

Newsletter

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Hot Topics

Smallpox, vaccinia or varicella?**The diagnostic and epidemiological dilemmas**

The US Institute of Medicine (IOM) has recently issued a review of the country's proposed smallpox vaccination program (<http://www.nap.edu/books/NI000489/html/index.html>) and several papers about the risks and benefits of various vaccination scenarios were published in the January 30 issue of the *New England Journal of Medicine*.¹⁻⁹

If needed, could you describe or make a diagnosis differentiating smallpox (variola), disseminated vaccinia (smallpox vaccine virus) & varicella? The US Centers for Disease Control & Prevention's website on smallpox (www.bt.cdc.gov/agent/smallpox/index.asp) has a useful algorithm (<http://www.bt.cdc.gov/agent/smallpox/diagnosis/pdf/spox-poster-full.pdf>)

In writing about smallpox, Dr Thomas Mack, of the University of California Los Angeles, recalls his experience in Pakistan, 30 years ago:⁵ "... the physical appearance of an unvaccinated person with variola major is alarming and quite unlike anything else, including the appearance of persons with varicella. Once they are infectious, 98 percent of previously unvaccinated patients have disease severe enough to be recognized by any professional or layperson familiar with the characteristic appearance ... the lesions, uniform in stage and set deeply in the dermis of the face and extremities, are unmistakable ... most virus shedding and almost all transmission occur during the first week of florid rash, and this period coincides with rapidly evolving symptoms severe enough to

keep infectious patients in bed.

Transmission would not be expected to occur over more than very short distances ... the viability of artificially airborne virus is measured in minutes.

Smallpox is not as infectious as its reputation would suggest."

Smallpox vaccination in Australia

Australia has 50 000 doses of smallpox vaccine stored and will purchase additional supplies in mid-2003. Health care professionals will receive information about the national plans for surveillance and management of biological events early in 2003. This information is also available on the website of the Commonwealth Department of Health and Ageing (www.health.gov.au) where it is updated regularly. After primary (first-time) vaccination it is expected that about 280 out of one million vaccinees could develop a generalised vaccinal rash that would require both clinical and laboratory experience to differentiate from smallpox.¹⁰



- Schraeder TL, Campion EW. Smallpox vaccination — the call to arms [perspective]. *N Engl J Med* 2003;348:381-2.
- Bozzette SA, Boer R, Bhatnagar V, et al. A model for a smallpox-vaccination policy [special article]. *N Engl J Med* 2003;348:416-25.
- Blendon RJ, DesRoches CM, Benson JM, et al. The Public and the smallpox threat [special article]. *N Engl J Med* 2003;348:426-32.
- Sepkowitz KA. Current concepts: how contagious is vaccinia [review]? *N Engl J Med* 2003;348:439-46.
- Mack T. A different view of smallpox and vaccination [sounding board]. *N Engl J Med* 2003;348:460-3.
- Breman JG, Arita I, Fenner F. Preventing the return of smallpox [sounding board]. *N Engl J Med* 2003;348:463-6.
- Rubins K, Relman DA. Progression of the lesion at the site of inoculation after smallpox vaccination. *N Engl J Med* 2003;348:414.
- Feuerstein-Kadgien B, Korn K. Images in clinical medicine. Cowpox infection. *N Engl J Med* 2003;348:415.
- Hanrahan JA, Jakubowycz M, Davis BR. Images in clinical medicine. A smallpox false alarm [letter]. *N Engl J Med* 2003;348:467-8.
- CDC. Smallpox vaccination and adverse reactions: guidance for clinicians MMWR 2003; (No.RR-4): 1-30. <http://www.cdc.gov/mmwr/PDF/rr/rr5204.pdf>

Recent Publications

- Kelly H, Riddell MA, Gidding H, Nolan T, Gilbert GL. A random cluster survey and a convenience sample give comparable estimates of immunity to vaccine preventable diseases in children of school age in Victoria, Australia. *Vaccine* 2002;20:3130-6.
- McMaster P, McIntyre P, Gilmour R, Gilbert G, Kakakios A, Mellis C. The emergence of resistant pneumococcal meningitis—implications for empiric therapy. *Archives of Disease in Childhood* 2002;87:207-10.
- Torvaldsen S, McIntyre PB. Observational methods in epidemiologic assessment of vaccine effectiveness. *Communicable Diseases Intelligence* 2002;26:451-7.
- Blumer C, Roche P, Spencer J, Lin M, Milton A, Bunn C, Gidding H, Kaldor J, Kirk M, Hall R, Della-Porta T, Leader R, Wright P. Australia's notifiable disease status, 2001: Annual report of the National Notifiable Diseases Surveillance System. *Commun Dis Intell* 2003;27:1-78.
- Davies P, Chapman S, Leask J. Antivaccination activists on the world wide web. *Archives of Disease in Childhood* 2002;87:22-5.
- Nolan T, McIntyre P, Robertson D, Descamps D. Reactogenicity and immunogenicity of a live attenuated tetravalent measles-mumps-rubella-varicella (MMRV) vaccine. *Vaccine* 2002;21:281-289.
- Forrest JM, Turnbull FM, Sholler GF, Hawker RE, Martin FJ, Doran TT, Burgess MA. Gregg's congenital rubella patients 60 years later. *Medical Journal of Australia* 2002;177:664-7.



NCIRS Website

NCIRS has on its website links to other immunisation websites, including Immunization Action Coalition (www.immunize.org), and the Children's Vaccine Program website (<http://www.ChildrensVaccine.org>). Also included is the website for the Allied Vaccine group (<http://www.vaccine.org>) a web ring made up of various groups. To find out more about these & other immunisation links visit our website at <http://www.ncirs.usyd.edu.au/links.html>

Recent Journal Club Topics

- Smallpox vaccination policy
- Vaccine & immunization resources on the world wide web
- Safety of anthrax vaccine
- Influenza-related hospitalizations among children in Hong Kong
- Effectiveness of vaccination for *Haemophilus influenzae* type b

NCIRS Journal Club meets each Monday at 12-1pm in the Clinical Sciences conference room at the Children's Hospital at Westmead. All are welcome.

If you would like to be placed on the journal club email list, or want more information, contact Nicholas Wood at NCIRS: nicholw3@chw.edu.au

National meningococcal C vaccination program

The Commonwealth Government is funding a national meningococcal C vaccination program aimed at protecting all persons aged 1-19 years. The first phase of the program (2003) is rolling out free vaccine for children aged 1-5 years through general practitioners & other immunisation providers. In 2003 senior high school students aged 15-19 years (& possibly other high school students depending on the jurisdiction) will be offered vaccination at school. Intervening age groups (primary & junior high schoolers) will receive the vaccine at school later in the program (late 2003-2005).

Invasive meningococcal disease

Meningococcal infections cause between 700 & 800 hospitalisations each year in Australia & 30-40 deaths (10 in children aged 0-4 years). The disease usually presents as meningitis or septicaemia & survivors may have severe sequelae. In Australia serogroup B causes most infections & serogroup C about one-third of cases; serogroup A is rarely seen. At present there are marked differences in serogroup C rates from State to State with NSW, Victoria & Tasmania experiencing the largest recent increases.

Vaccines

There are 2 quite different types of meningococcal vaccines. The multivalent polysaccharide vaccines (containing serogroups A, C, Y, W135; Mencevax ACWY (GlaxoSmithKline), Menomune (Aventis Pasteur) have been available for many years & are frequently used in adults & older children travelling to endemic areas of Africa & Asia where serogroups A & more recently W135 are prevalent. The new conjugated serogroup C vaccines are effective in young children & have been used in the recent successful United Kingdom mass vaccination program; these will also be used in the Australian program. Three products are available: Meningitec (Wyeth); Menjugate (CSL Vaccines); Neis Vac-C (Baxter Healthcare).

Adverse events with meningococcal serogroup C conjugate vaccines

Adverse events are similar to those seen with the current Hib conjugate vaccines. Children under the age of 2 years develop local redness (2%), irritability (20-50%) and fever $>38^{\circ}\text{C}$ (2-5%).

Older children more frequently develop local redness (30%) and headaches (10-14%) but have a slightly lower rate of fever (1-2%).

In the United Kingdom, where more than 18 million doses of the vaccines have been distributed, *anaphylaxis* has been reported at a rate of 0.3/100 000 doses, with full recovery of all children. *Convulsions* or *seizures* have been reported at a rate of about 1 in 60 000 doses. Some of these reports may be more accurately described as syncopal fits: this type of transient fitting precipitated by syncope & followed by rapid complete recovery is not infrequently seen in school-aged children receiving injections of any type. In infants in the UK the seizures were usually associated with fever; frequently the baby had received other routine vaccinations at the same time, so the cause of the fever could not be directly attributed to the meningococcal C vaccine. Following the use of 18 million doses of the vaccine the UK received 19 reports of *erythema multiforme* and 2 of *Stevens-Johnson syndrome* for which a causal association has not been completely established. The UK Expert Working Group considered that the small number of reports of purpura and petechiae were likely to be unrelated events.

In Australia vaccine adverse events should be reported to State/Territory Departments of Health except in Victoria & Tasmania where they are reported on the "blue form" directly to the Adverse Drug Reactions Advisory Committee (ADRAC).

Conclusion

Overall the vaccine is considered to be very safe and effective. In the UK, after 21 months of follow-up, efficacy was calculated as follows:

Age group	Efficacy (95%CI)
12-23 months	89% (73 to 96)
11-14 years	95% (82 to 99)
15-17 years	94% (83 to 98)

Further information

1. National Meningococcal C Vaccination Program. <http://immunise.health.gov.au/meningococcal.htm>
2. Conjugate meningococcal C vaccines —FAQ. Rosemary Lester, Priscilla Robinson and Stephen Pellissier. *Victorian Infectious Diseases Bulletin* 2002;5:45-46.
3. http://www.dhs.vic.gov.au/phd/vidb/downloads/back_issues/vidbv5i3.pdf

Communications Questionnaire

Part of the future development of NCIRS involves expanding our communication services with other interested professional groups. This would include developing an immunisation chat group and enhancing our website. To be able to do this successfully we require feedback from you.

Could you please email your responses to the following questions to karynp@chw.edu.au or fax the answers to Karyn Phillips, Business Manager NCIRS on fax (02) 9845 3082

Thank you,

Question 1. Website

Have you accessed the NCIRS Website? Yes / No

If yes, what did you find useful?

What, if anything did you find was missing from the website?

Question 2. Chat Group

Would you be interested in joining a chat group coordinated and monitored by NCIRS?

Yes / No

Question 3. Newsletter

What future topics would you like included in the NCIRS *Newsletter*?

For further information or if you would like to provide feedback on the *Newsletter*, please contact Karyn Phillips at karynp@chw.edu.au