

Newsletter

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Development of a priority scoring system to rank bio-terrorism risks

Congratulations to our own Professor Raina MacIntyre for developing a system that has been awarded the 2007 Henry Wellcome Medal and Prize from the Association of Military Surgeons of the US (AMSUS)



Professor Raina MacIntyre

Professor Raina MacIntyre, Principal Research Fellow and Senior Staff Specialist, NCIRS and Professor, Paediatrics and Child Health, University of Sydney, has

been awarded an international award for her risk-priority scoring system which will assist governments in preparing for a potential bio-terrorist attack. Raina, along with her co-researchers, devised a way of allocating risk using more factors than just probability of an attack, which is the traditional government measurement of risk. Raina's scoring system takes into account the severity of the consequences of an attack, not just the probability. The system rates the different types of bio-terrorism risks by looking at the severity of an attack's consequences, the potential for person-to-person transmission and the relative ease of decontamination.

For example, smallpox scores very highly under Raina's scoring system because although the probability of an attack with smallpox is low, if it actually happens the

consequences are much more serious in that there is person-to-person transmission. It can cause an epidemic in the population, whereas with anthrax, for example, it only affects the people who are immediately affected and it's not transmitted person-to-person.

Raina says that she hopes her work will assist governments to approach prioritisation in a systematic way.

Raina has recently returned from the AMSUS Annual Conference in Salt Lake City where she accepted the AMSUS Sir Henry Wellcome Medal and Prize for her article "Development of a Risk-Priority Score for Category A Bioterrorism Agents as an Aid for Public Health Policy" which was published in the journal *Military Medicine* in 2006. Under the terms of the will of Sir Henry Wellcome, a medical researcher born in 1851, The Wellcome Foundation Ltd. profits declared as dividends were to be utilised for the advancement of research work bearing upon medicine, surgery, chemistry, physiology, bacteriology, therapeutics, materia medica, pharmacy and allied subjects.

Homeopathy and Vaccination Fact Sheet

The newest fact sheet to be added to our NCIRS collection provides information regarding the use of homeopathic preparations in lieu of, or in addition to, vaccination. This was necessary because more and more people are considering homeopathy as a substitute for, or in conjunction with, conventional vaccination. It has been suggested that homeopathic remedies can strengthen the immune system, prevent childhood illnesses or, at the very least, lessen possible side effects when taken in conjunction with conventional vaccination.

The overriding message portrayed in this fact sheet is that, unlike conventional vaccination, there has not been

any rigorously performed research to demonstrate the safety or effectiveness of homeopathic preparations in the prevention of childhood diseases, nor has there been any research to substantiate the belief that homeopathic preparations can lessen the side effects sometimes experienced after conventional vaccinations.

The Australian Register of Homeopaths does not recommend the use of homeopaths as a substitute for conventional immunisation although this is not the belief of all homeopaths. Persons interested in homeopathic remedies are recommended to seek the advice of a homeopathy practitioner accredited with the Australian Register of Homeopaths (AROH).

24th International Papillomavirus Conference, Beijing, 3–9 November 2007

Julia Brotherton, Senior Research Fellow, NCIRS, attended the 24th International Papillomavirus conference in Beijing, China, from 3–9 November 2007. She presented the results of a recent HPV serosurvey conducted by NCIRS 'Population prevalence of exposure to human papillomavirus types 6, 11, 16, 18 and men, women and children in Australia.' Authors Newall AT, Brotherton JML, Quinn HE, Backhouse J, McIntyre PB, Gilbert GL, Esser MT, Erick J, Bryan J, Formica N, MacIntyre CR.

Other work presented at the conference which has involved NCIRS collaborations were

- a presentation by Prof Suzanne Garland on the interim results of the WHINURS HPV DNA prevalence study 'Human papillomavirus genotype prevalence in Australian women (Indigenous, Non-Indigenous, Urban, Rural) Populations.'

Authors Garland SM, Brotherton J, Condon J, Tabrizi S, McIntyre P, Smith D, Paul R.



Julia Brotherton at the 24th Intl Pabillomavirus Conference

and

- a poster presentation presented by Karen Canfell from the NSW Cancer Council 'The predicted impact of human papillomavirus vaccination on the incidence of infection in Australia'. Authors Smith MA, Canfell K, Barnabas RV, Brotherton JM.

Highlights of the conference included:

- information about prospects for the development of new L2 protein based HPV vaccines, which provide broader cross protection across HPV types in animal models;
- cross protection data from quadrivalent vaccine trials for infection and disease due to HPV types related to HPV16 and 18 (some evidence of protection when analysed by groups of HPV types but with wide confidence intervals);
- efficacy data of the quadrivalent vaccine in women aged 24–45 years (according to protocol results, which indicate that the vaccine is efficacious); and
- evidence from results of HPV DNA screening trials in women over 30 indicating that the use of high risk HPV DNA testing as part of cervical screening may allow for extension of screening intervals.

The lowlight of the conference was the outbreak of acute gastrointestinal illness that commenced on the second last day!!!

Clinical Trials

Updates

- A study on strategies to control seasonal influenza outbreaks in aged-care facilities - "Economic and Social Benefits of Treating and Preventing Influenza in Aged Care Facilities" over a 3 year period.
- A trial to evaluate the safety and effectiveness of a Combined *Haemophilus influenzae* type B (Hib) and Meningococcal C vaccine in 12 month old children with coadministration of MMR vaccine to include a 5 year serological follow-up.
- Birth dose pertussis: Does early whooping cough (pertussis) vaccination provide earlier antibody protection for infants? Extended to assess immunogenicity at 2 and 4 years of age.

Trials are also continuing in the following areas (please refer to previous NCIRS newsletters for more information).

- Randomised controlled trial of a Meningococcal B vaccine
- Immunogenicity of 7-valent pneumococcal conjugate vaccine (PCV-7) in different populations
- Hepatitis B immunity in "at risk" children
- A RCT of influenza vaccine in preventing ischaemic vascular events in people aged 40–64 years
- ARC Discovery project grant
- Evaluation of ZOSTAVAX™
- Immunogenicity, safety and persistence of immunity following human papillomavirus (HPV) vaccination
- Immunogenicity and reactogenicity of a booster dose of GlaxoSmithKline (GSK) Biologicals' combined reduced antigen content diphtheria-tetanus toxoids and acellular pertussis vaccine (Boostrix™)
- Immune response to a hepatitis B challenge dose in healthy subjects

For further information regarding any of the above trials, please contact Annemarie Egan (AnnemarE@chw.edu.au).

The Australian Immunisation Handbook, 9th Edition

The NCIRS Handbook team has been working hard to progress the production of the 9th Edition of *The Australian Immunisation Handbook*. The *Handbook* is now in the final desktopping/indexing stages and should go to press in the near future. The successful revision of the *Handbook* has been due to the great team effort by all the staff at NCIRS and there will be a celebration once the hardcopies are finally available!

In anticipation of the availability of the *Handbook*, NCIRS is currently working on an education slide package which is designed to provide immunisation service providers/educators with a snapshot covering "what's new" in the 9th Edition of *The Australian Immunisation Handbook*. It is anticipated that the slide collection will be available from the NCIRS web site soon. This slide presentation will be able to be freely downloaded and printed.

Recent Journal Club Presentations

What Led to the Nigerian Boycott of the Polio Vaccination Campaign?

Jegede AS PLoS Med 2007; 4(3): e73

doi:10.1371/journal.pmed.0040073. Full article available at: <http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0040073>

This paper looked at why Northern Nigeria boycotted the polio vaccine between 2003 and 2004. On the surface, the boycott was due to Northern Nigeria's Islamic leaders fearing the vaccine was a disguised attempt to control fertility, cause cancer and HIV transmission. Beneath the surface of these objections were historical, political and social issues that were at the heart of the opposition. There are underlying political tensions between the north and the south of Nigeria. The north has historically been colonised by Islamic Jihadists while the south has been a British colony. This has underscored the way orthodox medicine, a southern approach, has been received in the north where traditional medicine predominates. In the 1980s, president Babangida imposed a limit of 4 children per woman to control population growth. There was mistrust about this government agenda along with an apparent disparity between already dire access to basic health care and the ready availability of a relatively



The Kick Polio Out of Africa campaign

technological health care intervention in the form of vaccination. Finally there was distrust of western medicine over the 1996 Trovan antibiotic trial in which a number of children died and their deaths were attributed to that drug.

The response to the boycott was eventually successful. This included the setting up of a committee representing Nigerian health authorities, Muslim leaders from the North, WHO and UNICEF. Following a review of vaccine production processes and the seal of approval from Indonesian vaccine supplier, Biopharma, vaccination was reinstated on the condition that Biopharma become the main supplier. By this time, a wild polio Nigerian sourced strain had spread to at least 13 countries.

There is lingering resistance to the polio vaccine in the north, despite current support from religious leaders.

The article concludes that in vaccine programs, it is important to be sensitive to local politics; involve the state, local governments, community leaders and parents; and maintain public awareness about diseases through media that are appropriate to the country.



A vaccination team crosses a river to reach a village during a National Immunisation Day

Immunogenicity of Oka/Merck varicella vaccine in children vaccinated at 12-14 months of age versus 15-23 months of age.

Silber JL, Chan ISF, Wand WW, Matthews H, Kuter BJ Pediatric Infectious Disease Journal July 2007;26(7):572-576

Due to recent reports suggesting that breakthrough varicella may be more common in children when the Oka/Merck varicella vaccine (VARIVAX) is given at 12-14 months of age than when it is given at older ages, the aim of this study was to perform an analysis of five post-licensure clinical trials with this vaccine to evaluate immune response relative to the age of the vaccine recipient. Over the period 1995-2001, 3771 children aged 12-23 months received one injection of VARIVAX. The response rate or percent of children with varicella zoster virus antibody ≥ 5 gpELISA Units/mL at 6 weeks post-vaccination as measured using the Merck gpELISA assay was similar among 12-14, 15-17 and 18-23 month olds (93.8%, 90.8% and 93.1%, respectively). The geometric mean titre (GMT) was significantly higher for 12-14 month olds compared to older ages (15.1, 13.5 and 13.7 gpELISA units/mL, respectively; $P=0.02$). Among children 12-14 months of age, response rates and GMTs were similar regardless of their pre-vaccination status. In conclusion the Oka/Merck varicella vaccine is highly immunogenic when given to children 12-14 months of age and has a similar immunogenic profile to those aged 15-23 months.

Childcare Flu Vaccine Study - Mobile Vaccination Unit



The NCIRS team, under the supervision of Professor Robert Booy, has recently conducted a pilot study addressing the social, economic and health impact of vaccinating young children against influenza. The team devised the use of a mobile vaccination unit to reach children in different childcare facilities. The unit, unique in its design, was run by a doctor and nurse experienced in vaccination of children. It was equipped with a vaccination fridge. There was a friendly child and parent entertainment area that enhanced a rewarding vaccination experience for both participating families and the study team. 2007 was a pilot year for the study with

four childcare facilities in Sydney metropolitan area participating. It is planned to expand the number of centres to 25 next year.

Recent NCIRS Publications

- Menzies R, McIntyre P, Reid R, O'Brien K, Santosham M, Watt J, Angeles G, Brown A, Dunbar M, Leach A, Crengle S, Lennon D, Mason H, Grim C, Nolan L, Smith P, Dumaresq G, Richardson R, Moberley S, Stirling J, Gooda M, Green M. Conference report: Vaccine preventable diseases in indigenous populations—International perspectives. Satellite Symposium of the 5th International Symposium on Pneumococci and Pneumococcal Diseases, April 2006, Alice Springs, Australia. *Vaccine* 2007;25:7281-4.
- Lawrence GL, Aratchige PE, Boyd I, McIntyre PB, Gold MS. Annual report on surveillance of adverse events following immunisation in Australia, 2006. *Communicable Diseases Intelligence* 2007;31:269-83.
- Rank C, Menzies RI. How reliable are Australian Childhood Immunisation Register coverage estimates for Indigenous children? An assessment of data quality and coverage. *Communicable Diseases Intelligence*. In press 2007;31:283-7.
- Heywood AE, Macartney KK, MacIntyre CR, McIntyre PB. Current developments in varicella-zoster virus disease prevention. A report on the varicella-zoster workshop convened by the National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases on 16-17 November 2006. *Communicable Diseases Intelligence* 2007;31:303-10.
- van de Beek D, de Gans J, McIntyre P, Prasad K. Corticosteroids for acute bacterial meningitis [update of Cochrane Database Syst Rev. 2003;(3):CD004405; PMID: 12918010]. *Cochrane Database of Systematic Reviews* 2007;(1):CD004405.
- Ajayi-Obe EK, Coen PG, Handa R, Aitken C, McIntosh ED, Booy R. Influenza A and respiratory syncytial virus hospital burden in young children in East London. *Epidemiology & Infection* September 2007; [Epub ahead of print].
- Sengupta N, Booy R, Schmitt HJ, Peltola H, van Damme P, Schumacher RF, Campins M, Rodrigo C, Heikkinen T, Seward J, Jumaan A, Fin A, Olcen P, Thiry N, Weil-Olivier C, Breuer. Varicella vaccination in Europe: are we ready for a universal childhood programme? *European Journal of Pediatrics* March 2007; [Epub ahead of print].



**Merry Christmas and
a Happy New Year
from the team at NCIRS**