

A SELECTION OF TEN CURRENT READINGS ON NEW VACCINES AVAILABLE AS AVAILABLE AS FULL-TEXT (SOME FREE SOME REQUIRING PAYMENT)

Selection of readings made by A/Prof Goh Lee Gan

INFECTIONS AND VACCINES FOR ADULTS

Reading 1 : Moderate exercise improves antibody response to influenza immunization in older adults

Kohut ML, Arntson BA, Lee W, Rozeboom K, Yoon KJ, Cunnick JE, McElhaney J. Moderate exercise improves antibody response to influenza immunization in older adults. Vaccine. 2004 Jun 2;22(17-18):2298-306.

URL: <http://www.sciencedirect.com> (payment required)

Department of Health and Human Performance/Immunobiology, Iowa State University, 235 Forker Building, Ames, IA 50011, USA. mkohut@iastate.edu

ABSTRACT

Influenza vaccine efficacy is reduced among adults over age 65 and a significant number of vaccinated elderly may remain susceptible to influenza virus infection. The effect of moderate exercise training on the immune response to influenza immunization was evaluated in this study. Twenty-seven adults $\geq$ age 64 were assigned to an exercise group (n= 14) or a control group (n = 13). The subjects exercised at 65-75% heart rate reserve (HRR), 25-30 min, 3 days per week, for 10 months. Controls did not change activity. Subjects were immunized with trivalent influenza vaccine before and after the exercise intervention. After the exercise intervention, exercisers exhibited a greater mean fold increase (MFI) in antibody titer to influenza A/New Caledonia/20/99 (H1N1) and A/Panama/2007/99 (H3N2) than controls, and a greater Granzyme B activity to A/Panama/2007/99 than controls. These findings suggest that exercise may enhance the mean fold increase in antibody titer in response to influenza immunization if the influenza antigen was contained in the previous year's vaccine.

Reading 2 : Influenza-like illness

Kelly H, Birch C. The causes and diagnosis of influenza-like illness. Aust Fam Physician. 2004 May;33(5):305-9.

URL: <http://www.racgp.org.au/afp/downloads/pdf/may2004/20040510kelly.pdf> (free fulltext)

Epidemiology Unit, Victorian Infectious Diseases Reference Laboratory, North Melbourne, Victoria.
heath.kelly@mh.org.au

ABSTRACT

BACKGROUND: Influenza and other respiratory viruses circulate between spring and autumn in temperate climates and all year in tropical climates. These viruses cause symptoms often referred to as influenza-like illness (ILI), but are not generally distinguishable on clinical grounds alone.

OBJECTIVE: This article provides a brief review of the surveillance, viral causes and current diagnostic methods used to identify viruses causing ILI.

DISCUSSION: Influenza-like illness surveillance with laboratory support, conducted in most Australian states and territories, aims to define the impact of influenza seasons in the community and provide virus strains that may be used in future vaccine formulations. Surveillance may also be useful in the early stages of an influenza pandemic. In addition to influenza, viruses known to cause ILI include respiratory syncytial virus, rhinovirus, adenovirus, parainfluenza viruses, human coronaviruses (including the virus that causes severe acute respiratory syndrome) and the recently recognised human metapneumovirus. Polymerase chain reaction assays are the most common diagnostic tests now used for the differential diagnosis of ILI.

Reading 3 : Neisseria meningitidis carriage in Hajj pilgrims

Balkhy HH, Memish ZA, Almuneef MA, Osoba AO. Neisseria meningitidis W-135 carriage during the Hajj season 2003. Scand J Infect Dis. 2004;36(4):264-8.

URL: <http://www.ingentaconnect.com/content> (Payment is required)

Department of Infection Prevention and Control, King Abdulaziz Medical City, King Fahad National Guard Hospital Riyadh, Saudi Arabia.

ABSTRACT

During the 2003 Hajj pilgrimage to Mecca, 344 pilgrims of 29 different nationalities were screened by means of a throat swab to detect *Neisseria meningitidis* carriage. *N. meningitidis* was isolated from 11 subjects; 2 were serogroup W-135, 1 serogroup B, and 8 were non-groupable. The results indicate a very low colonization rate for *N. meningitidis* among the tested cohort, with a predominance of non-groupable strains. These results, combined with a review of the published data, warrant a re-evaluation of current recommendations by the Saudi Ministry of Health for the use of ciprofloxacin for Saudi pilgrims departing at the end of the Hajj season. However, vaccination with the meningococcal quadrivalent vaccine (containing A, C, Y, and W polysaccharides), for all pilgrims, should continue to be recommended. The possibility of new strains arising as a cause of future meningococcal outbreaks should be considered, and annual surveillance may give an early warning.

Reading 4 : Preventing pneumonia in the elderly**Loeb M. Pneumonia in the elderly. Curr Opin Infect Dis. 2004 Apr;17(2):127-30.**URL: <http://www.co-infectiousdiseases.com/> (Payment is required)

Department of Pathology and Molecular Medicine, McMaster University, Hamilton, Ontario, Canada.
loebm@mcmaster.ca

ABSTRACT

PURPOSE OF REVIEW: This review provides an update on new data about the etiology, clinical characteristics, outcomes, and prevention of community-acquired pneumonia. The impact of severe acute respiratory syndrome in older persons is also addressed.

RECENT FINDINGS: *Streptococcus pneumoniae* remains the most important cause of community-acquired pneumonia in the very elderly (80 years and over). *Pneumococcus* is also an important etiologic agent of pneumonia in residents of long-term care facilities. Clinical signs and symptoms of community-acquired pneumonia are less distinct in this group compared with younger patients. New data about influenza immunization reveal better mucosal immunity with the intranasal vaccine compared with the intramuscular vaccine. A review of clinical trial evidence differs from observational studies that demonstrate a clear benefit of the polysaccharide pneumococcal vaccine in the elderly. The prospect of severe acute respiratory syndrome in older adults is the most important new issue to emerge, as older adults are at increased risk from complications and death.

SUMMARY: There are many challenges in preventing and managing community-acquired pneumonia in the elderly. *S. pneumoniae* remains the most important cause. The clinical presentation of pneumonia in the very elderly can be nonspecific. Given the safety profile of the vaccine and supportive observational evidence, public health policymakers should continue to support use of the polysaccharide pneumococcal vaccine. However, research into new vaccine strategies, including use of conjugate or common antigen vaccines, is a priority.

Reading 5 : Reducing pneumococcal resistance through vaccine use**Amsden GW. Pneumococcal resistance in perspective: how well are we combating it? Pediatr Infect Dis J. 2004 Feb;23(2 Suppl):S125-8.**URL: <http://www.pidj.com> (Payment is required)

The Clinical Pharmacology Research Center, Bassett Healthcare, Cooperstown, NY 13326, USA.
guy.amsden@bassett.org

ABSTRACT

Because *Streptococcus pneumoniae* is the most commonly isolated community-acquired respiratory tract pathogen, the reports of high rates of antibiotic resistance throughout the world highlight the need for intervention to stem any further increases in resistance. Efforts to reduce the incidence of pneumococcal resistance have been mainly 2-fold, involving attempts to reduce unnecessary antibiotic prescribing, as well as to assure early childhood immunization with the pneumococcal heptavalent conjugate vaccine. To reduce unnecessary prescribing for infections that are typically viral in etiology, such as acute bronchitis, education efforts have been focused not only on clinicians but also on parents and patients. These education efforts significantly reduce unnecessary antibiotic prescribing, and initial evidence suggests that they may stabilize, if not reduce, the incidence of penicillin and macrolide-resistant pneumococcal isolates. Utilization of the relatively new pneumococcal heptavalent conjugate vaccine not only reduces the incidence of acute otitis media caused by pneumococcal serotypes included in the vaccine as well as disease caused by related serotypes but also has a highly significant effect on reducing the incidence of invasive pneumococcal disease in children and potential adult contacts. In addition more recent data have established that vaccination is also decreasing the carriage and transmission of antibiotic-resistant pneumococcal isolates. Education and vaccine programs that attempt to stabilize and/or reduce the rate of pneumococcal resistance are at least as important as having effective antibiotic treatments for pneumococcal disease. These efforts to address pneumococcal resistance have been highly successful to date.

INFECTIONS AND VACCINES FOR CHILDREN

Reading : 6 Childhood vaccine development

Baker JP, Katz SL. Childhood vaccine development: an overview. *Pediatr Res.* 2004 Feb;55(2):347-56. Epub 2003 Nov 19.

URL: <http://www.pedresearch.org/cgi/content/full/55/2/347> (free full text)

Department of Pediatrics, and Center for the Study of Medical Ethics and Humanities, Duke University Medical Center, Durham, NC 27710, U.S.A. Baker009@mc.duke.edu

ABSTRACT

Vaccines against childhood diseases represent some of the most important applications of 20th-century pediatric research. This survey examines how the components of the current U.S. immunization schedule emerged in three phases during the course of the century. The first phase, after the development of bacterial culture techniques, witnessed numerous efforts in the early 1900s to develop bacterial vaccines. It proved most fruitful with respect to diphtheria, tetanus, and pertussis. The rise of viral tissue culture techniques in the 1950s brought about a second phase of innovation resulting in vaccines against polio, measles, mumps, rubella, and varicella. A third wave of innovation, still very much alive, has drawn on a variety of new technologies and led to vaccines against hepatitis B, *Haemophilus influenzae* type b, pneumococcus, and still other organisms. Although basic science research has thus been a primary factor shaping the history of vaccine development, the collaboration between the academic, private, and public sectors critical to its application has not always proceeded smoothly. The history of vaccine research and development has important implications for today, as a variety of factors threaten to fragment this network.

Reading 7 : The Australian best-practice vaccine schedule

Burgess MA & McIntyre PB. Vaccines: the new Australian best-practice schedule. *MJA* 17 May 2004;190:494-496.

URL: http://www.mja.com.au/public/issues/180_10_170504/bur10901_fm.pdf (free full text)

National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases, University of Sydney and the Children's Hospital at Westmead, Sydney, NSW.

SUMMARY

In September 2003, the National Health and Medical Research Council (NHMRC) approved the new Australian Technical Advisory Group on Immunisation (ATAGI). This schedule includes three which are not free of charge to parents, namely, the inactivated poliomyelitis vaccine (IPV), varicella vaccine, and the seven-valent pneumococcal conjugate vaccine (7vPCV). Although not free of charge, nevertheless, they are strongly recommended.

Reading 8: Benefits of routine immunizations on childhood survival

Lehmann D, Vail J, Firth MJ, de Klerk NH, Alpers MP. Benefits of routine immunizations on childhood survival in Tari, Southern Highlands Province, Papua New Guinea. Int J Epidemiol. 2005 Feb;34(1):138-48. Epub 2004 Nov 23.

URL: <http://ije.oupjournals.org/cgi/content/full/34/1/138> (Payment required)

Papua New Guinea Institute of Medical Research, Goroka and Tari, Papua New Guinea. deborahl@ichr.uwa.edu.au

ABSTRACT

BACKGROUND: Non-specific beneficial as well as deleterious effects of childhood immunizations have been reported in areas of high mortality. This study aimed to determine the effects of diphtheria-tetanus-whole-cell-pertussis (DTP), BCG, hepatitis B, and measles vaccines on mortality in the highlands of Papua New Guinea (PNG).

METHODS: Demographic events for children born in 1989-1994 who were under monthly demographic surveillance in Tari were recorded from birth until age 2 years, out-migration, death, or the end of the study period. Data on BCG, hepatitis B, DTP, measles and pneumococcal polysaccharide vaccination were collected monthly from clinic records. To allow for different characteristics of immunized and non-immunized children, analysis included conditioning on a propensity score for vaccination, adjusting for differences in children's background characteristics.

RESULTS: In all, 101/3502 children (3%) who had at least one vaccine died between ages 29 days and 24 months were compared to 112/546 (21%) who had none. BCG was associated with lower mortality in the 1-5 month age group (hazard ratio [HR] = 0.17, 95% CI: 0.09, 0.34), measles vaccine with lower mortality at age 6-11 months (HR = 0.42, 95% CI: 0.17, 1.01), and pneumococcal polysaccharide vaccine with lower mortality at age 12-23 months (HR = 0.42, 95% CI: 0.19, 0.93). One or more doses of DTP was associated with lower overall mortality (HR = 0.27, 95% CI: 0.16, 0.44), particularly in the 1-5 month age group (HR = 0.19, 95% CI: 0.10, 0.34), and also in those who had had prior BCG (HR = 0.45, 95% CI: 0.22, 0.91).

CONCLUSION: Routine immunizations are effective in reducing overall mortality in young children in an area of high mortality. In particular, DTP, whether considered separately or in addition to BCG, was associated with a lowering of overall mortality, in contrast to findings reported from Guinea-Bissau.

Reading 9: Pertussis presentation, investigation and management

Frydenberg A, Starr M. Pertussis. Presentation, investigation and management. Aust Fam Physician. 2004 May;33(5):317-9.

URL: <http://www.racgp.org.au/afp/downloads/pdf/may2004/20040510starr.pdf> (free full text)

Paediatric Infectious Diseases Unit, Department of General Medicine, Royal Children's Hospital, Melbourne, Victoria.

ABSTRACT

BACKGROUND: Pertussis (whooping cough) is a highly infectious, preventable disease, which causes significant morbidity and mortality.

OBJECTIVE: This article discusses the presentations, investigations and management of cases and their contacts.

DISCUSSION: Maternal antibody does not confer protection to the infant so babies are particularly at risk of infection and complications until they have completed the primary course of vaccinations at 2, 4 and 6 months of age. Diagnosis is primarily clinical, but can be confirmed with immunofluorescence on nasopharyngeal aspirate or nasal swab. Recent changes to the Australian Standard Vaccination Schedule include the removal of the 18 month dose of DTPa and the addition of an adult formulation booster vaccination at 15-17 years of age.

TRAVEL MEDICINE

Reading 10: Travel health knowledge

Wilder-Smith A, Khairullah NS, Song JH, Chen CY, Torresi J.

Travel health knowledge, attitudes and practices among Australasian travelers. J Travel Med. 2004 Jan-Feb;11(1):9-15.

URL: <http://www.bcdecker.com> (Payment required)

Travellers' Health and Vaccination Centre, Department of Infectious Diseases, Tan Tock Seng Hospital, Singapore.

ABSTRACT

BACKGROUND: Although the Asia Pacific region is the focus of the fastest-growing tourist and travel industry, few data are available on the knowledge, attitudes and practices (KAP) of travelers from this region with regard to travel-related infectious diseases.

METHODS: We conducted a cross-sectional survey among travelers at the departure lounges of five airports in Australasia (Singapore, Kuala Lumpur, Taipeh, Melbourne, Seoul) whose travel destinations were Asia, Africa or South America. Two standardized questionnaires directed towards KAP in travel health, travel immunizations and malaria were administered.

RESULTS: Of 2,101 respondents (82% Asian, 17% Western), 31% had sought pretravel health advice and only 4% sought travel health advice from the travel medicine specialist. The risk of vaccine-preventable infectious diseases and malaria at the destination country was perceived to be low. Overall, fewer than 5% of travelers had been vaccinated in preparation for their trip. The most frequent travel vaccinations were for hepatitis A and B. Only 40% of travelers to malaria-endemic areas carried malaria prophylaxis. Compared to Western travelers, those of Asian nationality were significantly less likely to obtain pretravel advice and malaria prophylaxis and to receive travel vaccinations.

CONCLUSION: There is an urgent need for increased awareness about travel-related infectious diseases among Asian travelers, and greater uptake of pretravel health advice, vaccinations and malaria prophylactic measures.
