

A SELECTION OF TEN CURRENT READINGS ON TOPICS RELATED TO VALUE OF VACCINATION

Selection of readings made by A/Prof Goh Lee Gan

Reading 1 - Travel Medicine

Fenner P. Fitness to travel - assessment in the elderly and medically impaired. *Aust Fam Physician*. 2007 May; 36(5):312-5.

URL: <http://www.racgp.org.au/afp/200705/16221>

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ABSTRACT

BACKGROUND: As more people travel, and with an expanding aged population, the number of older travellers, including those with significant medical or physical impairment will increase significantly.

OBJECTIVE: This article addresses the assessment of fitness to travel in these groups, particularly with regard to their varying standard of fitness and/or disability. These factors should influence all travel plans.

DISCUSSION: Factors for consideration are: destination and itinerary; the traveller's current medical condition, state of health, mobility (if impaired), medication, preparation necessary, level of fitness; and assessment of precautions or protection needed for temperature and/or weather extremes, altitude and other influencing factors. The trip conditions, both possible and probable, should be assessed and matched with these factors before booking the trip - long before the planned departure. If the vacation is to be enjoyed, the destination and itinerary must be comfortably achievable within these confines for the individual(s) concerned.

Reading 2 - Travel Medicine

Gherardin T. The pre-travel consultation - an overview. *Aust Fam Physician*. 2007 May; 36(5):300-3.

URL: <http://www.racgp.org.au/afp/200705/16219>

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ABSTRACT

BACKGROUND: Australians are great travellers and the need for travel health advice can be a common presentation in general practice. General practitioners should be an important source of accurate and up-to-date information and provide appropriate travel medicine services.

OBJECTIVE: This article aims to highlight the prerequisites and underlying principles for good travel medicine practice, define the method of risk analysis at the travel medicine consultation, and discuss the main components of service provision.

DISCUSSION: Good travel medicine service implies being able to provide accurate, up-to-date advice about health risks for travellers and appropriate provision of selected vaccines, medications, medical kits and travel health products. The travel medicine consultation is the opportunity to make a risk assessment for individual travellers based on detailed analysis of the medical history, the itinerary and other information, in order to tailor advice and treatment. General practitioners should work within their abilities and refer complex cases to travel medicine specialists.

Reading 3 - Travel Medicine

Lau S, Gherardin T. Travel vaccination. *Aust Fam Physician*. 2007 May; 36(5):304-11.

URL: <http://www.racgp.org.au/afp/200705/16450>

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ABSTRACT

BACKGROUND: Immunisation is very cost effective. It provides high level immunity against a range of general and travel specific pathogens. There are more vaccines available as research and development of vaccines progresses. Some vaccines require multiple doses to induce long lasting protective immunity, and some will only induce protective immunity for a limited period of time.

OBJECTIVE: This article outlines the principles of travel immunisation and reviews the use of each individual vaccine.

DISCUSSION: Pre-travel consultation is interactive and must be individualised. A systematic approach is required, as well as knowledge of disease risks and vaccine details. Recommendation of vaccines should be based on travel illness epidemiology, and be appropriate to the traveller's needs and budget. We need to update routine vaccinations relevant in Australia, recommend vaccines relevant to the traveller's usual lifestyle and occupation, and travel vaccines based on specific needs.

Reading 4 - Influenza Vaccination

Hayward AC, Harling R, Wetten S, Johnson AM, Munro S, Smedley J, Murad S, Watson JM. Effectiveness of an influenza vaccine programme for care home staff to prevent death, morbidity, and health service use among residents: cluster randomised controlled trial. *BMJ*. 2006 Dec 16; 333(7581):1241. Epub 2006 Dec 1.

URL: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=17142257>

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ABSTRACT

OBJECTIVE: To determine whether vaccination of care home staff against influenza indirectly protects residents.

DESIGN: Pair matched cluster randomised controlled trial.

SETTING: Large private chain of UK care homes during the winters of 2003-4 and 2004-5.

PARTICIPANTS: Nursing home staff (n=1703) and residents (n=2604) in 44 care homes (22 intervention homes and 22 matched control homes).

INTERVENTIONS: Vaccination offered to staff in intervention homes but not in control homes.

MAIN OUTCOME MEASURES: The primary outcome was all cause mortality of residents. Secondary outcomes were influenza-like illness and health service use in residents.

RESULTS: In 2003-4 vaccine coverage in full time staff was 48.2% (407/884) in intervention homes and 5.9% (51/859) in control homes. In 2004-5 uptake rates were 43.2% (365/844) and 3.5% (28/800). National influenza rates were substantially below average in 2004-5. In the 2003-4 period of influenza activity significant decreases were found in mortality of residents in intervention homes compared with control homes (rate difference -5.0 per 100 residents, 95% confidence interval -7.0 to -2.0) and in influenza-like illness (P=0.004), consultations with general practitioners for influenza-like illness (P=0.008), and admissions to hospital with influenza-like illness (P=0.009). No significant differences were found in 2004-5 or during periods of no influenza activity in 2003-4.

CONCLUSIONS: Vaccinating care home staff against influenza can prevent deaths, health service use, and influenza-like illness in residents during periods of moderate influenza activity.

TRIAL REGISTRATION: National Research Register N0530147256.

Reading 5 - Influenza Vaccination

Fiore AE, Shay DK, Haber P, Iskander JK, Uyeki TM, Mootrey G, Bresee JS, Cox NJ; Advisory Committee on Immunization Practices (ACIP), Centers for Disease Control and Prevention (CDC). Prevention and control of influenza. Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2007. *MMWR Recomm Rep*. 2007 Jul 13; 56(RR-6):1-54.

URL: <http://www.cdc.gov.libproxy1.nus.edu.sg/mmwr/preview/mmwrhtml/rr5606a1.htm>

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ABSTRACT

This report updates the 2006 recommendations by CDC's Advisory Committee on Immunization Practices (ACIP) regarding the use of influenza vaccine and antiviral agents (CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices [ACIP]. *MMWR* 2006;55[No. RR-10]). The groups of persons for whom vaccination is recommended and the antiviral medications recommended for chemoprophylaxis or treatment (oseltamivir or zanamivir) have not changed. Estimated vaccination coverage remains <50% among certain groups for whom routine annual vaccination is recommended, including young children and adults with risk factors for influenza complications, health-care personnel (HCP), and pregnant women. Strategies to improve vaccination coverage, including use of reminder/recall systems and standing orders programs, should be implemented or expanded. The 2007 recommendations include new and updated information. Principal updates and changes include 1) reemphasizing the importance of administering 2 doses of vaccine to all children aged 6 months – 8 years if they have not been vaccinated previously at any time with either live, attenuated influenza vaccine (doses separated by > or =6 weeks) or trivalent inactivated influenza vaccine (doses separated by > or =4 weeks), with single annual doses in subsequent years; 2) recommending that children aged 6 months – 8 years who received only 1 dose in their first year of vaccination receive 2 doses the following year, with single annual doses in subsequent years; 3) highlighting a previous recommendation that all persons, including school-aged children, who want to reduce the risk of becoming ill with influenza or of transmitting influenza to others should be vaccinated; 4) emphasizing that immunization providers should offer influenza vaccine and schedule immunization clinics throughout the influenza season; 5) recommending that health-care facilities consider the level of vaccination coverage among HCP to be one measure of a patient safety quality program and implement policies to encourage HCP vaccination (e.g., obtaining signed statements from HCP who decline influenza vaccination); and 6) using the 2007–2008 trivalent vaccine virus strains A/Solomon Islands/3/2006 (H1N1)-like (new for this season), A/Wisconsin/67/2005 (H3N2)-like, and B/Malaysia/2506/2004-like antigens. This report and other information are available at CDC's influenza website (<http://www.cdc.gov.libproxy1.nus.edu.sg/flu>). Updates or supplements to these recommendations (e.g., expanded age or risk group indications for currently licensed vaccines) might be required. Immunization providers should be alert to announcements of recommendation updates and should check the CDC influenza website periodically for additional information.

Reading 6 - Varicella

Marin M, Güris D, Chaves SS, Schmid S, Seward JF; Advisory Committee on Immunization Practices, Centers for Disease Control and Prevention (CDC). Prevention of varicella: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep*. 2007 Jun 22; 56(RR-4):1-40.

URL: <http://www.cdc.gov.libproxy1.nus.edu.sg/mmwr/preview/mmwrhtml/rr5604a1.htm>

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ABSTRACT

Two live, attenuated varicella zoster virus-containing vaccines are available in the United States for prevention of varicella: 1) a single-antigen varicella vaccine (VARIVAX, Merck & Co., Inc., Whitehouse Station, New Jersey), which was licensed in the United States in 1995 for use among healthy children aged $>$ or $=$ 12 months, adolescents, and adults; and 2) a combination measles, mumps, rubella, and varicella vaccine (ProQuad, Merck & Co., Inc., Whitehouse Station, New Jersey), which was licensed in the United States in 2005 for use among healthy children aged 12 months-12 years. Initial Advisory Committee on Immunization Practices (ACIP) recommendations for prevention of varicella issued in 1995 (CDC. Prevention of varicella: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1996;45 [No. RR-11]) included routine vaccination of children aged 12-18 months, catch-up vaccination of susceptible children aged 19 months-12 years, and vaccination of susceptible persons who have close contact with persons at high risk for serious complications (e.g., health-care personnel and family contacts of immunocompromised persons). One dose of vaccine was recommended for children aged 12 months-12 years and 2 doses, 4-8 weeks apart, for persons aged $>$ or $=$ 13 years. In 1999, ACIP updated the recommendations (CDC. Prevention of varicella: updated recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1999;48 [No. RR-6]) to include establishing child care and school entry requirements, use of the vaccine following exposure and for outbreak control, use of the vaccine for certain children infected with human immunodeficiency virus, and vaccination of adolescents and adults at high risk for exposure or transmission. In June 2005 and June 2006, ACIP adopted new recommendations regarding the use of live, attenuated varicella vaccines for prevention of varicella. This report revises, updates, and replaces the 1996 and 1999 ACIP statements for prevention of varicella. The new recommendations include 1) implementation of a routine 2-dose varicella vaccination program for children, with the first dose administered at age 12-15 months and the second dose at age 4-6 years; 2) a second dose catch-up varicella vaccination for children, adolescents, and adults who previously had received 1 dose; 3) routine vaccination of all healthy persons aged $>$ or $=$ 13 years without evidence of immunity; 4) prenatal assessment and postpartum vaccination; 5) expanding the use of the varicella vaccine for HIV-infected children with age-specific CD4 $^{+}$ T lymphocyte percentages of 15%-24% and adolescents and adults with CD4 $^{+}$ T lymphocyte counts $>$ or $=$ 200 cells/microL; and 6) establishing middle school, high school, and college entry vaccination requirements. ACIP also approved criteria for evidence of immunity to varicella.

Reading 7 - Human Papilloma Virus Vaccine

Markowitz LE, Dunne EF, Saraiya M, Lawson HW, Chesson H, Unger ER; Centers for Disease Control and Prevention (CDC); Advisory Committee on Immunization Practices (ACIP). Quadrivalent Human Papillomavirus Vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep. 2007 Mar 23; 56(RR-2):1-24.

URL: <http://www.cdc.gov.libproxy1.nus.edu.sg/mmwr/preview/mmwrhtml/rr5602a1.htm>

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ABSTRACT

These recommendations represent the first statement by the Advisory Committee on Immunization Practices (ACIP) on the use of a quadrivalent human papillomavirus (HPV) vaccine licensed by the U.S. Food and Drug Administration on June 8, 2006. This report summarizes the epidemiology of HPV and associated diseases, describes the licensed HPV vaccine, and provides recommendations for its use for vaccination among females aged 9-26 years in the United States. Genital HPV is the most common sexually transmitted infection in the United States; an estimated 6.2 million persons are newly infected every year. Although the majority of infections cause no clinical symptoms and are self-limited, persistent infection with oncogenic types can cause cervical cancer in women. HPV infection also is the cause of genital warts and is associated with other anogenital cancers. Cervical cancer rates have decreased in the United States because of widespread use of Papanicolaou testing, which can detect precancerous lesions of the cervix before they develop into cancer; nevertheless, during

2007, an estimated 11,100 new cases will be diagnosed and approximately 3,700 women will die from cervical cancer. In certain countries where cervical cancer screening is not routine, cervical cancer is a common cancer in women. The licensed HPV vaccine is composed of the HPV L1 protein, the major capsid protein of HPV. Expression of the L1 protein in yeast using recombinant DNA technology produces noninfectious virus-like particles (VLP) that resemble HPV virions. The quadrivalent HPV vaccine is a mixture of four HPV type-specific VLPs prepared from the L1 proteins of HPV 6, 11, 16, and 18 combined with an aluminum adjuvant. Clinical trials indicate that the vaccine has high efficacy in preventing persistent HPV infection, cervical cancer precursor lesions, vaginal and vulvar cancer precursor lesions, and genital warts caused by HPV types 6, 11, 16, or 18 among females who have not already been infected with the respective HPV type. No evidence exists of protection against disease caused by HPV types with which females are infected at the time of vaccination. However, females infected with one or more vaccine HPV types before vaccination would be protected against disease caused by the other vaccine HPV types. The vaccine is administered by intramuscular injection, and the recommended schedule is a 3-dose series with the second and third doses administered 2 and 6 months after the first dose. The recommended age for vaccination of females is 11-12 years. Vaccine can be administered as young as age 9 years. Catch-up vaccination is recommended for females aged 13-26 years who have not been previously vaccinated. Vaccination is not a substitute for routine cervical cancer screening, and vaccinated females should have cervical cancer screening as recommended.

Reading 8 - Preventing Tetanus, Diphtheria, and Pertussis

Kretsinger K, Broder KR, Cortese MM, Joyce MP, Ortega-Sanchez I, Lee GM, Tiwari T, Cohn AC, Slade BA, Iskander JK, Mijalski CM, Brown KH, Murphy TV; Centers for Disease Control and Prevention; Advisory Committee on Immunization Practices; Healthcare Infection Control Practices Advisory Committee. Preventing tetanus, diphtheria, and pertussis among adults: use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine recommendations of the Advisory Committee on Immunization Practices (ACIP) and recommendation of ACIP, supported by the Healthcare Infection Control Practices Advisory Committee (HICPAC), for use of Tdap among health-care personnel. *MMWR Recomm Rep.* 2006 Dec 15; 55(RR-17):1-37.

URL: <http://www.cdc.gov.libproxy1.nus.edu.sg/mmwr/preview/mmwrhtml/rr5517a1.htm>

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ABSTRACT

On June 10, 2005, a tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine (Tdap) formulated for use in adults and adolescents was licensed in the United States for persons aged 11-64 years (ADACEL, manufactured by sanofi pasteur, Toronto, Ontario, Canada). Prelicensure studies demonstrated safety and efficacy, inferred through immunogenicity, against tetanus, diphtheria, and pertussis when Tdap was administered as a single booster dose to adults. To reduce pertussis morbidity among adults and maintain the standard of care for tetanus and diphtheria prevention and to reduce the transmission of pertussis to infants and in health-care settings, the Advisory Committee on Immunization Practices (ACIP) recommends that: 1) adults aged 19-64 years should receive a single dose of Tdap to replace tetanus and diphtheria toxoids vaccine (Td) for booster immunization against tetanus, diphtheria, and pertussis if they received their last dose of Td ≥ 10 years earlier and they have not previously received Tdap; 2) intervals shorter than 10 years since the last Td may be used for booster protection against pertussis; 3) adults who have or who anticipate having close contact with an infant aged <12 months (e.g., parents, grandparents aged <65 years, child-care providers, and health-care personnel) should receive a single dose of Tdap to reduce the risk for transmitting pertussis. An interval as short as 2 years from the last Td is suggested;

shorter intervals can be used. When possible, women should receive Tdap before becoming pregnant. Women who have not previously received Tdap should receive a dose of Tdap in the immediate postpartum period; 4) health-care personnel who work in hospitals or ambulatory care settings and have direct patient contact should receive a single dose of Tdap as soon as feasible if they have not previously received Tdap. An interval as short as 2 years from the last dose of Td is recommended; shorter intervals may be used. These recommendations for use of Tdap in health-care personnel are supported by the Healthcare Infection Control Practices Advisory Committee (HICPAC). This statement 1) reviews pertussis, tetanus and diphtheria vaccination policy in the United States; 2) describes the clinical features and epidemiology of pertussis among adults; 3) summarizes the immunogenicity, efficacy, and safety data of Tdap; and 4) presents recommendations for the use of Tdap among adults aged 19-64 years.

Reading 9 - Preventing Tetanus, Diphtheria, and Pertussis

Mast EE, Weinbaum CM, Fiore AE, Alter MJ, Bell BP, Finelli L, Rodewald LE, Douglas JM Jr, Janssen RS, Ward JW; Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) Part II: immunization of adults. : MMWR Recomm Rep. 2006 Dec 8; 55(RR-16):1-33; quiz CE1-4.

URL: <http://www.cdc.gov.libproxy1.nus.edu.sg/mmwr/preview/mmwrhtml/rr5516a1.htm>

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ABSTRACT

Hepatitis B vaccination is the most effective measure to prevent hepatitis B virus (HBV) infection and its consequences, including cirrhosis of the liver, liver cancer, liver failure, and death. In adults, ongoing HBV transmission occurs primarily among unvaccinated persons with behavioral risks for HBV transmission (e.g., heterosexuals with multiple sex partners, injection-drug users [IDUs], and men who have sex with men [MSM]) and among household contacts and sex partners of persons with chronic HBV infection. This report, the second of a two-part statement from the Advisory Committee on Immunization Practices (ACIP), provides updated recommendations to increase hepatitis B vaccination of adults at risk for HBV infection. The first part of the ACIP statement, which provided recommendations for immunization of infants, children, and adolescents, was published previously (CDC. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices [ACIP]. Part 1: immunization of infants, children, and adolescents. MMWR 2005;54[No. RR-16]:1-33). In settings in which a high proportion of adults have risks for HBV infection (e.g., sexually transmitted disease/human immunodeficiency virus testing and treatment facilities, drug-abuse treatment and prevention settings, health-care settings targeting services to IDUs, health-care settings targeting services to MSM, and correctional facilities), ACIP recommends universal hepatitis B vaccination for all unvaccinated adults. In other primary care and specialty medical settings in which adults at risk for HBV infection receive care, health-care providers should inform all patients about the health benefits of vaccination, including risks for HBV infection and persons for whom vaccination is recommended, and vaccinate adults who report risks for HBV infection and any adults requesting protection from HBV infection. To promote vaccination in all settings, health-care providers should implement standing orders to identify adults recommended for hepatitis B vaccination and administer vaccination as part of routine clinical services, not require acknowledgment of an HBV infection risk factor for adults to receive vaccine, and use available reimbursement mechanisms to remove financial barriers to hepatitis B vaccination.

Reading 10 - General Recommendations on Immunisation

Kroger AT, Atkinson WL, Marcuse EK, Pickering LK; Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC) General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep. 2006 Dec 1; 55(RR-15):1-48.

URL: <http://www.cdc.gov/libproxy1.nus.edu.sg/mmwr/preview/mmwrhtml/rr5515a1.htm>Immunization Services

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ABSTRACT

This report is a revision of General Recommendations on Immunization and updates the 2002 statement by the Advisory Committee on Immunization Practices (ACIP) (CDC. General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices and the American Academy of Family Physicians. MMWR 2002;51[No. RR-2]). This report is intended to serve as a general reference on vaccines and immunization. The principal changes include 1) expansion of the discussion of vaccination spacing and timing; 2) an increased emphasis on the importance of injection technique/age/body mass in determining appropriate needle length; 3) expansion of the discussion of storage and handling of vaccines, with a table defining the appropriate storage temperature range for inactivated and live vaccines; 4) expansion of the discussion of altered immunocompetence, including new recommendations about use of live-attenuated vaccines with therapeutic monoclonal antibodies; and 5) minor changes to the recommendations about vaccination during pregnancy and vaccination of internationally adopted children, in accordance with new ACIP vaccine-specific recommendations for use of inactivated influenza vaccine and hepatitis B vaccine. The most recent ACIP recommendations for each specific vaccine should be consulted for comprehensive discussion. This report, ACIP recommendations for each vaccine, and other information about vaccination can be accessed at CDC's National Center for Immunization and Respiratory Diseases (proposed) (formerly known as the National Immunization Program) website at <http://www.cdc.gov/nip>.
