

Vaccine Trials Group
Annual Report 2007





Introduction

The Vaccine Trials Group provides a coordinated approach to the development, delivery, assessment and promotion of vaccines and allergy treatments in the community. Key organisations we are associated with include the Telethon Institute for Child Health Research, Princess Margaret Hospital for Children, and the University of Western Australia School of Paediatrics and Child Health. We also have strong links with the Health Department of Western Australia and vaccine companies.

Our Mission

To improve the health of the community through immunisation and the prevention of infectious diseases

Our Aims

- to promote vaccine use in our community
- to study the safety and effectiveness of immunisation
- to conduct high quality clinical, epidemiological and laboratory research
- to prevent infection
- to improve the treatment of infection
- to provide training in clinical research and vaccinology

Key Research Areas

- Meningitis
- Respiratory disease
- Human Papilloma Virus and the prevention of cervical cancer
- Ear, nose and throat infections: treatment and prevention
- Surveillance of immunisation-preventable diseases such as rotavirus
- Other immunisation research

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Head of Department report

The VTG has continued to make significant progress in its key areas of research and advocacy for immunisation during 2007. Promotion of vaccine use in the community has received a boost through the formation of the Immunisation Alliance in late 2007, a consumer reference group that is involved with promotion of immunisation within the community and providing feedback to the Health Department and Immunisation providers on immunisation issues from a public perspective. The Alliance represents a diverse group of community members and with the help of funding and support from the Communicable Disease Control Directorate of the WA Health department, the VTG's Heidi Hutton and other VTG staff helped set it up. In addition VTG staff have given regular updates on immunisation and new vaccines to health professionals and the general public as well speaking to the electronic and print media on a range of topics regarding immunisation and infectious diseases.

Research into New Vaccines

We have continued to perform critical studies of new vaccines for the prevention of meningococcal disease with studies of a novel meningococcal B vaccine in toddlers and adolescents attracting a lot of attention following on from our Phase I study in adults. The results of these studies will become available in late 2008 but preliminary results from the adult study suggest that this new vaccine may well provide broad protection against a variety of meningococcal B strains. In addition, studies of combination meningitis vaccines - HibMenCY and HibMenC vaccines - in infants and toddlers have continued with promising early results. We completed studies of bird 'flu vaccines in adults, the elderly and young children with the majority of subjects developing antibodies that are able to neutralise the bird 'flu virus with young children responding particularly well to the vaccine. Finally, we have also been involved in a study of the next generation of HPV vaccine in young women which is hoped to increase the protection to 90% of all cervical cancer-causing strains of the HPV virus.

Understanding Immunity to Infectious Diseases

In order to understand how we can better prevent both common infections in the ear, nose and throat, as well as infections in vulnerable populations such as premature infants, researchers at the VTG have been studying immune responses to a variety of bacteria thought to be important in these infections. The SPIN study is identifying weaknesses in the early or innate immune response to bacteria and other stimuli and this has led to collaborations with the Harvard Medical School in Boston and a successful NHMRC funding application in 2007 to continue this research. We hope this will identify which infants are at highest risk for infection and what sort of preventative strategies might be used. We are continuing to try to unravel why some children are particularly at risk for ear infections and which aspects of their immune response are deficient. The GROMIT study, which will be the largest study of its kind to date, commenced in 2007 will help answer some of these questions as will other ongoing research into the role of bacterial biofilm (or "slime")

in ENT infections. This research will also complement other studies being done on immunity to pneumococcal disease and pneumonia in infants in the highlands of Papua New Guinea in conjunction with other researchers at the Telethon Institute and the PNG Institute of Medical Research in Goroka, PNG. These infants are one of the highest risk populations in the world for these diseases and it is hoped that this research will assist the development of the next generation of pneumococcal vaccines that will provide broad coverage against the many pneumococcal strains that cause meningitis, pneumonia and ear infections.

Making a difference: Impact of research

Immunisation continues to be a rapidly changing field with great progress being made in the prevention of new diseases. In 2007, there were two new vaccines introduced onto the National Immunisation Program: human papillomavirus (HPV) vaccines in teenage girls and young women for the prevention of cervical cancer and rotavirus vaccines in infants for the prevention of severe gastroenteritis. It is pleasing to see these vaccines being introduced and making an impact on health following the important research by VTG involving clinical trials of HPV vaccines in adolescents and young women and assessment of disease burden due to rotavirus in young children. These studies were important in the assessment of safety, efficacy and cost-effectiveness of these vaccines that is required prior to introduction on the national schedule. We will be continuing to follow the safety and effectiveness of these vaccines through studies of rotavirus gastroenteritis in the Emergency Department and wards of Princess Margaret Hospital funded by the WA Department of Health Communicable Disease Control Directorate and the national PAEDs study of vaccine safety monitoring funded by the Commonwealth Department of Health and Ageing. It is hoped that in the years to come, the whole community will benefit from these new vaccines and the reductions in serious illness that they prevent.

Training researchers

The VTG has a strong commitment to training in clinical research and immunisation. We continue to have a number of post-graduate PhD, Masters, Honours and medical students from Perth and overseas involved in a variety of research projects. We also run regular training sessions in good clinical research practice to ensure ongoing high quality clinical research and we send students and staff members to national and international conferences to present their research findings and receive additional training in overseas laboratories. This travel has been generously supported through grants and fellowships, the University of WA, the Friends of the Institute and the Meningitis Centre.

Dr Peter Richmond



Highlights for 2007

The Vaccine Trials Group had another busy year with many highlights:

- Our study investigators and researchers presented to numerous health care providers and schools in and around Perth as well as interstate and at overseas conferences in Europe.
- We had overwhelming responses and interest from the community and the media, particularly in our Meningococcal B vaccine studies for adolescents and toddlers. We were able to enrol above our expected study participant numbers in several trials.
- Completion of Avian Influenza Vaccine studies for adults, seniors and children, with a total of 379 participants.
- The development of the WA Immunisation Alliance through collaboration with The Meningitis Centre and the Health Department of WA.
- We had 6 PhD students and 1 Masters students involved in VTG research in 2007.
- The licensure of the human papilloma virus vaccine, Cervarix®. The Vaccine Trials Group has been involved in several studies with Cervarix®. The adolescent study completed in 2005 and the young women's and older women's studies remain ongoing and are due to be completed in 2009. The initial results of the younger women's study were published in *The Lancet* in 2007.



Meningococcal B vaccine study participants shared their views on being part of the vaccine trial at a focus group session before having some fun at the Megazone.

How many vaccines did we give in 2007?

The Vaccine Trials Group research nurses gave a total of 448 vaccines.

Of those vaccines:

- 41 were given to adults
- 272 were given to children 12 months and over
- 135 were given to adolescents.

How many samples did we collect in 2007?

There were a total of 1596 samples collected.

- 999 blood samples
- 172 saliva samples
- 1 breast milk sample
- 424 cervical samples (Pap smears).

The blood, saliva and breast milk samples were processed by the Vaccine Trials Group scientists, Immunology staff at Princess Margaret Hospital for Children, and the Telethon Institute for Child Health Research laboratory staff.

The cervical smears are transported to the United States or Singapore for analysis.

Our research projects

Meningococcal Research

VTG are currently involved in a number of vaccine studies for the prevention of meningitis and meningococcal disease. Two studies trying to reduce the number of injections children receive while still protecting them against bacteria that cause meningitis included the combined *Haemophilus influenzae* type B and the Meningococcal CY (HibMenCY) vaccine study for infants, and the combined *Haemophilus Influenza* type B and Meningococcal C (HibMenC) Vaccine study for toddlers who have not yet had their 12 month booster vaccine. The HibMenCY study completed follow up phone calls in 2007 and we expect to receive results later in 2008 once all data has been analysed. The immunisation part of the HibMenC study has been completed and we are now seeing participants each year to follow up their long-term protective immune response to the vaccine.

The development of a meningococcal B vaccine to protect against all type B strains of meningitis has been elusive, however VTG are very pleased to be involved in the Meningococcal B vaccine studies for adults, toddlers and adolescents. The adults have been returning to VTG to provide their blood for ongoing immunogenicity studies. We also completed the toddler and adolescent studies. There were a total of 99 toddlers who participated in the study (33 in Perth) and 127 adolescents, with 47 very enthusiastic adolescents from Perth.



Meningococcal B Adult Update

As the first human adult Meningococcal B study came to a close in 2007, participants were called back to participate in an additional study of the long-term effectiveness of the vaccine and additional blood-sampling for the development of laboratory tests for future analysis of the vaccine, and to test for protective antibodies against many different group B strains.

Thirty-one participants aged 18-25 years who completed the entire Meningococcal B adult study were eligible for the additional studies. Almost all eligible participants were more than happy to come back and participate in the additional studies. The new studies brought a new area of expertise to the Vaccine Trials Group, where a large blood-sampling protocol was developed. Hence the Vaccine Trials Group is now capable of obtaining large volumes of blood from adult participants, in the same way as the Red Cross Blood Bank.

So far, findings from the Phase I adult Meningococcal B vaccine study have been very promising, with results presented to the European Society for Paediatric Infectious Disease conference in May 2008. A new and enhanced formulation of the vaccine will be trialled at the end of 2008 in adults aged 18-40 years throughout Australia, in its next phase of clinical testing.

Respiratory Disease Research

Influenza or the 'flu is caused by a highly contagious virus spread by coughing and sneezing. It is often considered a mild disease, slightly worse than a cold but the 'flu has killed millions of people, including children, around the world. Symptoms include chills, sweating, headache, cough, and general muscle and joint pains. In rare cases 'flu may lead to serious complications such as pneumonia or inflammation around the brain or heart. Children are two to three times more likely than adults to get sick with the 'flu and be hospitalised. Children are also thought to be very important in spreading the 'flu virus in the community.



Avian Flu Vaccine Studies

Avian influenza is a particularly severe new influenza strain infecting birds that also has the potential to infect humans and cause a pandemic. In 2007 VTG completed three studies that looked at the safety, tolerability and immunogenicity of the Pandemic Influenza (avian or bird 'flu) vaccine in healthy adults aged 18 to 64 years, older adults aged 65 years and above, and children aged six months to 8 years of age.

The purpose of this research study was to identify a vaccine that may prevent the spread of bird 'flu in the event of a pandemic and to determine which of the two different formulations produce the best immune response in children and adults. The virus type tested in this study (A/Vietnam/1194/2004) has been identified by the WHO as a suitable pandemic-like virus.

Recent bird 'flu infections in Asia have shown that the disease is more severe in children than in adults. About 85% of children who became infected with bird 'flu died. Therefore, finding a suitable vaccine that can be given to adults as well as children is a priority for the Australian government and WHO. This study was sponsored by CSL Limited and the Australian Government recently announced the licensing of the vaccine.

The research, conducted in Perth, Adelaide and Melbourne, has provided us with a lot of valuable information from participants who volunteered their time to have blood tests and to complete a diary of any symptoms or illnesses that they experienced after each dose of the study vaccine. In Perth, we enrolled 87 children, 200 adults and 92 older adults.

The study results for the senior and adult studies have shown that both dosages of the vaccine used in the study produced neutralising antibodies against the bird 'flu strain used in the vaccine in approximately 50% and 70% of participants respectively. In the children's study the vaccine was shown to be strongly immunogenic in both age groups.

Human Papillomavirus Research

We continue to be involved in several HPV vaccine trials, including the recently licensed Gardasil[®], and Cervarix[®] which was licensed in 2007.

We are currently in the last year of a 4-year HPV vaccine study of young women aged 17 to 25 years, and in the last year of a 3-year HPV vaccine trial for women aged over 26 years to see if the vaccine also has any therapeutic benefits. A total of 295 women enrolled in these studies. Although Cervarix[®] is licensed it is important that these studies are completed.

We are helping to test a new vaccine called V505. V505 is made like Gardasil[®], except that it may also offer protection against other types of HPV and prevent up to 90% of all cervical cancers. This study will assess different strengths and doses of V505 for immune response and side-effects in comparison to Gardasil[®]. Consequently, 80% of women participating in this study will receive V505 and 20% will receive Gardasil[®].

Ear, Nose and Throat Research

Middle ear infection (also called otitis media) is one of the most common childhood infections. It is the most frequent reason for a child to see a doctor, to be given antibiotics, or to have an operation. In addition to this, having frequent middle ear infections can also affect a child's development and learning. Some children are more prone to chronic and/or recurrent ear infections than others. The reasons for this are unclear, though they are likely to involve a variety of factors including impaired immune responses, genetics, anatomical defects and allergies. Our research is focused on finding out why some children are so prone to these infections.

GROMIT study

The GROMIT study aims to understand the Genetics of Recurrent Otitis Media and Immunology in Toddlers. This is done by comparing specific immune responses and related genetic factors between 0-2 year old children with and without recurrent ear infections. Recruitment started in September 2007 and so far 108 cases and 41 controls have been included in the study. Whilst recruitment continues we are also working in the lab to develop and optimise tests such as immunological laboratory assays, which will enable us to analyse the blood, saliva, middle ear effusion and nasal samples that we have collected from our participants.

Biofilm in ear, nose and throat infections

Biofilm is when bacteria live together in a community and are covered by a protective slimy layer. When in biofilm, bacteria are very resistant to immune responses and protected from antibiotics. We believe that biofilm is the cause of persistent ear infections in some children. The purpose of this study is therefore to show the presence of biofilm in the ears, tonsils and adenoids of children with recurrent ear, nose and throat (ENT) disease.

To date, recruitment has almost closed for the groups of children with adenotonsillar disease (recruited 84 children) and recurrent ear infections (recruited 152 children) however we are still looking for some children with diagnosed obstructive sleep disorder to make the adenotonsillar group up to 100. PhD student Ruth Thornton has been very busy setting up imaging techniques (fluorescent in situ hybridisation) to show the presence of biofilm in all the collected biopsies of middle ear mucosa, adenoids and tonsils. This study has also shown for the first time that bacteria that cause ear infections may infect the cells that line the middle ear which may be important in chronic infections.

The recruitment of healthy controls in the same age group (2 to 15 years of age) started in 2007 and has continued into 2008. By recruiting children who are generally healthy and do not have chronic or recurrent ear infections we will be able to compare the immune response between sick and healthy children. We aim to recruit 120 healthy children for this study and currently have 29.

Pneumococcal immunity and carriage in high risk mothers and newborns

Streptococcus pneumoniae is the scientific name for a bacterium which is a major cause of ear, nose and throat diseases. It can also cause more serious invasive conditions which can lead to death. Carriage of the bacteria in a child's upper respiratory tract in infancy increases the risk of invasive disease, which is especially high in under-developed countries. Jacinta Francis is a Masters student who is currently looking at antibody levels to certain proteins on the bug in children (cord blood sample) and their mothers from Papua New Guinea. She has looked at antibody responses to a pneumococcal protein called 'Pneumolysin' and has found that IgG antibody responses in maternal and cord plasma are strongly associated. This relationship suggests the antibody is transferred from mother to child, but does not appear to protect the child from carrying the bug early in life. One of our other scientists, Jan Nelson, has also been developing assays to measure antibody responses to another pneumococcal protein called PspA in high risk populations such as Aboriginal children and babies in Papua New Guinea.



Group A Streptococcus

The GAS study aims to look at carriage and immunity against Group A Streptococcus in healthy children between 0 and 10 years old. This bug is a common cause of throat and skin infections, but can also cause more serious disease like scarlet fever, Toxic Shock Syndrome and rheumatic fever. This study will give information on the age that children start carrying this bacterium and develop natural immunity to it. 110 children have been recruited, 10 in each age-group between 0 and 10 years old. From these children a throat swab and serum sample have been collected. The throat swabs were analysed for the presence of GAS. Wyeth will evaluate antibody responses to GAS in the collected serum samples.



A comparison of different specimen types for detection of Rotavirus

Rotavirus is the single most important cause of severe gastroenteritis in young children worldwide. Fifty per cent of all children who are admitted to hospital with gastroenteritis have Rotavirus. It is essential that we have an accurate and efficient surveillance program to monitor the impact of the new Rotarix® vaccine given to infants under 6 months of age. We are comparing nose and throat swabs to stool samples in children with gastroenteritis who are assessed in the Emergency Department at Princess Margaret Hospital or admitted to the ward. Due to the difficulty of obtaining a stool sample in the Emergency Department a rectal swab has been added to the study protocol so we can assess what type of infection is causing the child's gastroenteritis. Due to this change we will also be monitoring the social acceptance of a rectal swab in children under the age of 3 years as another tool of surveillance. This study is currently being conducted at Royal Children's Hospital in Victoria and Princess Margaret Hospital in WA. The study commenced in August 2007 and will continue until November 2008. At PMH we have recruited over 270 patients to this study.

Generic Blood Bank

The generic blood bank study aims to collect 90mls of blood (at one time) from healthy volunteers for the scientists to use when optimising experiments. The blood is processed to isolate white blood cells, plasma and serum which can then be used in different experiments. Often when optimising, many different factors need to be tested and to keep the experiments controlled we need to use the same person's cells in multiple experiments. Some of the experiments we do involve ELISAs to detect antibody levels and TRFs to detect cell cytokine production.

PAEDS

Paediatric Active Enhanced Disease Surveillance (PAEDS) is a pilot study to determine feasibility and sustainability of hospital-based active surveillance for childhood conditions of public health importance. This model has been very successful in Canada and South Africa. Important conditions to the Commonwealth Department of Health and Ageing are acute flaccid paralysis, intussusception, infantile seizures and hospitalised varicella (chicken pox) patients, as there is currently no form of active reporting for these rare conditions. The pilot study is currently recruiting through four paediatric hospitals across Australia. It is hoped that this form of surveillance will increase the quantity of biological samples obtained and acquire up to date accurate information from parents and medical records to enhance our knowledge about these conditions. Recruitment commenced in August 2007 and is currently continuing. Currently we have screened 200 patients and recruited 81 patients into the surveillance pilot study.

Adverse Events Following Immunisation

The Vaccine Trials Group has been involved in developing a new model for the surveillance of adverse events following immunisation in Western Australia. This has involved a review of current WA surveillance, interstate and national surveillance systems, and extensive stakeholder consultation within WA. The new model aims to improve data collection and monitoring, and to provide an enhanced system of referral for specialist clinical review. The project has given VTG the opportunity to develop partnerships with immunisation providers and others involved in immunisation.

A vaccine study of the immunity of newborn babies

The Vaccine Study of Postnatal Immune development in Neonates (VSPIN) study is looking at the development of infants' immune responses to the routine vaccination schedule and how susceptible they are to infections and allergies over the first two years of life.

The aims of this study are to: (1) evaluate vaccine specific antibody and cellular immune responses to routine infant immunisations given at 2, 4, 6 and 12 months of age: and (2) evaluate the burden of infection and risk of allergic sensitisation in the first two years of life in preterm infants compared to term infants. The study comprises 8 clinical visits from 2 months to 2 years of age.

At this stage we have enrolled a total of 92 infants, 51 premature and 41 term infants from King Edward Memorial Hospital. Fifty two subjects have completed the 2 year study and 4 will complete the study over the next 6 months. Analysis of the samples from these participants will begin in the next couple of months. One of the problems in doing studies in premature infants and newborns is the small volumes of blood that can be collected. One of our scientists, Sam Curtis, at the end of 2007 visited a laboratory in Manchester to learn a new technique that requires 100 times less blood to measure vaccine responses. This Luminex system was set up at the VTG in 2008.

The DTaP (Pre-school booster) vaccine study

In Australia, children are recommended to receive a booster dose of 'triple antigen' vaccine against diphtheria, tetanus and pertussis (DTaP) before starting school at the same time as polio and measles-mumps-rubella (MMR) vaccines.

PhD student Olivia White is looking at why children develop redness and swelling at the injection site following their pre-school booster vaccination of diphtheria, tetanus, whooping cough and polio (DTPa-IPV).

This study could have important implications in monitoring, investigating, and ultimately preventing adverse reactions to childhood vaccines.

Approximately 120 West Australian children will be required to complete this study. Ninety seven children have been taking part in the study over the last year and only 7 children have had redness and/or swelling greater than 50mm. We only need a few more children to enrol in this study. The study involves 3 visits at the clinic over 12 months where both DTaP and MMR vaccines will be provided. It also involves collection of blood and saliva samples at each visit and completion of diary cards after receiving vaccines.

Collaborations

Princess Margaret Hospital for Children

The Vaccine Trials Group is working in close collaboration with numerous departments at PMH. This includes the pharmacy where experienced clinical trials pharmacists, led by Margaret Shave, ensure that all clinical trials investigational products are stored, dispensed and accounted for according to good clinical practice. The PMH Immunology Department also assists in some of our studies with sample processing, storage and sample transportation. We continue to have close links with the PMH pathology service who have assisted us in venipuncture of infants and children when our phlebotomists are unavailable.

We continue to work closely with wards and departments, particularly since commencing the Rotavirus study and PAEDS where staff have been closely liaising with us.

The Meningitis Centre

VTG works closely with The Meningitis Centre, helping to raise awareness about meningitis and to promote meningitis prevention through immunisation. We are members of their committee and the centre is extremely supportive in promoting our meningitis vaccine studies through their activities.

In 2007, The Meningitis Centre awarded a scholarship to Angela Fuery, one of our PhD students whose project is looking at the cellular mechanisms associated with long-term protection against meningococcal disease. Angela will be looking at samples collected from infants in the studies of the Haemophilus influenzae B, Meningococcal C and Y combined conjugate vaccine in 2003 and 2005. It is hoped that these analyses will lead to more long-lasting protection against meningococcal disease.

The Health Department of WA

In 2007, Heidi Hutton worked with the Communicable Disease Control Directorate (CDCD) to establish the WA Immunisation Alliance. The alliance has a membership of 24 consumers and health professionals who are interested in increasing awareness and improving immunisation rates within WA.

We have been working collaboratively with CDCD on the rotavirus research study and the development a model for Adverse Events Following Immunisation (AEFI).

We also continue to have strong links with the Population Health Areas and the Child and Adolescent Community Health Divisions.

The Divisions of General Practice

We maintain links with the Divisions of General Practice and have provided a range of information sessions and updates about our studies and immunisation through the Divisions of General Practice.

The Amanda Young Foundation

The Amanda Young Foundation was formed in 1998 following the tragic death of Amanda Young from meningococcal septicaemia at the age of 18 years. One of their missions is to raise awareness about meningococcal disease through fundraising and education in the community, schools and the medical profession.

We maintain links with the foundation to assist with raising awareness about meningococcal disease through early detection and treatment, and promotion of prevention through immunisation.

The foundation kindly provided our participants in the Meningitis vaccine studies Amanda Young Foundation water bottles.

Community Involvement and Promotion

The VTG works closely with the community and has developed networks with a number of groups and organisations. These include child care centres, primary and high schools, community and child health centres, mothers groups and sporting groups.

To ensure that our study information and promotional material are understood by community members we distribute our study information for consumer comment prior to their submission to ethics.

Through our consumer involvement, VTG have a representative on the Telethon Institute for Child Health Research Consumer Advisory Council, which was established in 2006 by Ann McKenzie.

The VTG helped to establish the WA Immunisation Alliance in 2007 and have a VTG representative on the committee.

Vaccine Trials Group staff

The Vaccine Trials Group has been fortunate to attract staff who bring a wide range of expertise and experience to the group. The following is a list of all VTG staff that contributed to our success in 2007.

Head of Department

Dr Peter Richmond

Coordinator

Jan Adams

Clinical Research Fellows

Dr Gabriela Dixon

Dr Anastasia Phillips

Dr Karen Prosser

Dr Tanya Stoney

Study Investigators

Dr Rachel Skinner

Dr Richard Loh

Prof Peter Sly

Prof Pat Holt

A/Prof Harvey Coates

Dr Karen Moller

Dr Alison Stubbs

Dr Robyn Leake

Dr Louise Farrell

Dr Julie Rowe

Dr Tony Keil

Mr Shyan Vijayasekeran

Research Nurses

Jane Jones

Jennifer Kent

Fiona McDonald

Janet McBride

Shalene Nandlall

Larissa Rhind

Research Assistants

Sanela Bilic

Samantha Curtis

Angela Fuery

Heidi Hutton

Lisa Montgomery

Eva Mowe

Jan Nelson

Sharon Ringrose

PhD Students

Holly Clifford

Hannah Moore

William Pomat

Tobias Strunk

Ruth Thornton

Olivia White

Masters student

Jacinta Francis

Post Doctoral scientist

Dr Selma Wiertsema

Administration Staff

Samuel Gray

Sonali Gunasekera

Jody Willett



Financial Report

Total income for 2007

\$1,559,422.78

Expenses:

Salary including on costs

726,086.69

Research Expenses

338,207.28

Study Participant Expenses

25,560.19

Clinical Trial Equipment

896.26

Infrastructure

159,795.58

Total expenses

\$ 1,250,546.00

Balance

\$308,876.78

Our Funding Sponsors

CSL Limited, Garnett Passe and Rodney Williams Foundation, GlaxoSmithKline, Health Department of WA, MedImmune, National Health and Medical Research Council and Wellcome Trust, PMH Foundation, Royal Australasian College of Physicians, University of Western Australia, Wyeth Pharmaceuticals, ICHR Friends of the Institute.

Scholarship Awards

The Meningitis Centre, Stan and Jean Perron Trust

Presentations and Publications

2007 Publications

1. Nolan T, Lambert S, Robertson D, Marshall H, **Richmond P**, Streeton CL, Poolman J, Boutriau D. A novel combined Haemophilus influenzae type b-Neisseria meningitidis serogroups C and Y-tetanus -toxoid conjugate vaccine is immunogenic and induces immune memory when co-administered with DTPa-HBV-IPV and pneumococcal vaccine in infants *Vaccine* 2007; 25:8487-99
2. Nolan T, Lambert S, Robertson D, Marshall H, **Richmond P**, Streeton C. A DTPa-HBV-IPV vaccine for primary vaccination of infants. *J Paediatrics and Child Health* 2007; 43:587-92
3. Hales BJ, Laing IA, Pearce LJ, Hazell LA, Mills KL, Chua KY, **Thornton RB**, **Richmond P**, Musk AW, James AL, Lesouéf PN, Thomas WR. Distinctive immunoglobulin E anti-house dust allergen-binding specificities in a tropical Australian Aboriginal community. *Clin Exp Allergy*. 2007; 37:1357-63.
4. Carville KS, Lehmann D, Hall G, Moore H, **Richmond P**, deKlerk N, Burgner D. Infection is the major component of the disease burden in Aboriginal and non-Aboriginal Australian children: a population-based study. *Pediatric Infectious Disease J* 2007; 26:210-6 .
5. Moore H, Burgner D, Carville KS, Jacoby P, **Richmond P**, Lehmann D. Diverging trends for lower respiratory infections in non-Aboriginal and Aboriginal children *J Paediatrics and Child Health* 2007; 43:451-7
6. Nolan RC, **Richmond P**, Prescott SL, Mallon DF, Gong G, Franzmann AM, Naidoo R, **Loh RKS**. Skin Prick Testing Predicts Peanut Challenge Outcome In Previously Allergic Or Sensitised Children With Low Serum Peanut-Specific Ige Antibody Concentration. *Pediatric Allergy and Immunology* 2007;18:224-30
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9. **Richmond P**, Robertson D. Immunisation. In *Practical Paediatrics*, Eds D Robertson, M South. 6th Ed p89-97 London, UK. Elsevier, 2007
10. **Strunk T**, **Richmond P**, Currie A, Levy O, Burgner D. Neonatal immune responses to coagulase-negative staphylococci *Current Opinion in Infectious Diseases* 2007; 20:370-5
11. Paavonen J, Jenkins D, Bosch FX, Naud P, Salmerón J, Wheeler CM, Chow SN, Apter DL, Kitchener HC, Castellsague X, de Carvalho NS, **Skinner SR**, Harper DM, Hedrick JA, Jaisamran U, Limson GA, Dionne M, Quint W, Spiessens B, Peeters P, Struyf F, Wieting SL, Lehtinen MO, Dubin G; HPV PATRICIA study group. Efficacy of a prophylactic adjuvanted bivalent L1 virus-like-particle vaccine against infection with human papillomavirus types 16 and 18 in young women: an interim analysis of a phase III double-blind, randomised controlled trial. *Lancet*. 2007; 369:2161-70.
12. **Skinner SR**, Kang M, Rosenthal SL. Vaccinating young adults against human papillomavirus: the importance of understanding health decision-making and behaviour. *Sex Health*. 2007 Jun;4(2):129-32.
13. **Skinner SR**, Parsons A, Kang M, Williams H, Fairley C. Sexually transmitted infections. Initiatives for prevention. *Int J Adolesc Med Health*. 2007; 19:285-94.
14. **Coates H**, **Thornton R**, Langlands J, Filion P, Keil AD, **Vijayasekaran S**, **Richmond P**. The role of chronic infection in children with otitis media with effusion: Evidence for intracellular persistence of bacteria. *Otolaryngol Head Neck Surg*. 2008 Jun;138(6):778-81.

Conference Presentations 2007

- Richmond P**. Immunology of Otitis media in children, Ear Research Symposium, Perth 2007
- Richmond P**. Immunology of Immunisation: implications for indigenous children. Menzies School of Health Research, Indigenous Immunisation Workshop, Darwin, NT, August 2007
- Richmond P**. Neonatal Immunisation for Pneumococcal disease. National Centre for Immunisation Research Conference, Sydney, NSW, July 2007
- Richmond P**. Immunisation research in Western Australia. National Centre for Immunisation Research Conference, Sydney, NSW, July 2007
- Richmond P**. Meningococcal C disease: who would benefit? 5th World Congress of the World Society for Pediatric Infectious diseases, Bangkok, Thailand, November 2007
- Wiertsema S**. Measuring cellular immune responses to pneumococcal proteins in young children with Otitis Media. Poster presentation at the 9th International Symposium on Recent Advances in Otitis Media, 3-7 June 2007, Florida, USA.
- Thornton R**. A role for *Alloicoccus otitidis* in Otitis Media. Oral presentation at the 9th International Symposium on Recent Advances in Otitis Media, 3-7 June 2007, Florida, USA.
- Strunk T**. Innate immune responses of preterm infants to bacterial neonatal pathogens and Toll-like receptor agonists. Oral Presentation at Annual Meeting of the European Society for Pediatric Research in Prague, Czech Republic, October 2007



Telethon Institute for Child Health Research
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