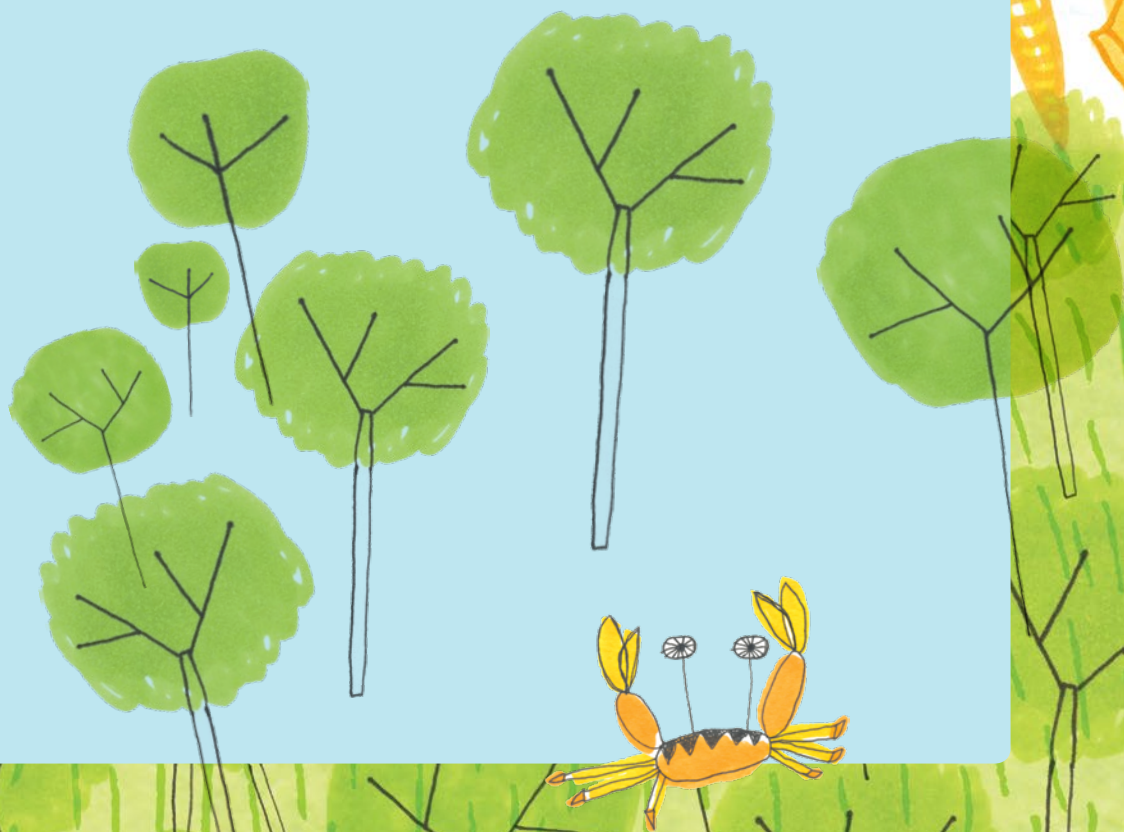




™
The Royal
Children's
Hospital
Melbourne

IMMUNISATION SERVICE

Immunisation Service Report 2016-18





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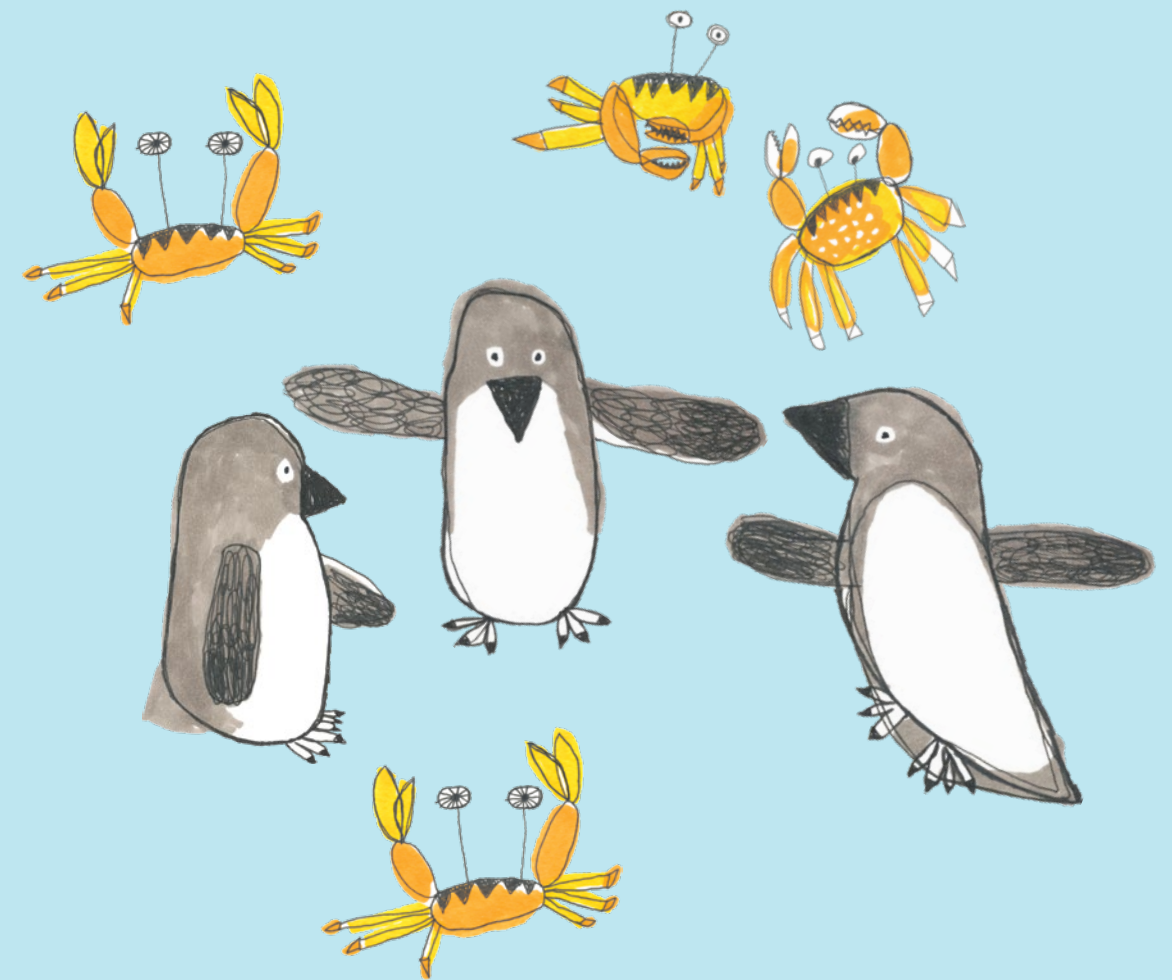
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Abbreviations

ACIR	Australian Childhood Immunisation Register
AIR	Australian Immunisation Register
AEFI	Adverse Event Following Immunisation
AIR	Australian Immunisation Register
ANUM	Associate Nurse Unit Manager
BCG	Bacille Calmette-Guerin
CVU	Clinical Vaccinology Update
DHHS	Department of Health and Human Services (Immunisation section)
EMR	Electronic Medical Record
FLACC	Face Legs Activity Cry Consolability (scale for pain measurement)
FFS	Fee for service
FTE	Full Time Equivalent
GP	General Practitioner
HOD	Heads of Department
HHE	hypotonic-hyporesponsive episode
ICU	Intensive Care Unit
ID	Infectious Diseases
ImPS	Immuniser Provider System
MCRI	Murdoch Children's Research Institute
MVEC	Melbourne Vaccine Education Centre
NCIRS	National Centre for Immunisation Research and Surveillance
NIP	National Immunisation Program
NP	Nurse Practitioner
NUM	Nurse Unit Manager
PAEDS	Paediatric Active Enhanced Disease Surveillance
PHAA	Public Health Association of Australia
PI	Principal investigator
RCH	Royal Children's Hospital
RSV	Respiratory Syncytial Virus
SAEFVIC	Surveillance of Adverse Events Following Vaccination In the Community
UNICEF	United Nations Children's Fund
UR	Unit Record
VHIMS	Victorian Health Incident Monitoring System
VIRGO	Vaccine and Immunisation Research Group
WHO	World Health Organisation



SECTION 1 Overview



The RCH Immunisation Service

Our vision

The vision of the The Royal Children's Hospital (RCH) Immunisation Service is to improve the health of children through the service's core business of providing:

- Clinical immunisation telephone advice
- Administering opportunistic immunisations
- Consulting specialised patient groups in the weekly outpatient clinic.

The immunisation service also provides:

- Education
 - Across all of the campus; medical students; paediatric trainees; nurses; clinicians
 - External education, including through the Melbourne Vaccine Education Centre (MVEC) website and Clinical Vaccinology Updates (CVU)
- Research
 - A strong clinical research team including special risk groups; vaccine safety; vaccine preventable disease (VPD) surveillance; vaccine hesitancy and vaccine trials
 - Epidemiological and clinical trial studies in current and potentially new vaccine preventable diseases

Our purpose

We deliver the highest quality immunisation care to children and their families. The RCH Immunisation Service plays a vital role in increasing vaccine awareness, understanding and knowledge by assisting the community and health professionals through education, teaching and training. We do this by:

- Developing evidence based immunisation guidelines www.mvec.mcricri.edu.au
- A commitment to training and development of paediatricians with a special interest in immunisation, clinical nurse consultants, nurse immuniser trainees, graduate nurse program participants.
- Delivering of community education programs and resources
- Shaping clinical practice by actively participating in National and international immunisation conferences
- Leading internationally recognised research
- Collaboration with community, government and professional stakeholders
- Involvement in immunisation policy at a state and national level
- A team of passionate and dedicated professionals committed to our purpose

Links and partnerships

Whilst based within the RCH, the Immunisation Service has a broad reach within the Melbourne Children's campus, including; a clinical role across multiple RCH departments, research teams within the MCRI and affiliations with the University of Melbourne. The RCH Immunisation Service has core funding through a partnership with the Victorian Department of Health – Immunisation section. The immunisation service also has affiliations with Surveillance of Adverse Events Following Vaccination In the Community (SAEFVIC) – based at the RCH, MCRI and Monash Health.

This report provides a detailed account of the immunisation service's performance over the 2016-18 financial years and is designed to demonstrate the activities undertaken by the team of dedicated staff involved in immunisation at the RCH. The strong relationships we have built with our patients, families, stakeholders and community is important to us and is vital to our continued success.

Immunisation Service Reports 2016-18

This document is a service activity report over two years (1 July 2016 – 30 June 2018).

It highlights the core service activity as well as additional immunisation programs undertaken by the RCH Immunisation Service team.

Key highlights

Nurse practitioner

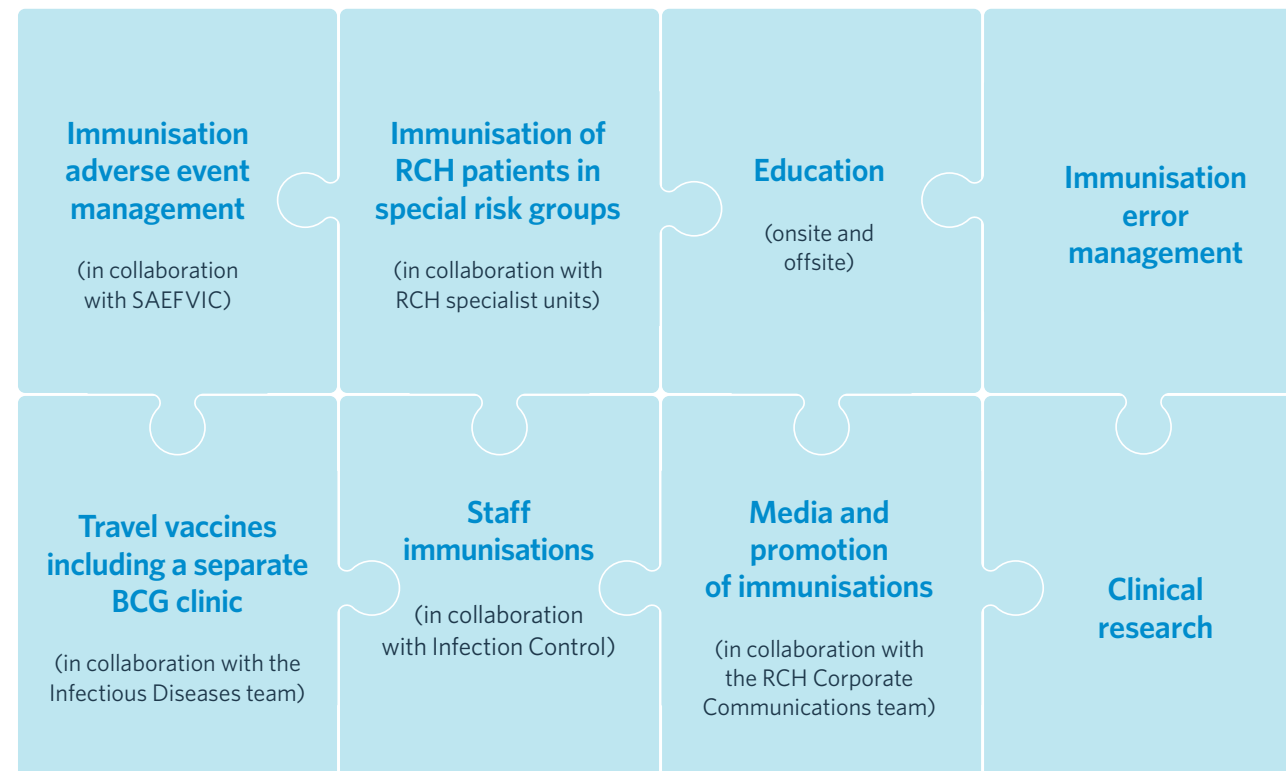
Sonja Elia became the first Victorian nurse to attain endorsement as a nurse practitioner (NP) in the field of immunisation, and one of only three in this field across Australia.

Recently endorsed NP, Sonja Elia has worked at the RCH for more than two decades, spending much of her time as part of the dedicated immunisation team. A few years ago, Sonja decided to extend her scope of practice by pursuing a master's degree in advanced practice nursing in order to qualify as an NP and be able to prescribe vaccines without the reliance on doctors.

One example involves Meningococcal B, a highly sought after vaccine, where nurses in the unit were forced to refer families back to their GPs in order to obtain a script. With her new autonomy, Sonja can now offer special risk vaccines to patients including Meningococcal ACWY & B and Hepatitis A vaccines.

Since her commencement as an NP, there has been a significant uptake in immunisation rates for Meningococcal B and the streamlining of patient care is progressively leading to better outcomes and care.

Additional services provided by the RCH Immunisation Service



CEO Award for Great Care – Positive Experience

The CEO Award for Great Care – Positive Experience, recognises an initiative or achievement by an individual or team, from any staff group, that significantly enhances the experience of working for, engaging with or being treated by the RCH; whether as an employee, patient, family member, supplier or member of the broader community. The RCH Immunisation Centre team have worked extremely well together, particularly over the past 12 months, to achieve the highest vaccination rates by a tertiary immunisation service in the world. It has set the benchmark for immunisation centres nationally, assisting in the set-up of drop-in centres at Queensland Children’s Hospital (Brisbane), Westmead (Sydney), Princess Margaret Hospital (Perth), Women’s and Children’s Health Network (Adelaide) and British Columbia Children’s Hospital (Canada).

The dedicated team of immunisation professionals work hard to protect patients, families, visitors as well as their colleagues against vaccine preventable diseases. The immunisation nurses use their skills to promote vaccination as well as ensure the immunisation experience is a positive one. This has resulted in improvements to vaccination rates and is an outstanding achievement for the RCH.

Further funding of immunisation services at the RCH

As the previous funding agreement 2015–18 expired on 30 June 2018, Sonja Elia and Nigel Crawford put together a business case for future funding of the RCH Immunisation Service. The application has provided future financial support for the inpatient immunisation work, administrative staff, as well as some monies for the clinical vaccinology updates. At the time of this report, we are still seeking funding for an immunisation pharmacist (see below) and immunisation fellow.

Immunisation pharmacist

Demonstrated in this report, there has been a steady increase in the number of patients attending the drop-in centre as well as number of vaccines (21% growth in five years). As a result, there are many times the pharmacy department at the RCH runs out of stock simply because they cannot keep up with ordering as well not having the physical space to stock more than a two-week supply of vaccines. On occasion the drop-in centre has had to send families away, despite trying to source emergency stock from other departments i.e. Infection Control, Emergency Department and Woods Commercial Pharmacy at the RCH.

The RCH Immunisation Centre established the implementation of an immunisation pharmacist specifically to undertake the following:

1. Direct liaison with the vaccine department at the Department of Health and Human Services to keep the immunisation service up to date with vaccine supply issues, new vaccines and vaccine changes and recommendations.
2. Improved access for families to immunisation advice through the telephone advice line, with the immunisation pharmacist having the ability to provide information about vaccines.
3. The Victorian Pharmacist-Administered Vaccination program enables pharmacists to complete a recognised ‘Immuniser program of study’ and administer vaccines to specific client groups, i.e. Boostrix® and influenza vaccine. The pharmacist has further supported the immunisation service team in this area.
4. Assisting the team with vaccine education, participating in weekly teaching meetings, as well as assisting the nursing staff with hospital based education provision.

Annie Cobbleidick was successfully appointed into the role of Immunisation Pharmacist and has quickly become a vital member of the immunisation team. This six-month pilot has been funded through monies raised from selling user pays vaccines and unfortunately is not a sustainable model of funding.



Staff

Medical

Nigel Crawford
(Medical Lead)
Teresa Lazzaro
Margie Danchin
Kirsten Perrett
Daniel Golshevsky

Nursing

Sonja Elia
(Nurse Practitioner
and Manager)
Rebecca Feore
Narelle Jenkins
Nadine Henare
Phillippa Van Der Linden
Lynne Clutterbuck

Past

Vicki Wall
Lucy Lam
Skye Miller
Francis Robertson

Administration

Jessica Elia
Jo Gleeson

Pharmacist

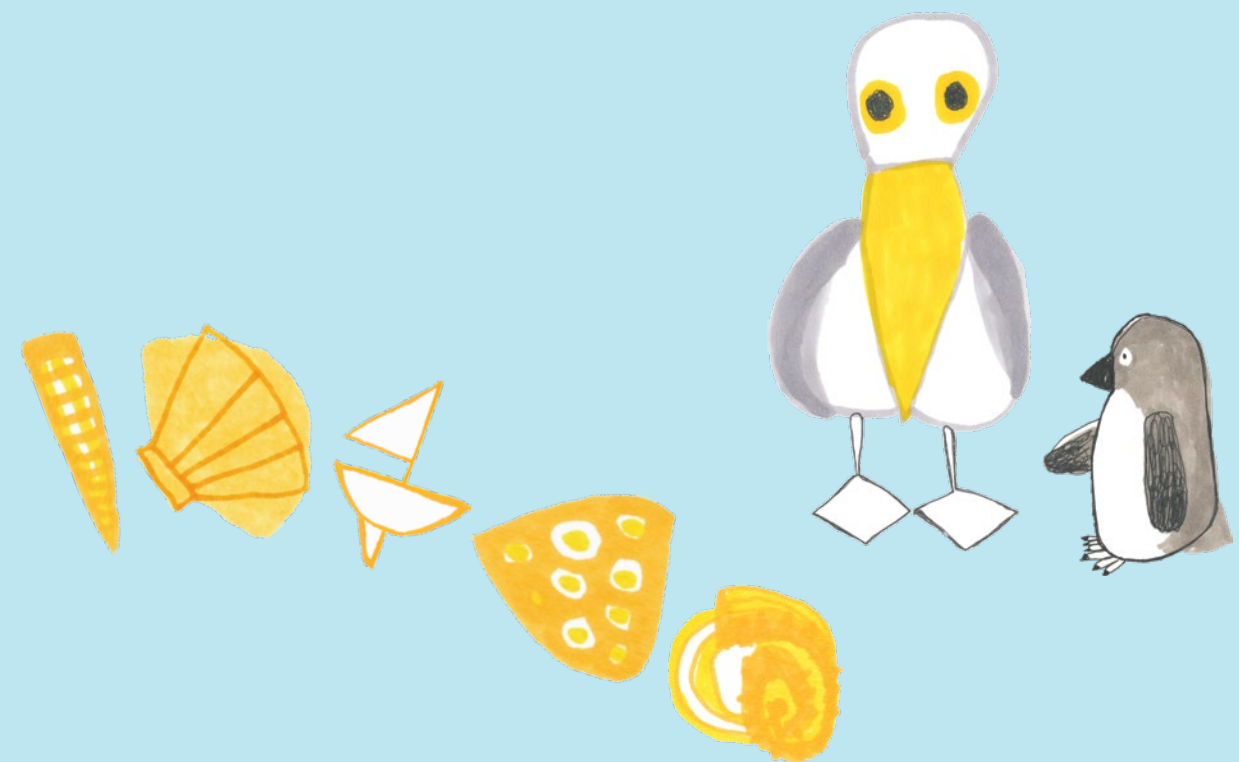
Annie Cobbleidick

Volunteer

Sandrine Fernando



SECTION 2
Report on
performance



A. Core service activity

The RCH Immunisation Drop-in Centre

The RCH Immunisation Drop-in Centre continues to lead the way nationally, with the highest numbers of patient's immunised in a tertiary hospital setting. It is easily accessible, on the main street of the hospital and is open Monday to Friday, 9am to 4.30pm. On a daily basis, the nursing staff in the centre addresses vaccine hesitancy and communicates the importance and safety of vaccination to be able to close the immunisation gaps, particularly of children in special risk groups. The success of the immunisation centre relies on the co-operation of every health care professional at the RCH, who consider each health presentation as an opportunity to ensure that their patient is immunised.

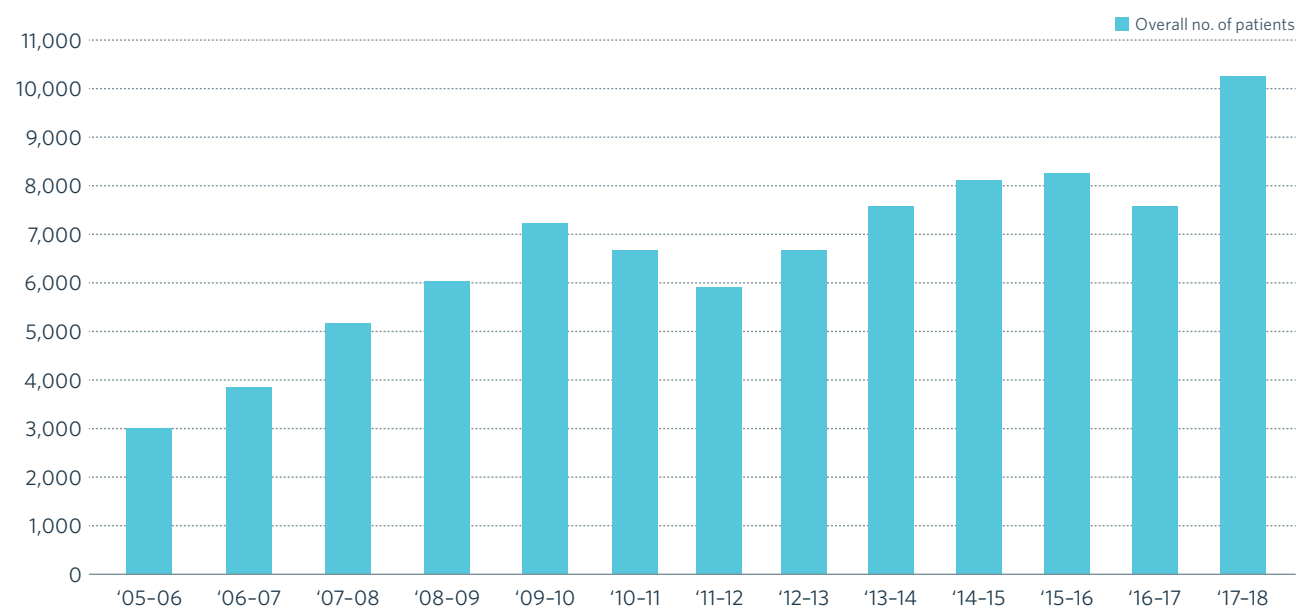
Improvements to the drop-in centre in this reporting period, have included the introduction of two large 381 litre vaccine fridges, taking vaccine supply away from central pharmacy as well as installation of wall oxygen, suction and nitrous oxide, with the aim of providing immunisation under sedation in the drop-in centre.

Overall activity

In 2016-17, 7,577 patients, siblings and parents were opportunistically vaccinated at the RCH Immunisation Drop-in Centre and in 2017-18, this increased to 10,311 patients and their family members. **Figure 1** highlights the service activity over the last few years.

Figure 1: Patients immunised at the RCH Immunisation Drop-in Centre by 12-month period

Immunisation service activity



The activity demonstrated above, includes drop-in patients, siblings and/or parents of the patient as well as outpatients directed to the centre. If the current inpatients are well enough, they too can drop in to the centre or the immunisation nursing staff attend the ward and provide the relevant immunisations.

Figure 2 demonstrates an overview of the source of patients receiving immunisations at the drop-in centre.

Outpatient clinics

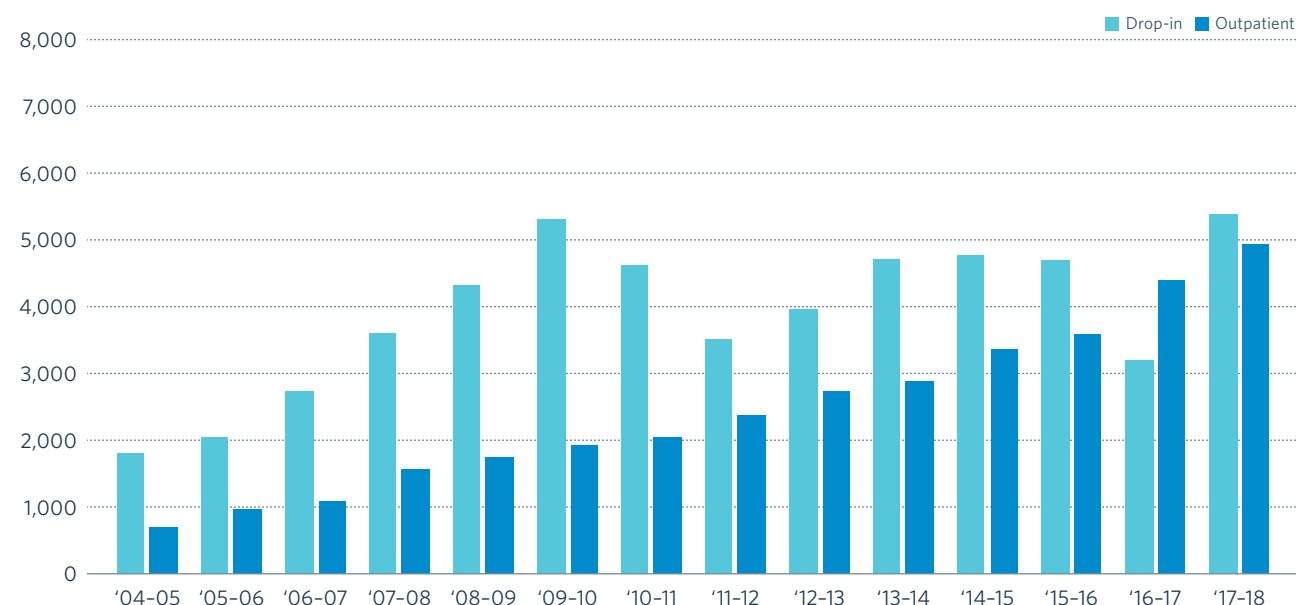
The weekly Specialist Immunisation Clinic provides a service to children with complex medical health problems and specialist immunisation needs. This Tuesday morning clinic combines SAEFVIC and the RCH Immunisation Drop-in Clinic and has five paediatricians, Nigel Crawford, Teresa Lazzaro, Daniel Golshevsky, Kirsten Perrett and Margie Danchin.

The patients who should be referred to this clinic are:

- those who have previously experienced an adverse event following immunisation
- are at risk of an adverse event following immunisation
- children with underlying complex medical health problems (includes oncology, transplant, immune suppression)
- children who require supervision following immunisation
- families with immunisation needs unable to be met within a community setting

Figure 2: Patients immunised at the RCH Immunisation Drop-in Centre by 12-month period: non-outpatient drop-in patients vs. outpatients

Immunisation service activity

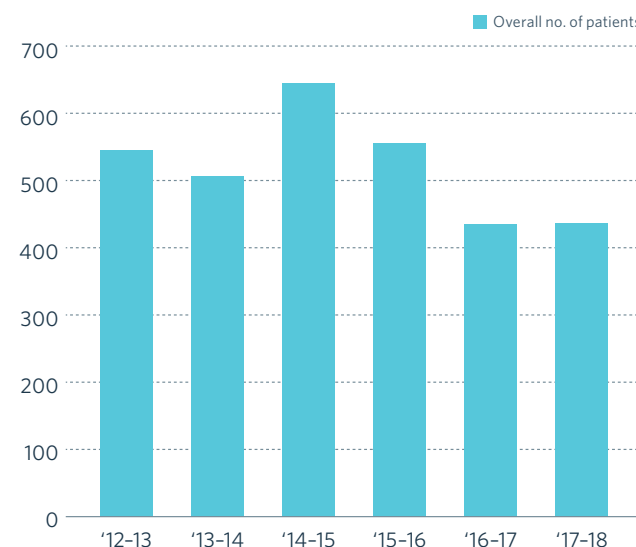


- families requesting medical or special exemptions in the context of the 'No jab, No pay' (national) and 'No jab, No play' (state) based policies.

The clinic continues to be an important resource for internal and external healthcare professionals, with the number of appointments remaining consistent over the reporting periods. The overall number of patients seen in the RCH Immunisation Drop-in Clinic is detailed in **Figure 3**.

Figure 3: Number of clinic patients* by year
*excludes BCG clinic patients (see separate summary)

Immunisation clinic activity



The lead role of the RCH Specialist Immunisation Clinic (SIC) has been highlighted by them being the lead site for the Adverse Event Following Immunisation – Clinical Assessment Network (AEFI-CAN). Funded through the Commonwealth via AusVaxSafety (NCIRS) (www.ncirs.edu.au/vaccine-safety/ausvaxsafety), this collaboration means clinical immunisation cases are shared around the country and the most up-to-date advice and vaccine plans are given to families who attend our clinics.

Telehealth

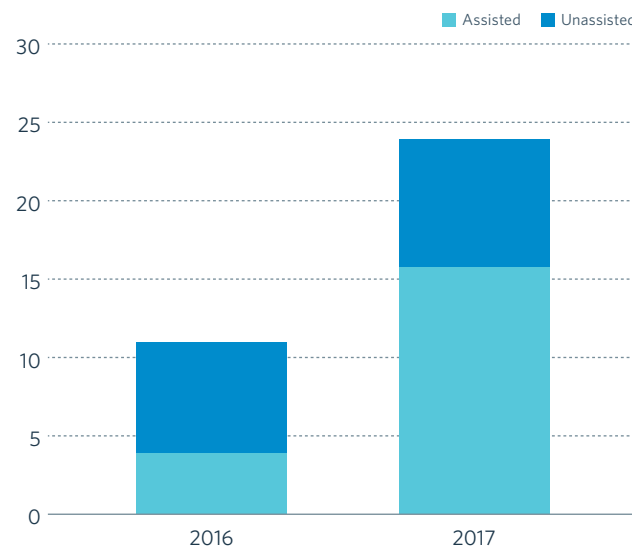
The RCH appreciates the commitment families make to travel into the hospital to attend appointments. Long driving distances, waiting times and taking time off work may add to the stress levels families experience when organising a trip into the RCH.

A telehealth video-call can help reduce this stress. Families who live regionally or interstate can avoid the long drive and have a video-call appointment with the immunisation team (provided they are medically suitable). The appointment can be unassisted (with the child and family) or assisted (with the child's GP or paediatrician, or other local healthcare provider).

In 2016 there were 11 telehealth immunisation consultations, and in 2017 there was 24 (see **Figure 4**).

Figure 4: Number of Telehealth consultations by year

Telehealth 2016-17



Additional immunisation consultations

In addition to the fact the nursing staff are busy answering telephone enquiries and vaccinating patients and family members, there is often much more activity that is difficult to capture. The immunisation nurses provide expert advice on a range of topics, including:

- vaccine hesitancy consultations, including individualised tailored immunisation schedules
- overseas immunisation records requiring translation and reporting to the Australian Immunisation Register (AIR)
- individualised immunisation plan, including serology for patients with complex medical problems – special risk patients
- enquiries about new vaccines (e.g. Meningococcal B and ACWY vaccines)
- enquiries about non-scheduled vaccines (e.g. influenza vaccine, parent pertussis vaccine, BCG vaccine)
- enquiries about medical and special immunisation exemptions
- parents/medical students/nursing staff seeking immunisation resources
- immunisation adverse event advice and reporting
- incomplete AIR records requiring updating

Telephone advice line

1300 882 924 (option 2)

Direct (03) 9345 6599

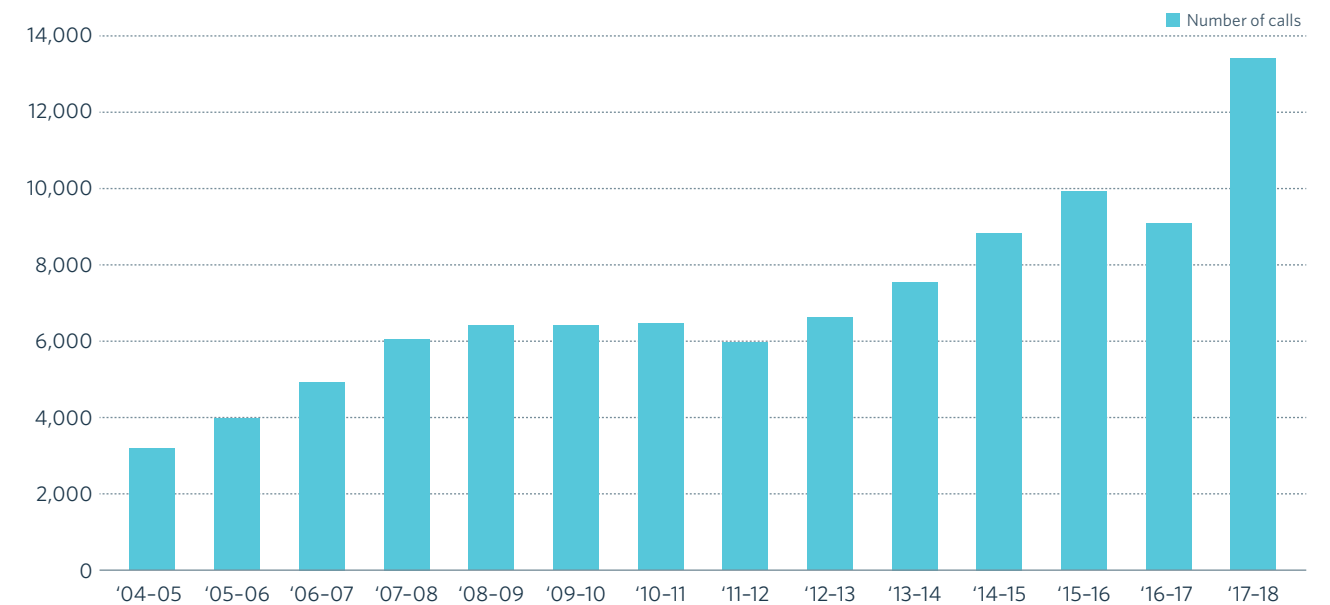
People today seek instant access and immediate gratification and whilst there is some good information available via the internet, there is misleading information as well. The telephone advice line was formally established and specifically funded to provide the public with fast, direct access to advice on Immunisation. As the national immunisation schedule undergoes change, and new vaccines are regularly introduced, the telephone consulting continues to increase every month, year on year.

Over the reporting period the telephone advice line has substantially increased. In the past 12 months, the telephone calls have increased by 47%. Majority of calls are received by parents, followed by immunisation providers, the RCH hospital staff, as well as other community based organisations. There were 9,152 telephone advice calls documented at the drop-in centre in 2016-17 and 13,432 calls recorded over the last 12 months.

The telephone advice line is managed by the immunisation nursing staff however, when there is a particularly complex enquiry, the nursing staff can refer the call to the medical staff for a prompt reply to the caller. The advice line is answered between 9am-4.30pm on working weekdays of the year. This is shown in **Figure 5** which does not reflect the possible demand for immunisation telephone advice it is only a reflection of calls answered.

Figure 5: Immunisation advice calls at the RCH Immunisation Drop-in Centre by 12-month period

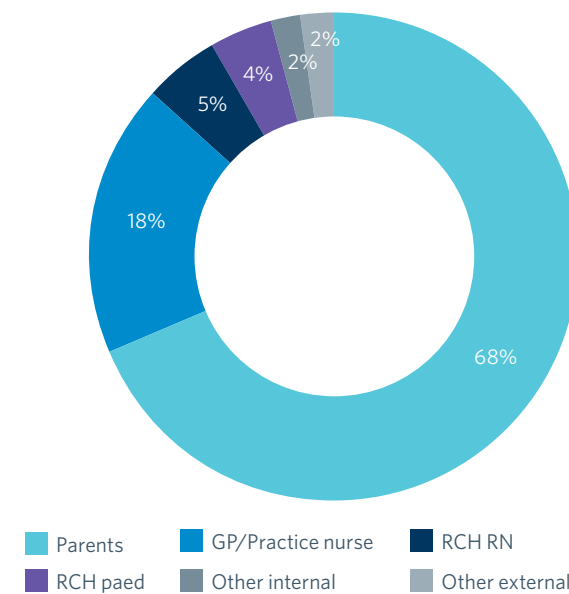
Immunisation telephone advice



In this reporting period, information was collected on the caller type to the telephone advice line (see **Figure 6**).

Figure 6: Telephone advice calls at the RCH Immunisation Drop-in Centre by caller 1 July 2016 - 30 June 2018

Telephone advice - caller type



Inpatient immunisations

The immunisation team conduct a daily cross-reference of all ward inpatients aged between six weeks and seven years with the AIR to determine each child's immunisation status, including their need for special risk vaccines. The national

due and overdue rules for childhood immunisation, according to AIR are applied. Children are considered 'overdue' for immunisations if they are 30 days or more overdue for the age-appropriate vaccines at the date of admission to hospital; 'due' for immunisations if the immunisation due date is less than 30 days prior. The recognition of overdue patients is now more critical due to the 'No job, no pay' legislation, as their families may be subjected to financial disadvantage.

Once the children were identified as due or overdue, the RCH Immunisation Service nurses liaised with the ward-based nurse coordinators regarding administration of immunisations and/or the need for parental consultation related to immunisation. If vaccinating the child immediately was contraindicated, the Immunisation team developed an immunisation plan to support immunisation at a later date, either within the RCH or via the child's general practitioner (GP) or other local immunisation provider. The RCH Immunisation Service reviewed these children by checking the AIR 1 month post-discharge to determine whether immunisations were completed and that their AIR status was up-to-date. If the child was not up to date, there would be the potential to flag them again in a subsequent admission, otherwise the family would be sent the usual AIR reminder letter of overdue immunisation status.

Key to the success of the project is the close liaison between the immunisation service staff and ward-based nursing staff as well as the use of the Electronic Medical Record (EMR). Prior to the implementation of the EMR, from 1 September 2013 to 31 January 2014, a total of 42% (352/831) of due/overdue inpatients were brought up-to-date with their

scheduled immunisations within one month of their admission to the RCH. This was either receiving catch-up vaccines or updating AIR with the parent held record of immunisation. Since EMR, from 1 May 2016 to 30 December 2017, 57% (1,403/2,470) of inpatients were brought

up-to-date. The implementation of the EMR has demonstrated a 15% increase in the opportunistic immunisation of inpatients.

The **Figure 7** and **Figure 8** below demonstrates the month by month success of the program.

Figure 7: Inpatients identified as due or overdue for immunisation and consequently vaccinated 1 July 2017 – 30 June 2018

Immunisation service activity

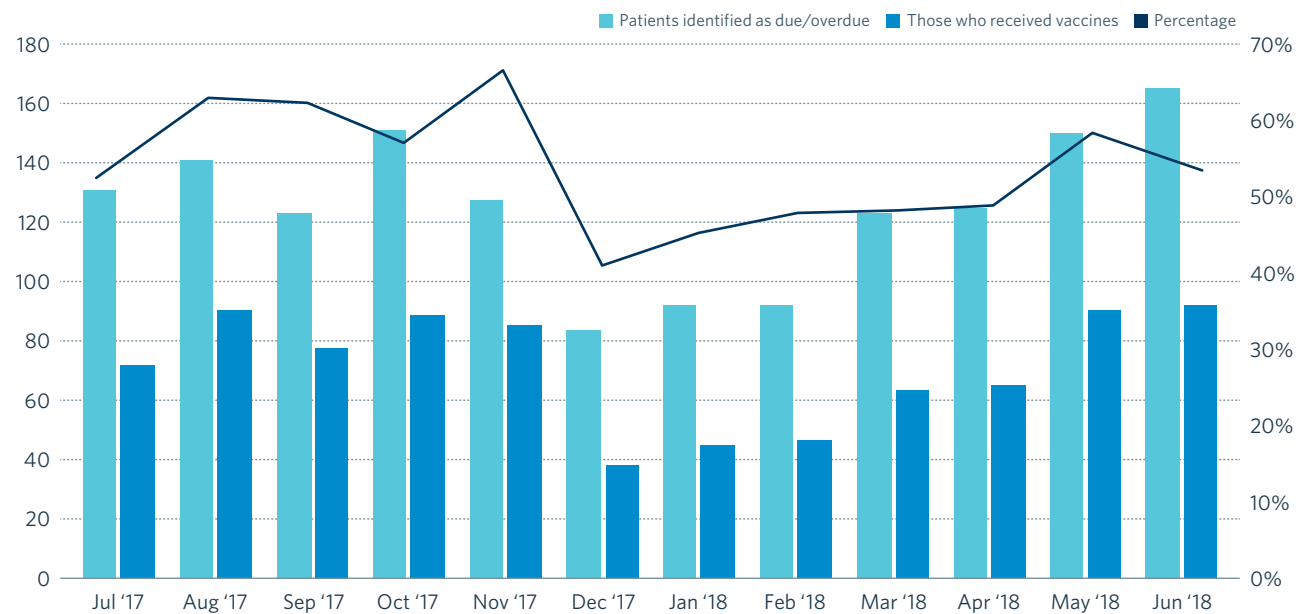
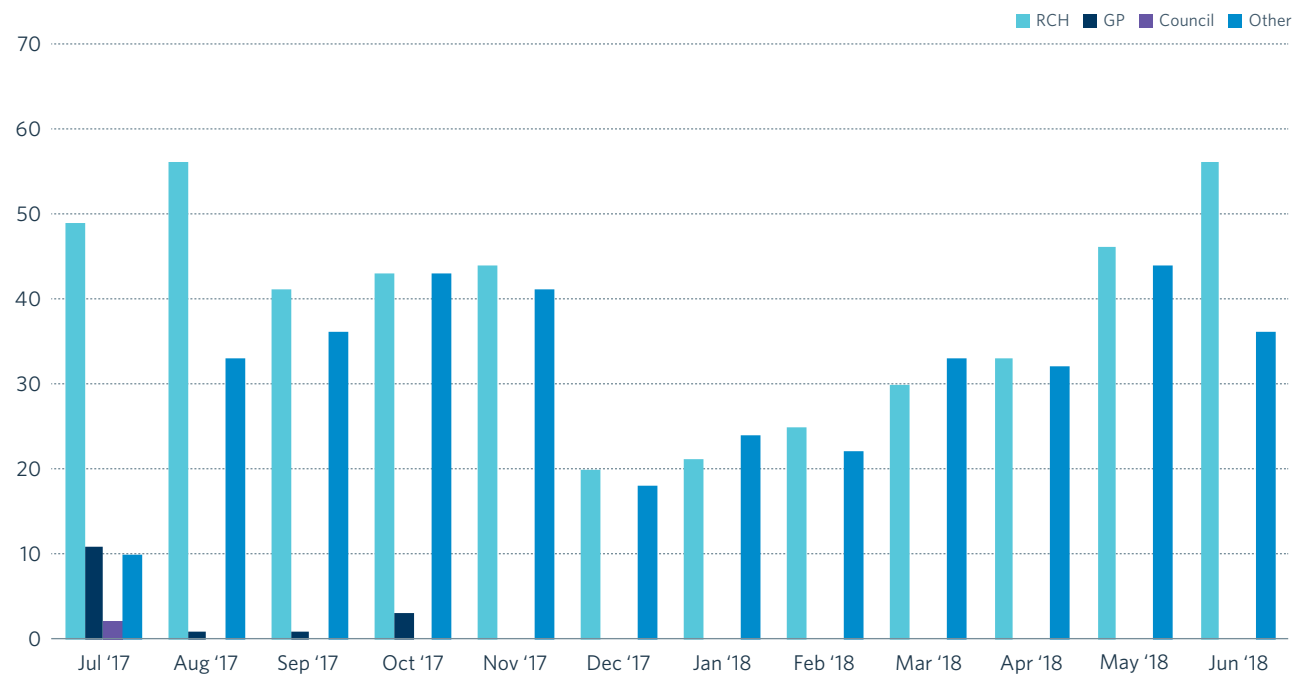


Figure 8: Inpatients vaccinated by site 1 July 2017 – 30 June 2018



Elective admissions

The immunisation service at the RCH has developed a unique service for needle phobic paediatric patients. Children and adolescents who have had confirmed via phone discussion, that they have failed immunisation in the community using standard distraction and minimally invasive techniques, are then booked to be seen by an Immunisation Paediatrician and admitted as day patients to the Day Medical Unit (DMU), where they receive their immunisations in conjunction with a combination of distraction and sedation. These methods aim to address the anxiety surrounding the immunisation process. Most importantly, they are relatively easy to use and can be titrated and administered by qualified medical or nursing staff. They are fast acting and their effects wear off relatively quickly – ensuring minimal adverse outcome and facilitating same day discharge.

At the RCH, there is an organisational policy for procedural sedation relevant to ambulatory areas and whilst not specific to immunisation, does provide a structured and standardised approach for the delivery of procedural sedation. Nitrous oxide is the first-line agent of choice in the majority of cases (titrated to a maximum percentage of 70% as required with a minimum oxygen percentage of 30%). Other adjunctive therapies including oral midazolam (0.3–0.5 mg/kg per dose, maximum of 20 mg) and play or distraction therapy are added as needed.

Over the reporting period, 283 patients have received vaccines under sedation. Specifically, 161/283 (57%) patients were admitted to the Day Medical Care for vaccines under sedation, whilst the remainder were opportunistically immunised under general anaesthetic in other settings; 79/283 (28%) in operating theatre; 9/283 (3%) in day oncology unit and 34/283 (12%) in Medical Imaging. These have included patients with needle phobia, as well as severely autistic patients with a fear of medical procedures.

A medical record review was conducted on all patients who had immunisation under sedation between January 2012 to December 2016 in the Day Medical Unit. A total of 139 children and adolescents had 213 vaccination encounters. More than half of the vaccination encounters involved multiple vaccines. A total of 400 vaccine doses were administered. One third of patients (32.3%) had multiple DMU admissions for vaccinations. The median age of patients was 13 years.

There were only 10 (4.7%) failed attempts at vaccination; all due to patient non-compliance with prescribed sedation. The majority of patients (58.9%) had a diagnosis of needle phobia.

Immunisations for newly arrived immigrants

The Immigrant Health Service at the RCH provides a comprehensive approach to physical and mental health for children and young people who arrived as refugees or seeking asylum. The service is supported by the Victorian Department of Health and Human Services and includes a weekly outpatient clinic (Mondays 1-5pm at desk A5) as well as Refugee Health Fellow Program.

As well as expertise in child refugee health, staff have experience in general paediatrics, developmental paediatrics, forensic medicine, child and adolescent psychiatry and paediatric mental health nursing. Interpreting, pathology, radiology and pharmacy services are available onsite, alongside all other hospital services. Volunteers help families navigate the hospital. The clinic has regular secondary mental health (psychiatry and psychology) consultations, and are also supported by a teacher from the RCH Education Institute. There are close links to primary health care providers, refugee health teams, The Royal Dental Hospital and settlement/community organisations working in refugee health.

The immunisation service assists with any catch up immunisations and/or Mantoux testing of the patients attending the RCH Immigrant Health Service. Prior to the patient's clinic appointment, the Immunisation nurses perform an AIR check on all immigrant health patients to assist with further catch-up vaccines required and to reduce immunisation errors at the time of the appointment. The immunisation service collaborate with the immigrant health team in the regular updating of catch-up guidelines www.rch.org.au/immigranthealth/clinical/Catchup_immunisation_in_refugees

The immunisation nurses have provided Mantoux tests and subsequent reading for many of these patients. **Figure 9** outlines the total number of Mantoux tests performed by the immunisation service nurses. The immunisation nurses assist in facilitating chest X-rays, medical review and explanation with the interpreter if the Mantoux test is positive.

Figure 9: Mantoux tests administered by the RCH Immunisation Service by 12-month period

	'08-9	'09-10	'10-11	'11-12	'12-13	'13-14	'14-15	'15-16	'16-17	'17-18
Mantoux tests	207	289	343	206	207	269	332	243	165	92

Influenza vaccine

It is always difficult to predict what influenza strains will dominate the winter months, and changes in the virus can reduce the effectiveness of influenza vaccines. In 2017, the vaccine did not match the circulating strains (particularly H3N2) and Australia recorded the highest number of influenza infections, than any other year. This led to the state government funding influenza vaccine for children six months to five years in 2018. As a result of the high numbers of influenza disease, in 2018 a huge increase in demand (25-30%) for the influenza vaccine occurred. The Victorian Health Department then experienced an extreme shortage in supply and had to ration stock. The shortages affected children aged three to five who were eligible to receive the vaccine under the government program, as well as children aged five to 18 who have an underlying health condition. The RCH Immunisation Service met regularly with the RCH Executive and kept communication open with DHHS regarding maintaining stock levels and prioritised the most vulnerable patients.

From 20 March to 16 October 2018, 4,709 influenza vaccine doses were administered. This is an increase by 7% compared with the same period in 2017, which is remarkable given the vaccine supply issues. The RCH Immunisation Service ensures that information is shared throughout the hospital to help facilitate special risk group patients to not miss out on the annual influenza vaccine. In particular, the Immunisation service worked with the paediatric intensive care unit in 2018, to ensure that extremely vulnerable children were immunised with influenza vaccine. The immunisation service vaccinated 27/31 identified patients over a 12-week period. Also via EMR, a reminder letter was sent to special risk groups, in particular patients with cystic fibrosis and complex medical care, and evaluation of the success of this initiative will take place to inform use next year in more special risk areas.

The immunisation service recommends influenza vaccine for all parents and siblings of eligible patients, however they are required to purchase the vaccine and have it administered at the drop-in centre. The data presented in **Figure 10** includes patients, parents and siblings provided influenza vaccine at the drop-in centre. The RCH patients represent 32% of those receiving opportunistic influenza vaccines at the drop-in centre. This does not include children aged six months to five years who were eligible for free influenza vaccine this year and were not captured in the RCH data.

The RCH patients immunised with influenza vaccine come from a variety of medical departments throughout the hospital. **Figure 11** represents the influenza vaccine doses according to patient group given the vaccine at the drop-in centre during the 2016 to 2018 season.

Staff influenza vaccine

The staff influenza vaccine program continued with the same successful model as in the last four years, with executive support and leadership, corporate communication support as well as NUM, HOD and nurse immuniser engagement.

Qualified nurse immunisers from the various wards and departments worked with the infection prevention and control team offering staff the influenza vaccine. This allowed easy access to the vaccine at all hours for many RCH shift workers. The formal staff influenza vaccination campaign ran for 16 weeks, between 16 April and 5 August 2018. Due to a nationwide shortage of vaccine for eight weeks during June and July, the 2018 program failed to reach the 89.3% achieved in 2017.

The 2018 RCH staff influenza vaccination program achieved a vaccination rate of 86.5% (DHHS target 80%, aggregate 83.2%). The number of staff who refused the influenza vaccine was 4.9% (aggregate 7.1%).

In addition to the 4,248 RCH paid staff who participated, 1,240 MCRI volunteer and student staff were also vaccinated.

Figure 10: Influenza immunisations at the RCH Immunisation Drop-in Centre by month and year

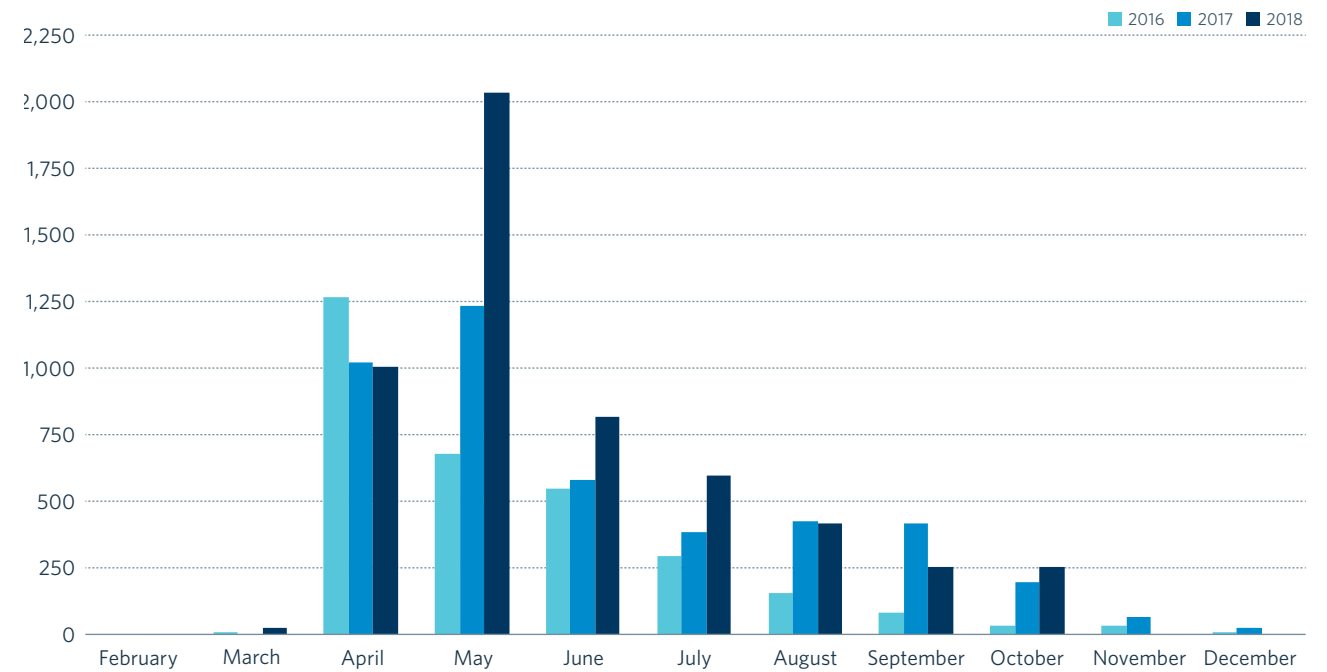
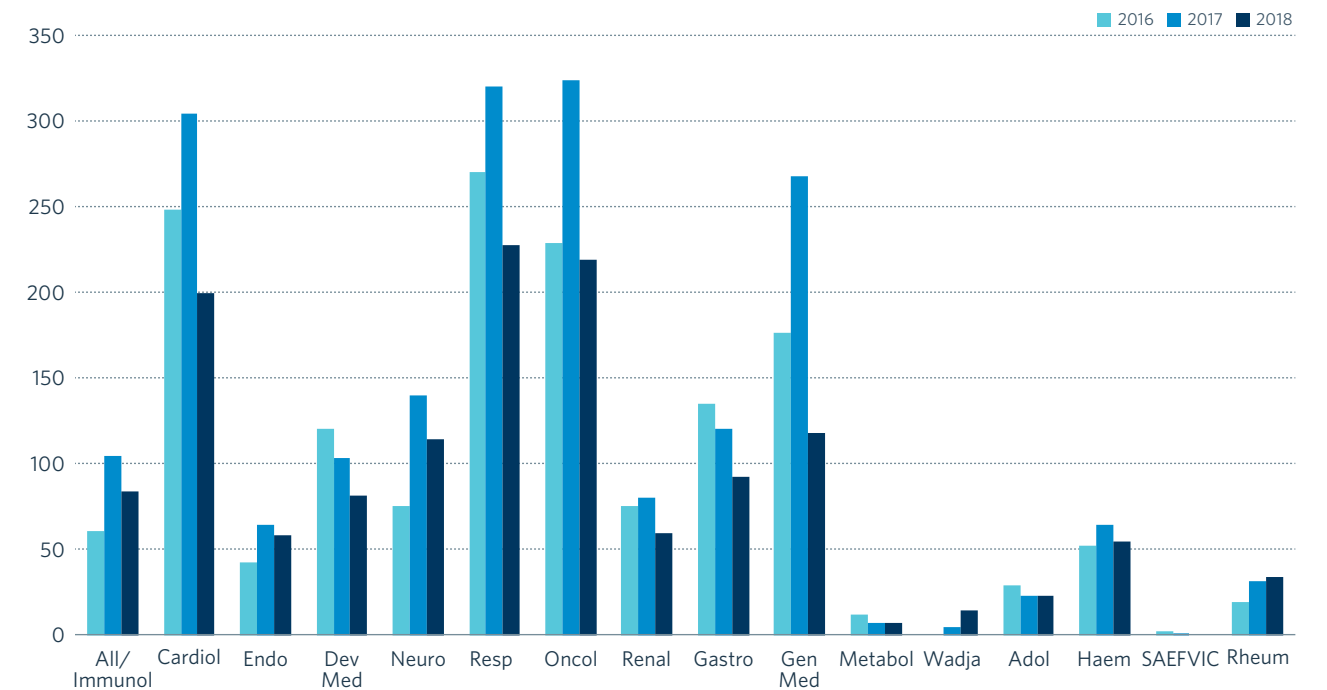


Figure 11: Total number of influenza vaccines (n) by medical department (2016-18)





(B) Additional immunisation service programs

Bacille Calmette Guerin (BCG) vaccine for children <12 months of age

In Victoria, the immunisation services at the RCH and Monash Health have been the major providers of BCG vaccine since 2013. Of the patients that attend the RCH, the majority of children received BCG vaccine prior to travel to a high-risk country, with less children of African descent receiving BCG vaccines than their Asian counterparts. The BCG clinic runs weekly, for infants less than 12 months of age and is undertaken by the immunisation medical team.

Figure 12 represents the monthly number of patients attending the BCG clinic.

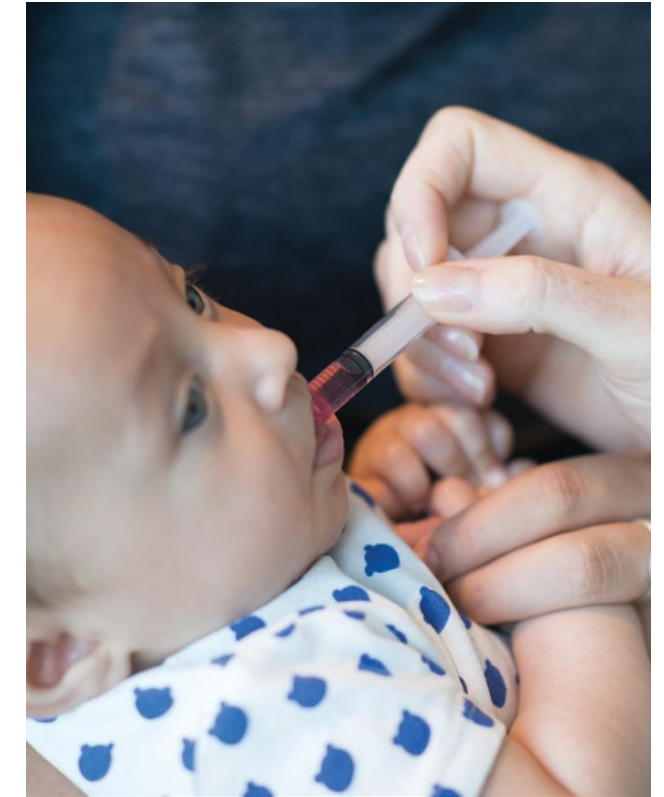


Figure 12: Monthly RCH BCG clinic attendees

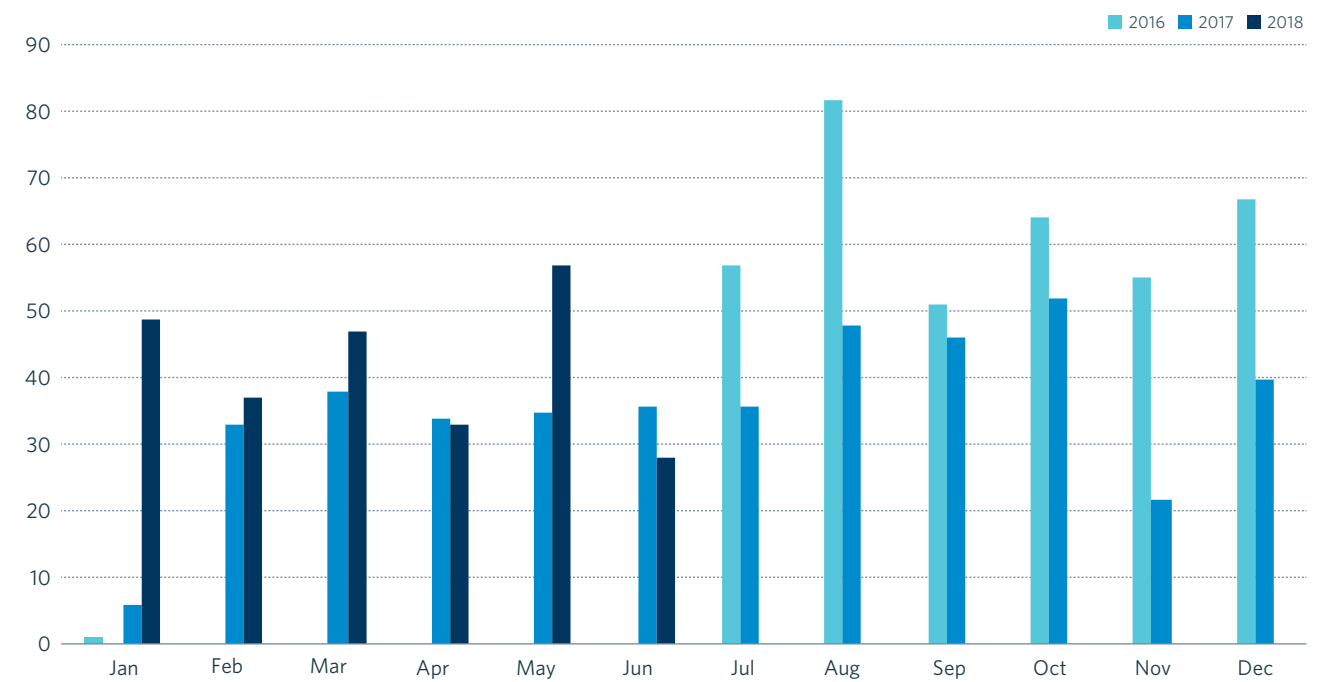
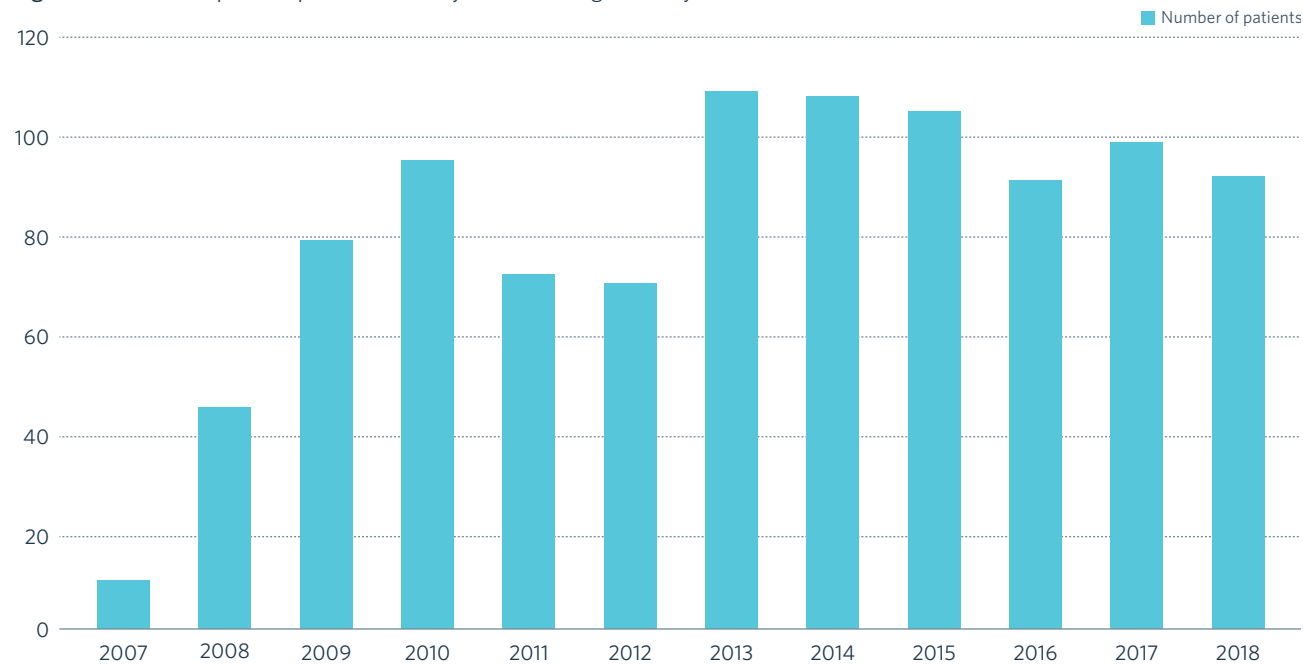


Figure 13: Number of patients provided monthly RSV Immunoglobulin by the RCH Immunisation Service



RSV immunoglobulin prophylaxis for cardiac and respiratory patients

The RCH Immunisation Service has provided Respiratory Syncytial Virus (RSV) Immunoglobulin to high-risk infants for the past 12 years (See **Figure 13**). RSV is the most common cause of respiratory infections in babies and young children. In premature infants, as well as cardiac and chronic lung disease patients, RSV infection can lead to other more serious illnesses. Infection can last about a week, but some cases may last several weeks. For at-risk infants, an admission to Intensive Care is likely. To prevent serious RSV-related complications, high-risk infants can receive monthly RSV immunoglobulin, which provides passive immunity against RSV infections. This has been shown to decrease the incidence of RSV hospitalization and the number of hospital days.

In 2018, the program commenced on the 2 May. In total, 92 patients were placed on the list of eligible patients. Sixty-five of these patients were cardiology, whilst the other patients were under other risk categories; pre-term infants under neonatology (21), respiratory (4), neuromuscular (1) and immunology (1). Patients were booked in to the RCH Immunisation Drop-in Centre or were immunised on the ward if a current inpatient.

Patients were booked in to the RCH Immunisation Drop-in Centre (218 doses) or were immunised on the ward if a current inpatient (121 doses). **Figure 14** indicates the number of doses administered, which highlights that some patients did not receive all of the recommended doses. This can be due to the timing of when they commenced the program.

Figure 14: Number of patients receiving each of the recommended RSV immunoglobulin doses 2018

	1st dose	2nd dose	3rd dose	4th dose	5th dose
No. of patients	92	81	68	54	47

The RCH Immunisation Service nursing staff educated families with the use of the RSV handouts, informing them about RSV disease and how the RSV immunoglobulin program works. This group of eligible patients are at increased risk of vaccine preventable diseases, and therefore the importance of routine scheduled immunisations (two, four, six and 12 months) and giving these on time is reinforced with the families.

In addition to the National Immunisation Program list of vaccines, these patients require extra vaccines (i.e. two doses of influenza vaccine and an extra conjugate pneumococcal vaccine at six-months or one-year of age). The parents of infants with cardiac problems are also recommended to receive influenza as well as pertussis booster vaccines (see **Figure 15**). The patients and their families were provided immunisation advice and catch-up vaccines during RSV visits as well as the RSV Immunoglobulin doses.

Figure 15: Opportunistic immunisations provided during RSV immunoglobulin visits

Immunisations	No. of patients/family members immunised
2 month	9
4 month	19
6 month	12
12 month	2
18 month	0
Extra 13vPCV	4
Patient influenza vaccine	36
Total patients/family members administered vaccines at the time of RSV immunoglobulin visits	100

The 50 mg vials cost about \$800 each and the 100mg vials cost about \$1,500 each. In 2018, the RCH Immunisation Service saved 64 of the 100mg vials of RSV product and saved five vials of the 50mg vials. The total cost saving was estimated to be \$100,000 (see **Figure 16**). This was an increased saving compared to 2017.

Figure 16: RSV vials saved from cohorting patients (2018)

	Vials would have used	Would have cost	Vials actually used	Actual cost
50mg vials	114	\$91,200	109	\$87,200
100mg vials	300	\$450,000	236	\$354,000
Totals		\$541,200		\$441,200

Special risk patients

Administration of additional vaccines is a priority for patients with medical conditions that increase the risk of infectious diseases. The RCH Immunisation Service places great importance on pre-screening individuals who present for immunisation to ensure that additional vaccines are opportunistically administered. Clinical guidelines for these at risk patients have been developed by affiliated immunisation staff and endorsed at a monthly immunisation meeting, held at the RCH. Attendees at this meeting include paediatricians, infectious disease physicians, nurse immunisation specialists, infection control team members and a representative from the Immunisation Section of the Victorian DHHS. These guidelines are based on the latest available evidence and may be different to the recommendations in the latest edition of the *Australian Immunisation Handbook*. Some of the recommendations in these guidelines are outside the scope of the National Immunisation Program (NIP).

The special risk guidelines have included updates for the following conditions:

- solid organ transplant recipient
- chemotherapy and post haematopoietic stem cell transplant
- asplenia/hyposplenia
- pre-term infants
- Inflammatory Bowel Disease (IBD) patients
- patients with cystic fibrosis
- rheumatology patients

These guidelines have been placed on our Melbourne Vaccine Education Centre website www.mvec.vic.edu.au/immunisation-references. The additional recommended vaccines have been approved and funded by the RCH Drug Utilisation Committee.

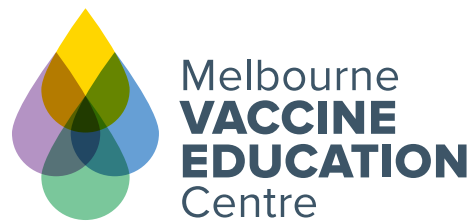


SECTION 3

Communication and accountability



Melbourne Vaccine Education Centre



The Melbourne Vaccine Education Centre (MVEC) website (www.mvec.vic.edu.au) continues to progress with numerous guidelines and resources added to the site. A highlight has been updating our immunisation app (VicVax - www.rch.org.au/rch/apps/vicvax/Victorian_Immunisation_Schedule_app/) detailing the latest schedule in Victoria and includes recommendations for special risk groups. By highlighting any recent changes to the immunisation schedule. This is the place we direct the RCH staff regarding our current immunisation schedule, aiming to minimise the risk of drug administration errors.

The aim of MVEC is to provide relevant clinical information based on the latest available evidence, as well as practical

tools to assist in education and decision-making around new vaccines. This education initiative is both for healthcare professionals and families and highlights the leadership role the RCH has in immunisation education at a state and national level.

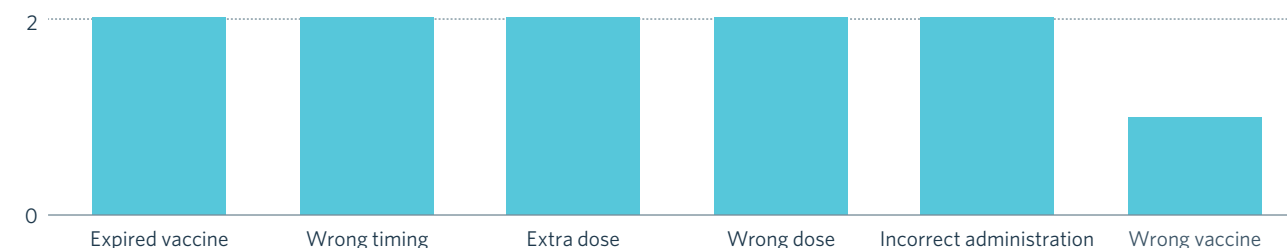
MVEC includes an A to Z of immunisation references, linking to our special risk guidelines (detailed above) and other expert resources such as the Better Health Channel. It has also been used as a site to highlight the RCH and Monash immunisation service position statements, for example regarding the seasonal influenza vaccine and the new Meningococcal B vaccine (Bexsero) and Meningococcal W containing vaccines.

The MVEC and RCH teams have also been co-ordinating an annual Clinical Vaccinology Update (CVU). A national leader in vaccine education, it has over 200 participants at each of its events, which are detailed on the MVEC website (www.mvec.vic.edu.au/clinical-vaccinology-update-2018). The CVU format has been replicated by other special immunisation clinics around Australia.



Figure 17: Actual vaccine errors from 1 July 2016 – 30 June 2018 by type

Actual clinical incidents by type



Immunisation errors

The immunisation service strives to ensure that all staff safely prescribe, dispense and administer appropriate vaccines and monitor vaccine use. The thought of making an error is devastating, but unfortunately they can occur at some point, despite developing strategies for prevention. The RCH Immunisation Service reports all errors to the Victorian Health Incident Management System (VHIMS). By investigating each incident and discussing these at the monthly immunisation meeting, we can understand the factors which contribute to vaccine errors and develop strategies to further prevent the errors from re-occurring. **Figure 17** above demonstrates the actual vaccine errors in 2016–18 by type.

We anticipated a reduction of medication prescribing errors in this reporting period, given the move to the new EMR, and there has been a 42% reduction.

Monthly meeting

Once a month the immunisation team meet to conduct discussion about various immunisation issues and this is a great form for exchanging ideas. This group includes representatives from the RCH related departments including: SAEFVIC, Department of General Medicine and the Infectious Diseases Paediatricians and Infection Control. There are also representatives from external immunisation groups including: immunisation section DHHS, Vaccine and Immunisation Research Group (VIRGO), Monash Health and Sunshine Immunisation services.

A monthly internal business meeting is also held to discuss topical issues and improved communication between the medical and nursing staff. One important outcome has been to allocate physicians and nurses to different special risk groups (e.g. cardiology, Wadja, neonates and respiratory medicine). The aim is to improve collaboration between the treating teams and the immunisation service, with outcomes to be monitored including inpatient vaccine rates and influenza vaccine delivery.

Feedback on the RCH Immunisation Drop-in Centre

Consumer feedback and complaints provide an opportunity to observe the quality of health care from the perspective of consumers and carers. The RCH Immunisation Service want to hear what is good, what is bad and what we can do to make the service better. Information is collected through consumer feedback forms available in the drop-in centre, or via telephone to the RCH Consumer Liaison officer. Each feedback item is entered into VHIMS and followed up. All feedback is treated with the utmost confidentiality.

Over the past two years, we have continued to receive a great deal of informal positive feedback from families. Of the formal feedback provided to the Consumer Liaison Officer, there were a total of 19 feedback items, six complaints and 13 compliments.

National Immunisation Teleconference

Nigel Crawford (co-lead), Margie Danchin, Kirsten Perrett and Jim Buttery are members of the Adverse Events Following Immunisation – Clinical Assessment Network (AEFI-CAN). As detailed above, this group is coordinating specialist immunisation clinic (SIC) activities nationally and collaborating with colleagues internationally in Canada and the United States.

The AEFI-CAN network also includes representatives from the National Centre for Immunisation Research and Surveillance (NCIRS) based at the Westmead Children's Hospital (Sydney), Women's and Children's Hospital (Adelaide), Princess Margaret Hospital (Perth) and Queensland Children's Hospital (Brisbane). Topics discussed at these teleconferences include immunisation adverse events, immunisation policies, topics of interest (e.g. vaccine allergy; seizures) as well as advice on complex individual patients seen at the adverse event clinics at each site. They are also leading the national discussion around medical and special exemptions for vaccines.

Immunisation policy

Australian Technical Advisory Group on Immunisation (ATAGI)

This is the peak advisory committee for the Australian Government on immunisation issues. Nigel Crawford is an ongoing member (appointed 2014) with his areas of expertise being special risk groups and vaccine safety. He is currently the Chair of the Meningococcal working party.

Surveillance of Adverse Events Following Vaccination In the Community (SAEFVIC)

The RCH Immunisation Service continues a close working relationship with SAEFVIC. Nigel Crawford (Director), Teresa Lazzaro, Wonie Uahwatanasakul, Kirsten Perrett and Margie Danchin all work in the RCH Immunisation Service which now includes SAEFVIC patient follow-up. It involves partnerships with DHHS, the RCH Department of General Medicine, the RCH Immunisation Service and the Murdoch Children's Research Institute (MCRI). The SAEFVIC unit is based at the RCH campus with clinical services also at Monash Health. There have been over 14,000 immunisation adverse event reports to SAEFVIC since commencement in 2007. The SAEFVIC clinic is incorporated into the Tuesday morning RCH Immunisation Service clinic, with follow-up vaccines administered in the outpatient treatment rooms or drop-in centre if required. In some instances, patients are admitted to the day medical unit or overnight for vaccination as required.

Immunisation education

Whilst the immunisation service does not directly receive funding from DHHS to provide immunisation education, as the national leader in this field, it is an important and busy part of the service provided by the RCH Immunisation team. The annual Clinical Vaccinology Update (CVU) has become an integral part of continuing professional development for Victorian immunisation providers and is always well attended (www.mvec.vic.edu.au/events). The CVU was held in December 2016, November 2017 and a special edition CVU in June 2018 to address the NIP changes and its impact on providers. In August 2017, the second Travel Vaccine Update (TVU) was held.

PHAA Immunisation Conference (Adelaide June 2018)

The two-yearly Public Health Association of Australia (PHAA) National Immunisation conference was held in Adelaide in June 2018. Several RCH and SAEFVIC team members were in attendance at the conference and also a number of oral presentations and posters delivered (see below).

Education at the RCH

Each Tuesday morning, the immunisation medical, nursing, pharmacist and administrative team meet for weekly vaccine education sessions, with presentations from the various immunisation areas within the hospital. There have been sessions on influenza, meningococcal disease epidemiology, Kawasaki disease and immunisation, live vaccines and immunosuppression as well as simulation based training workshops on anaphylaxis, giving feedback and difficult phone calls. It is a great opportunity for staff to present and discuss topics of interest. There is also a weekly meeting following the Tuesday immunisation clinic (12:30-1pm), where interesting clinical cases are discussed.

RCH nursing and medical immunisation updates

RCH ward nursing immunisation updates (12)

- Oncology department (3, Sonja Elia)
- Emergency Department (4, Lynne Clutterbuck)
- Neonatal unit (1, Lynne Clutterbuck)
- General medical unit (1, Phillipa Van Der Linden)
- Adolescent ward (1, Vicki Wall)
- Medical imaging (1, Sonja Elia)
- Pharmacy (1, Sonja Elia)

Clinical teaching for graduate nurses, medical students (17)

- Throughout the year medical students attend and observe at the RCH Immunisation Drop-in Centre to learn about giving vaccines and observe the techniques and communication style of the RCH immunisation nurses (13)
- Immunisation update for graduate nurses (4, Phillipa Van Der Linden)

RCH student immunisation teaching sessions (4)

- Paediatric Specialist Program (4, Phillipa Van Der Linden, Sonja Elia)





Clinical mentoring of immunisation nursing students (12)

Following successful completion of accredited nurse immuniser course some nurses complete their clinical mentorship with the RCH Immunisation Service. University approved mentors at the RCH currently include Rebecca Feore, Lynne Clutterbuck, Phillippa Van Der Linden, Nadine Henare, Narelle Jenkins and Sonja Elia.

RCH medical and nursing staff immunisation updates

- Meningococcal presentation, general medicine meeting RCH, March 2017 (Nigel Crawford)
- RCH Grand Round (June 2017): 10 years of SAEFVIC/PAEDS (Nigel Crawford)
- Meningococcal disease, Clinical Paediatric Update RCH, June 2017 (Nigel Crawford)
- BCG vaccines, General Medicine meeting RCH, March 2018 (Nigel Crawford)

External education

Nursing

- The role of the nurse practitioner in specialty areas, Nursing Research and Clinical Innovations symposium RCH, September 2017 (Sonja Elia)
- Innovations in practice. Model of Care – Immunisation Nurse Practitioner, Australian College of Nurse Practitioners, Victorian/Tasmanian Symposium, March 2018 (Sonja Elia)

General practitioners and immunisation providers

2016

- Vaccine hesitancy, GP Education Update, AstraZeneca July 2016 (Margie Danchin)
- Vaccination Update, Australian Doctor Mothers and babies Seminar, August 2016, Melbourne (Margie Danchin)

- Fellow of the Royal Australasian College of Physicians lectures, October 2016, Melbourne (Nigel Crawford)
- Development of new interventions to address vaccine hesitancy – the way forward in Australia, South Australian Clinical Vaccinology update, November 2016, Adelaide (Margie Danchin)
- 'Top 10' vaccine topics, Clinical Vaccinology Update, December 2016 (Nigel Crawford)

2017

- Australian immunisation schedule and vaccine safety, Centers for Disease Control and Prevention, February 2017, Atlanta, USA (Nigel Crawford)
- Addressing vaccine hesitancy and rejection in the clinical encounter: the SKAI project, RACP Congress, May 2017, Melbourne (Margie Danchin)
- Special risk and viral vaccines: RCAP-Virology conference, May 2017, Blue Mountains, NSW (Nigel Crawford)
- Update on Paediatric Vaccination, Queensland Immunisation Symposium, May 2017, Brisbane (Margie Danchin)
- Vaccine decision-making begins in pregnancy: correlation between vaccine intentions and concerns regarding childhood vaccination and maternal vaccination with childhood vaccine uptake, ESPID, May 2017, Spain (Margie Danchin)
- Hot topics: AEFI CAN, Centers for Disease Control and Prevention Immunisation safety office, June 2017, Atlanta, USA (Nigel Crawford)
- Vaccine safety, immunisation nurses special interest group conference, June 2017, Melbourne (Nigel Crawford)

- Shared Decision Making in Routine Childhood Vaccination: What do Parents Want? 9th International Shared Decision Making Conference, July 2017, France (Margie Danchin)

- Overview of SAEFVIC/RCH Immunisation Service and catch up immunisation Western Victoria Primary Health Network, July (Geelong) October (Ballarat), (Sonja Elia)

- Public health at the CDC and IMD, Mannix College Medical Faculty, August 2017, Melbourne (Nigel Crawford)

- Vaccine Confidence Meeting, Emory University, Atlanta, Georgia, August 2017 (Margie Danchin)

- Travel and immunisation update, Health Ed (GP) X 4, September 2017, Melbourne, Adelaide and Brisbane (Nigel Crawford)

- Minimising childhood immunisation pain using a cold-numbing device (Coolsense®). September 2017, New Zealand Immunisation conference, Wellington NZ (Narelle Jenkins)

- Immunisations under sedation at a tertiary paediatric hospital in Melbourne, Australia from 2012–16, September 2017, New Zealand Immunisation conference, Wellington NZ (Kirsten Perrett)

- Vaccine Acceptance Science, Policy, and Practice in a 'Post-Fact' World', Les Pensières, September 2017, France (Margie Danchin)

- Fellow of the Royal Australasian College of Physicians lecture, October 2017, Melbourne (Nigel Crawford)

- New vaccines, ACT Health, October 2017, Canberra (Nigel Crawford)

- Get Smart – immunisation education and research, Clinical Vaccinology Update, October 2017 (Nigel Crawford)

- Vaccine hesitancy, Hunter New England PHN, October 2017 (Margie Danchin)

2018

- Invasive Meningococcal disease vaccines and launch of Adolescent Men ACWY program, ACT Health February 2018, Canberra (Nigel Crawford)

- Update on Paediatric Influenza. Influenza Specialist Group (ISG), Immunisation Coalition, February 2018, Melbourne (Margie Danchin)

- The changing face of Meningococcal disease and vaccine recommendations in Australia, Menzies School Health Research, March 2018, Darwin (Margie Danchin)

- Legislating vaccines? A comparative look at the role of law in different countries in promoting vaccination, World Vaccine Congress, April 2018, Washington (Margie Danchin)

- Reporting Immunisation Adverse events and Immunisation Catch up, Eastern Melbourne Primary Health Network, X 3 April/May 2018 (Sonja Elia)

- AEFI CAN, Australasian Society for Infectious Diseases, May 2018, Gold Coast (Nigel Crawford)

- 'Shingles' temporally associated with Zostavax® vaccine in Victoria, Australia, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Nigel Crawford)

- NIP changes 2018, Clinical Vaccinology update, June 2018 (Nigel Crawford)

- Online vaccination skills training for paediatricians may optimize vaccine discussions with parents, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Margie Danchin)

- Impact of 'No Jab' policies on parents and immunisation service, RCH, Melbourne, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Margie Danchin)
- Vaccine Allergy? Skin testing and vaccine challenge at a tertiary paediatric hospital, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Kirsten Perrett)
- Providing influenza vaccine for egg anaphylactic patients at the RCH, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Sonja Elia)
- The role of the Immunisation Nurse Practitioner, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Sonja Elia)
- Vaccination status of oncology patients in a tertiary hospital long-term follow-up program, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Nadine Henare)
- Utilising overdue dose reports to improve Human Papillomavirus (HPV) vaccine coverage, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Rebecca Feore and Narelle Jenkins)
- Multi-component interventions delivered during pregnancy may improve childhood and maternal vaccine uptake, 16th National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018 (Margie Danchin).

Staffing

Medical staffing

Nigel Crawford has an appointment with the RCH Immunisation Service (2 sessions) and SAEFVIC MCRI (1 session). Together with Margie Danchin (1.5 sessions), Kirsten Perrett (1.0 session) and Teresa Lazzaro (0.7 session), the medical team provide clinical support to the drop-in centre team on a daily rotating telephone roster. Daniel Golshevsky - locum 0.5 sessions (alternate weekly clinic) departed from the immunisation service, with Wonie Uahwatasakul resuming this role within the team.

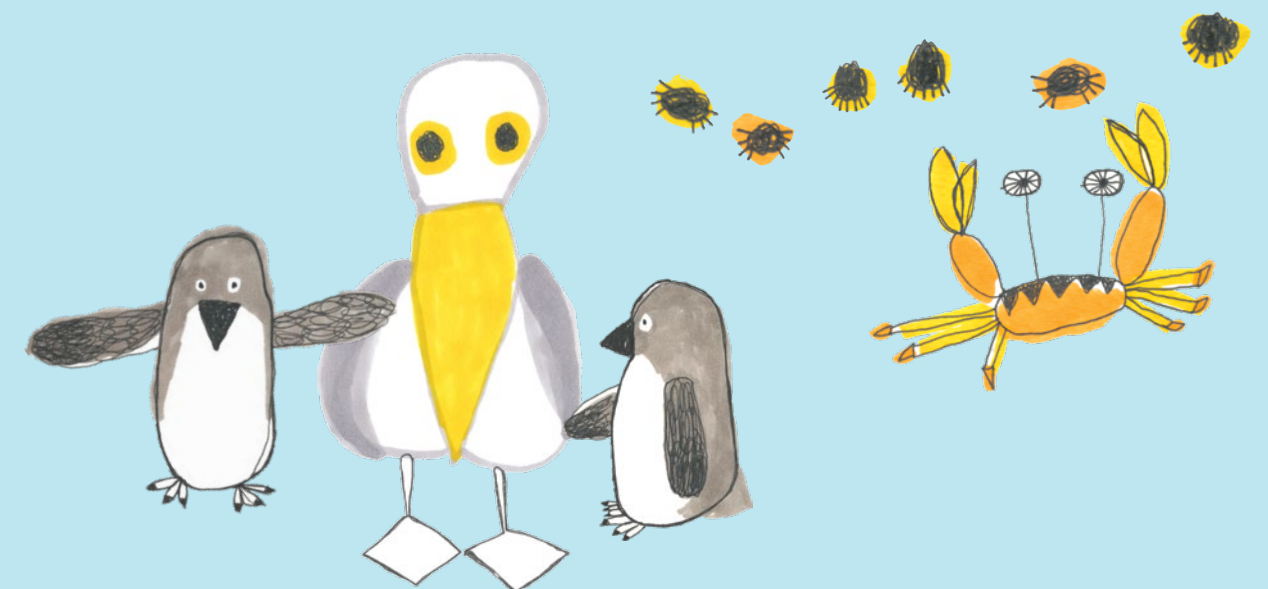
Nursing staffing

Over the past two years, there have been very few changes amongst the nursing staffing. Vicki Wall took up a role closer to home in the East Gippsland area as a school nurse while continuing her work as immunisation coordinator with the Shire council. Lynne Clutterbuck joined the immunisation nursing team, having previously worked in the Emergency Department at the RCH. During the RSV Immunoglobulin program, we welcomed Lucy Lam (Day Surgery Unit) and Francis Robertson (Platypus ward). We thank all those staff past and present for their contribution to the high quality care delivered by the immunisation team.

Administrative support

We welcomed Jo Gleeson to the administrative team, with her experience in health information services at the RCH. Jessica Elia has continued her work with the RCH Immunisation Service in an administrative role and with Jo, encompass what it means to provide Great care at the RCH. They provide exemplary customer service and assist the medical and nursing teams to ensure that the experience for the family is a positive one.

SECTION 4 Clinical immunisation research and publications



Background

As detailed in the previous section, the RCH Immunisation Service has strong research links across the campus, with both the MCRI and The University of Melbourne (UoM).

We have three staff with honorary appointments at the UoM;



Nigel Crawford



Kirsten Perrett



Margie Danchin

We also conduct a number of collaborative projects with Universities and tertiary Children's hospitals around the country. These are predominantly in the sphere of vaccine preventable diseases, including epidemiological studies, vaccine safety, communication/social science research and vaccine trials. A number of these specific projects are detailed below:

- AusVaxSafety – national collaboration regarding vaccine safety, led by the National Centre for Immunisation Research and Surveillance (NCIRS) – Sydney University
– www.ncirs.edu.au/vaccine-safety/ausvaxsafety
– RCH Investigator Nigel Crawford

This project also incorporates our Adverse Event Following Immunisation – Clinical Assessment Network (AEFI-CAN), with Nigel Crawford (PI), Margie Danchin and Kirsten Perrett as investigators.

- Paediatric Active Enhanced Disease Surveillance (PAEDS) – a national collaboration of tertiary paediatric hospitals, monitoring the epidemiology and clinical outcomes of vaccine preventable diseases (e.g. varicella and whooping cough), vaccine adverse events (e.g. intussusception (Rotavirus vaccine) and syndromic evaluation (acute flaccid paralysis; Australian Childhood Encephalitis study) – PIs Kristine Macartney and Cheryl Jones (Sydney University)
– www.paeds.edu.au
– RCH Investigator – Nigel Crawford

- Vaccine hesitancy – RCH/UoM. Leadership from Margie Danchin, as part of a collaboration with PI Julie Leask (Sydney University and NCIRS)
– www.ncirs.edu.au/research/social-research/sarah-project

- VIRGo trials unit – School of Population and Global Health, The University of Melbourne. The RCH Immunisation Paediatrician's Kirsten Perrett and Margie Danchin lead this research, which is part of the national vaccine trial network. Kirsten Perrett also has a role in the Melbourne Children's trials unit, assisting in the development of new research initiatives across the campus.

- www.mcri.edu.au/research/themes/infection-and-immunity/vaccine-and-immunisation-research-group-virgo

The RCH Immunisation Service also work closely with Monash Children's Hospital and University.

Advanced trainee and scholarly selective projects (completed 2016–18)

Advanced trainees

Tim Penno – Varicella vaccine in special risk groups (Supervisor: Nigel Crawford)

Kate Hodgson – Establishment of the AEFI-CAN network – a HPV vaccine pilot (Supervisor: Nigel Crawford)

Daryl Cheng – Anaphylaxis following vaccination in children 0–18 years (Supervisor: Nigel Crawford)

Tim Ford – Immunisation in IBD patients (Supervisor: Nigel Crawford)

Rowena Silcock – Subcutaneous nodules: an important adverse event following immunisation (Supervisors: Kirsten Perrett and Nigel Crawford)

Scholarly selective

Amelia Marshallsea – Evaluation and survey regarding health professional utilisation of the MVEC website

Publications

1. O'Grady KF, Chang AB, Cripps A, Mulholland EK, Smith-Vaughan H, Wood N, **DANCHIN M**, Thornton R, Wilson A, Torzillo P. J, Morris P. M, Richmond P, Rablin S, Arnold D, Connor A, Goyal V, Stoney T, **PERRETT K**, Grimwood K. The clinical, immunological and microbiological impact of the 10-valent pneumococcal-Protein D conjugate vaccine in children with recurrent protracted bacterial bronchitis, chronic suppurative lung disease and bronchiectasis: a multi-centre, double-blind, randomised controlled trial. *Human Vaccine Immunotherapeutics*. 2018:0.
2. Pratt JJ, Connell TG, Bekhit E, **CRAWFORD NW**. Splenic cyst and its management in a 21-month-old boy: a rare complication of invasive meningococcal disease. *BMJ Case Reports*. 2018 May 4;
3. Costa-Pinto JC, Willaby HW, Leask J, Hoq M, Schuster T, Ghazarian A, O'Keefe J and **DANCHIN MH**. Parental Immunisation Needs and Attitudes Survey in paediatric hospital clinics and community maternal and child health centres in Melbourne, Australia. *Journal of Paediatrics and Child Health*. 2018;54(5):522-9
4. Cheng D R, **ELIA S** & **PERRETT KP**. Immunizations under sedation at a paediatric hospital in Melbourne, Australia from 2012-2016. *Vaccine* 2018 June 14;36(25):3681-3685.
5. Kiang KM, **ELIA S** & Paxton G. No Jab, no record: Catch-up vaccination of children in immigration detention. *Journal of Paediatrics and Child Health* 2018 Jan 3.
6. Baxter CM, Clothier HJ, **PERRETT KP** Potential Immediate Hypersensitivity Reactions Following Immunization in Preschool Aged Children in Victoria, Australia. *Human Vaccines Immunotherapeutics* 2018 Apr 6:1-10.
7. Berry NJ, **DANCHIN M**, Trevena L, Witteman HO, Kinnersley P, Snelling T, et al. Sharing knowledge about immunisation (SKAI): An exploration of parents' communication needs to inform development of a clinical communication support intervention. *Vaccine*. 2018.
8. Cutland CL, Nolan T, Halperin S, Kurugol Z, Ahmed K, **PERRETT KP**, Richmond P, Marshall H, Ceyhan M, Kolhe D, Hezareh M, Van Der Wielen M. Immunogenicity and safety of one or two doses of the quadrivalent meningococcal vaccine MenACWY-TT given alone or with the 13-valent pneumococcal conjugate vaccine in toddlers: a phase III, open-label, randomized study. *Vaccine* 2018 Mar 27;36(14):1908-1916.
9. Bedford H, Attwell K, **DANCHIN M**, Marshall H, Corben P, Leask J. Vaccine hesitancy, refusal and access barriers: The need for clarity in terminology. *Vaccine*. 2017.
10. Britton PN, Dale RC, Blyth CC, Macartney K, **CRAWFORD NW**, Marshall H, Clark JE, Elliott EJ, Webster RI, Cheng AC, Booy R, Jones CA. Influenza-associated encephalitis/Encephalopathy identified by the Australian Childhood Encephalitis Study 2013–2015. *Pediatric Infectious Diseases Journal*, 2017 Nov;36(11):1021-1026.
11. Ching NS, **CRAWFORD N**, McMinn A, Baker C, Azzopardi K, Brownlee K, Lee D, Gibson M, Smeesters P, Gonis G, Ojaimi S, Buttery J & Steer A. Prospective Surveillance of Pediatric Invasive Group A Streptococcus infection. *Journal of the Paediatric Infectious Diseases Society*, 2017 Dec.
12. **DANCHIN MH**, Costa-Pinto J, Attwell K, Willaby H, Wiley K, Hoq M, et al. Vaccine decision-making begins in pregnancy: Correlation between vaccine concerns, intentions and maternal vaccination with subsequent childhood vaccine uptake. *Vaccine*. 2017. Epub ahead of print.
13. Fielding JE, Bolam B, **DANCHIN MH**. Immunisation coverage and socioeconomic status – questioning inequity in the 'No Jab, No Pay' policy. *Australian and New Zealand Journal of Public Health*. 2017;41(5):455-7.

14. McHugh L, Andrews R, Lambert S, Viney K, Wood N, **PERRETT KP**, Marshall H, Richmond P, O'Grady KA. The FluMum study: Birth outcomes for Australian mother-infant pairs who received an influenza vaccine during pregnancy, 2012-2014. *Vaccine*. 2017 Mar 7;35(10):1403-1409.
15. Costa-Pinto J, Willaby HW, Leask J, Wood N, Marshall H, **DANCHIN M**. Vaccine discussions with parents: The experience of Australian paediatricians. *Journal of Paediatrics and Child Health*. 2017;53(9):855-61.
16. My C, **DANCHIN M**, Willaby HW, Pemberton S, Leask J. Parental attitudes, beliefs, behaviours and concerns towards childhood vaccinations in Australia: A national online survey. *Australian Family Physician*. 2017;46(3):145-51.
17. Leask J, **DANCHIN M**. Imposing penalties for vaccine rejection requires strong scrutiny. *Journal of Paediatrics and Child Health*. 2017;53(5):439-44.
18. **PERRETT KP**, Nolan TM. Immunization During Pregnancy: Impact on the Infant. *Paediatric Drugs*. 2017 May 16.
19. Berry NJ, Henry A, **DANCHIN M**, Trevena LJ, Willaby HW, Leask J. When parents won't vaccinate their children: a qualitative investigation of Australian primary care providers' experiences. *BMC Pediatrics*. 2017;17(1):19.
20. Clothier HJ, **CRAWFORD N**, Russell MA, Buttery JP. Allergic adverse events following 2015 seasonal influenza vaccine, Victoria, Australia. *Euro Surveillance*. 2017 May;22(20)
21. O'Neill J, **ELIA S** & **PERRETT K**. Human Papillomavirus vaccine uptake in adolescents with developmental disabilities. *Journal of Intellectual & Developmental Disability* 2017.
22. ELIA S, **PERRETT K** & Newall F. Providing opportunistic immunisations for at-risk inpatients in a tertiary paediatric hospital. *Journal for Specialists in Pediatric Nursing* 2017.
23. Clothier HJ, **CRAWFORD NW**, Russell M, Buttery JP. Adverse events following vaccination of older people may be under-reported. *Medical Journal Australia*. 2017 Sep 2(7):301-302.
24. Britton PN, Blyth CC, Macartney K, Dale RC, Li-Kim-Moy J, Khandaker G, **CRAWFORD N**, Marshall H, Clark J, Elliott E, Booy R, Cheng AC, Jones CA; ACE study investigators, FluCAN investigators and PAEDS network. The Spectrum and Burden of Influenza-Associated Neurological Disease in Children: Combined Encephalitis and Influenza Sentinel Site Surveillance from Australia 2013-2015. *Clinical Infectious Diseases*. 2017, Apr 29.
25. Clothier HJ, **CRAWFORD NW**, Russell M, Kelly H, Buttery JP. Evaluation of 'SAEFVIC', A Pharmacovigilance Surveillance Scheme for the Spontaneous Reporting of Adverse Events Following Immunisation in Victoria, Australia. *Drug Safety*. 2017, Mar 24.
26. Chen MY, Kirkwood CD, Bines J, Cowley D, Pavlic D, Lee KJ, Orsini F, Watts E, Barnes G and **DANCHIN M**. Rotavirus specific maternal antibodies and immune response to RV3-BB neonatal rotavirus vaccine in New Zealand. *Human Vaccine Immunotherapeutics*. 2017;13(5):1126-35.
27. Cheng DR, Barton R, Greenway A, **CRAWFORD NW**. Rituximab and protection from vaccine preventable diseases: applying the evidence to pediatric patients. *Expert Review Vaccines*. 2016 Dec;15(12):1567-1574.
28. **CRAWFORD NW**, Hodgson K, Gold M, Buttery J, Wood N; AEFI-CAN network. Adverse events following HPV immunization in Australia: Establishment of a clinical network. *Human Vaccine Immunotherapeutics*. 2016 Oct;12(10):2662-2665.
29. Taylor-Miller T, Chapman M, Connell T, Cole T, **CRAWFORD NW**. Interesting microorganism. *Journal of Paediatrics and Child Health*. 2016 Sep 22.
- (v) WHO Pilot RSV Surveillance 2017-2018 at The Royal Children's Hospital, Melbourne. Pratt J, McMinn A, Mulholland K, Daley A, Barr I & Crawford N. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (vi) Infection site abscess post infant vaccines – a rare but real complication. Addison M, Lewis G & Crawford N. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (vii) Recurrence of Adverse events following immunisation (AEFI) during supervised admission at SAEFVIC. Lewis G, Addison M, McGuire R & Crawford N. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (viii) Medical conditions as risk factors for invasive Meningococcal disease. Peng C, Crawford N, Patel C, King C, Chiu C, Li-Kim-Moy J, McIntyre P. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (ix) The recent epidemiology of invasive meningococcal disease – implications for vaccination policy. Patel C, Chiu C, McIntyre P & Crawford N. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (x) Effectiveness of maternal vaccination among infants aged <6 months hospitalised with pertussis. Quinn H, Comeau J, Marshall H, Elliot E, Crawford N, Blythe C, Kynaston A, Snelling T, Richmond P, Macartney K, McIntyre P, Wood N. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (xi) Enhanced passive surveillance of adverse events during an adolescent MenB vaccine program. Marshall H, Koehler A, Pratt N, Quinn H, A'Houré M, Crawford N, Macartney K. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.

Conference abstracts

- (i) Uptake of pertussis vaccine among pregnant women in Victoria, Australia: temporal, geographical and socioeconomic variation. Rowe SL, Morey R, Perrett KP, Cowie BC, Franklin LJ, Strachan J, Pellissier S, Stephens N, Leder K, Nolan T, Sutton B & Cheng AC. ESPID Malmo, May 2018.
- (ii) Subcutaneous Nodules following Immunisation in Childhood. Silcock RJ, Crawford N, Selvaraj G, McMinn A, Danchin M, Lazzaro T, Perrett KP. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (iii) Delayed anaphylaxis following immunisation in a 4 year old – a case study. Harris A, Choo S Perrett KP. 16TH National Immunisation conference, Public Health Association of Australia, Adelaide, June 2018.
- (iv) Protective Antibody Levels 7.5 Years after Primary Vaccination in Adolescence with a Recombinant, 4-Component, Meningococcal Serogroup B Vaccine (4CMenB), and Response to a Booster Dose in Adolescents and Young Adults: Phase IIIb Clinical Findings. Nolan T, O'Ryan M, Santolaya ME, de Looze F, Marshall H, Richmond P, Henein S, Rheault P, Heaton K, Perrett KP, Garfield H, Gupta A, Ferguson M, D'Agostino D, Toneatto D. ID week 2018.



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