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Immunisation in Under Studied and Special Risk Populations:
'Closing the Gap in Knowledge through a Multidisciplinary Approach'

Protecting Australia – closing the gap in immunisation for migrants and refugees

Proceedings from a stakeholder workshop

John Niland Scientia building

UNSW Australia

9th August 2013

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NHMRC Centre for Research Excellence in Population Health
Immunisation in Under-studied and Special Risk Populations: "Closing the gap in knowledge through a multidisciplinary approach.

The CRE Immunisation is dedicated to addressing identified gaps in knowledge through research, consultation, advocacy, policy and capacity building. This CRE, led by Professor Raina MacIntyre, brings together advanced expertise across UNSW Australia, The National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (NCIRS), The Children's Hospital at Westmead, The Kirby Institute, The Centre for Infectious Diseases and Microbiology, The University of Sydney and the University of Antwerp, Belgium. Vaccination needs of refugees, migrants and travellers is one of four streams within the CRE.

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Immunisation needs of Migrants and Refugees
- Stakeholder workshop –

Workshop Speakers

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Professor David Isaacs	The Children's Hospital at Westmead
Dr Mohamud Sheikh	School of Public Health and Community Medicine, UNSW Australia
Dr Stephen Conaty	Environmental Health Branch, Health Protection NSW
A/Professor Tilman Ruff	Nossal Institute for International Health

Panel discussion - "Future solutions to funding gaps and other barriers to vaccination in migrants and refugees"
Chair: Professor Raina Macintyre

Panel members:

Ms Sue Campbell Lloyd	Communicable Diseases Branch, Health Protection NSW
Dr Stephen Conaty	Environmental Health Branch, Health Protection NSW
Dr Paul Douglas	Australian Government Department of Immigration and Border Protection
Professor David Isaacs	The Children's Hospital at Westmead
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Stakeholders: Workshop attendees included stakeholders from academia, industry, representatives from the Federal health department, State public health units, Medicare Local Alliances and local council immunisation providers, General Practice, and multicultural, asylum seeker and refugee health networks.

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Executive Summary

Health inequity and provision of health care to resettled refugees and new migrants are complex and critical issues worldwide. These groups often have lower rates of health care utilisation and poor access to care and preventive services. As such, refugees and migrants are at increased risk of under-immunisation compared to Australian-born residents and higher rates of many vaccine-preventable diseases are reported in migrant Australians, particularly after travel. There are numerous barriers to addressing low immunisation coverage for migrants and refugees, particularly ensuring equitable access to funded vaccines.

The Centre for Research Excellence in Population Health (CRE) *"Immunisation in under-studied and special risk populations: Closing the gap in knowledge through a multidisciplinary approach***"** is dedicated to identifying and addressing research gaps with important immunisation policy implications for high risk and marginalised populations. On the 9th August, 2013 the CRE hosted a stakeholder workshop: *Immunisation policy for migrants, refugees and travellers*. This report describes the key immunisation issues and recommendations specific to migrants and refugees discussed in the first half of the forum. This national workshop convened relevant stakeholders with an interest in refugee and migrant health enabling a considered and focused discussion of risks, gaps and areas for future policy direction. This workshop is the first national meeting dedicated to immunisation needs of migrants and refugees to be held, and the first time during which stakeholders from relevant sectors have been brought together as a group to discuss these issues.

Universal access to immunisation, including catch-up immunisation, has wider public health benefits for Australia beyond the benefits to the individual. Low rates of immunisation in newly arrived migrants and refugees pose a risk to their own health and to the ongoing success of the largest publicly-funded preventive program in Australia, the National Immunisation Program (NIP). Failure to address immunisation gaps at a coordinated national level in these vulnerable groups will lead to ongoing risk of outbreaks of infectious diseases. Key findings and recommendations arising from the workshop are detailed in this report and summarised below.

Workshop aims

- To convene and engage relevant stakeholders on key immunisation issues for migrants and refugee groups;
- Address barriers to immunisation;
- Identify immunisation policy gaps specific to migrants and refugees; and
- Identify immunisation needs of these groups and provide recommendations to inform policy.

Key findings

People from migrant and refugee backgrounds are at greater risk of under-immunisation for vaccines listed on the NIP compared to Australian-born residents. Migrants and refugees may therefore be susceptible to vaccine-preventable diseases (VPDs) because of potentially lower immunity and also because of subsequent travel to visit friends and relatives (VFR) in their countries of origin. VFR travellers are at higher risk of VPDs and less likely to seek travel health advice.

Across Australia's States and Territories there are multiple pathways for assessment of newly arrived refugees and different models for accessing the Australian health system. The majority are directed through the general primary care and hospital system, while some States and Territories provide specialist refugee health services. There are no migrant-specific health services. Jurisdictions have their own

arrangements for catch-up immunisation for refugees, but these may depend on people of refugee origin accessing available refugee health services and identifying themselves to health providers. Models for refugee services around the country were described and discussed at the forum. There is no universal system to identify people accessing health care in the Australian system as being of refugee or migrant origin. As such, health care providers may not be aware of a need for catch-up immunisation.

There are many challenges and barriers in primary care for delivery of catch-up immunisation for refugees and migrants, including lack of identifiers for refugees/migrants when accessing primary care and lack of vaccination records and a whole-of-life immunisation register. The lack of universal funding for catch-up for migrants and refugees who have missed scheduled NIP vaccines is the major barrier to the equitable provision of immunisation collectively described by workshop attendees. For many asylum seekers living in the community, ineligibility for Medicare severely restricts access to primary care and is a further barrier to immunisation. Medicare restrictions also pose financial barriers to immunisation for those on international student, and certain migrant work visas and their children. Models of catch up immunisation in other countries were discussed, including the US model of requiring proof of immunisation off-shore as part of the entry visa requirements. This was not seen as a feasible model for Australia, citing required legislative changes and doubts in the cold chain maintenance of developing countries and refugee camps. This reiterates the importance of assessment of immunisation status post-arrival in Australia.

Many outbreaks of VPDs in Australia, including measles, which is defined as eliminated in this country, are linked to importations through travel. Recent large measles outbreaks in South-Western and Western Sydney have been linked to vulnerable, under-immunised migrant groups, despite no indication of low immunisation coverage on the Australian Childhood Immunisation Register (ACIR) for these geographic areas. This example highlights the risk of importations and subsequent outbreaks through under-immunised vulnerable groups.

It was agreed by workshop attendees that the gap in funding for catch-up immunisation for migrants and refugees leaves Australia vulnerable to ongoing outbreaks of VPDs despite our excellent NIP. Finding a way forward to address this in our Federated system is of national disease control benefit.

Key workshop recommendations

- Articulation of specific gaps in immunisation policy for refugee and migrants, the most important being funding of universal catch-up immunisation.
- Explicitly addressing the immunisation needs of migrants and refugees in the implementation of the National Immunisation Strategy for Australia 2013-2018;
- Funding of vaccines for catch-up immunisation for recently arrived migrants and refugees;
- Renewed advocacy for a whole-of-life immunisation register in Australia, to enable primary care providers to identify people of any age of refugee or migrant background and evaluate their immunisation needs;
- Improvements in the identification of refugee and migrants in hospital, primary health and population health databases to identify risk groups for under-immunisation or infectious diseases and to enable targeted health education and health care delivery;
- Improvements to refugee service coordination and support for immunisation delivery in the primary care sector; and
- Community engagement and education to improve immunisation coverage.

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Introduction

Australia is a nation of migrants with an estimated 27% (6.0 million people) of the resident population born overseas, two thirds from non-English speaking countries, and a further 23% of the Australian population born to migrant parents [1]. In 2010-11, 423,897 people migrated to Australia, including 84,014 permanent migrants. Permanent migrants include those on family visas, skilled worker permanent visas (migrants) and humanitarian entrants (refugees). In 2012, 6,253 refugee and humanitarian visas and 8,062 Onshore Permanent Protection (866) visas were granted [2]. Entrants on the family visa stream may also be migrants from refugee backgrounds [3]. People claiming asylum in Australia are in detention centres, in community detention or living within the community on limited bridging visas while awaiting outcomes of their application for asylum. In 2012, 15,800 claims for asylum were lodged in Australia [4].

Recent migrants and refugees have inadequate immunity to many vaccine-preventable diseases on the Australian Standard Vaccination Schedule [5-10]. Migrant Australians may have lower vaccine coverage, [11] and a higher risk of vaccine-preventable diseases [12 13]. Refugees invariably arrive from countries with disruptions to health infrastructure and immunisation programs. For the majority of migrant source countries, national immunisation programs do not include many of the vaccines on Australian Standard Vaccination Schedule, and coverage is likely to be variable [14]. Even where coverage is adequate, cold chain failures in refugee settings may result in lower vaccine effectiveness.

For many migrants and refugees, there are significant barriers to accessing optimal healthcare including immunisation. Language difficulties, cultural differences in health-seeking behaviours, financial constraints, fragmented health service delivery and a lack of health system literacy contribute to poor health outcomes in migrants and refugees [15 16]. Effective communication between a patient and healthcare provider is required in the provision of optimal health care. In the 2011 census, 49% of migrants arriving prior to 2007 and 67% of recent arrivals spoke a language other than English at home [17]. In the 2011 census, poor or no English language proficiency was reported by 12% of migrants arriving in Australia in the past 10 years [18 19]. This highlights the importance of access to language services are for migrants and refugees. However, evidence suggests that interpreter services are often not engaged [20]. Competing health needs, including mental health issues and other issues regarding resettlement and employment are additional barriers to the provision of healthcare in refugee and asylum seeker populations in particular. Lack of awareness of immunisation needs of migrants and refugees by providers may also be a barrier. In a study of East African migrants settled in Melbourne, only 1 in 5 had received a vaccine since arriving in Australia, despite multiple opportunities during GP or hospital visits [5]. For mobile migrant populations, there may also be missed opportunities to provide National Immunisation Program (NIP) vaccines at the schedule points due to frequent trips overseas and movement between States and Territories during the early settlement period.

The Australian Department of Health supports the United Nations Human Rights Council recommendation that all refugees have a health assessment soon after settlement through its funding of a Refugee Health Assessment (within twelve months of arrival) in the Medical Benefits Schedule (Items 701, 703, 705 and 707) [21]. Medicare guidelines recommend the development of a catch up immunisation schedule. However, there is no systematic process to ensure that all newly arrived refugees are offered a health assessment when they engage with the Australian health system. There are several dedicated refugee health services in Australia, but only a fraction of resettled refugees access these services. The remainder are absorbed into the general health system, and may have difficulty negotiating health services in primary care or the hospital system [22]. In primary care, current general practice software systems do not enable providers to identify patients of refugee-background, and unless this information is actively sought, the refugee origin of the patient, their eligibility for a Refugee Health Assessment and the need for catch up

immunisation may be missed. Primary care and specialist practitioners who see recently arrived migrants and refugees report that the need for catch-up immunisation in these groups is universal [6]. However, immunisation may be often overlooked in managing the complex health needs of these population groups and there may be missed opportunities to complete immunisation schedules.

Assessment of prior immunisation for recent arrivals is complex, with variable documentation of prior immunisation. The Australian Immunisation Handbook recommends commencement of a standard catch-up schedule for migrants and refugees unable to provide valid documentation of vaccination [23]. Few refugees arrive with valid documentation [10] and the proportion of recent migrants with valid immunisation records is unknown. The NIP determination made under the *National Health Act 1953* provides for eligibility for certain at-risk cohorts and routine childhood vaccines with strict age cut-offs for routine and catch-up vaccination [24]. State and Territory restrictions on eligibility for immunisations generally follow these Commonwealth restrictions but may modify these criteria for some specific at-risk cohorts or age groups. An example of the impact of national eligibility criteria for catch-up vaccination is the lack of provision of HPV vaccine to recently arrived migrants and refugee females aged 14-26 years who miss the school-based program. While the HPV vaccine is recommended for young adults up to 26 years, free catch-up is no longer provided and the cost of HPV vaccination is prohibitive for many for whom it is recommended. Another illustration is that migrant women are less likely than Australian-born women to be immune to varicella and rubella, placing them at risk of infection during pregnancy and a subsequent risk to the fetus [13]. However, funding of catch-up of the measles-mumps-rubella (MMR) and varicella vaccines for adolescents and adults varies by jurisdiction by age and visa class. For asylum seekers living in the community, a further barrier to vaccination is that a proportion are ineligible for Medicare, severely restricting access to primary care services [25]. Restrictions to Medicare are also a barrier to immunisation for other visa classes, including bridging visa, international student visa and certain work visa (such as the 457 visa) holders and their children.

Australia's NIP is one of the worlds most comprehensive and successful publicly funded immunisation programs. However, gaps in coverage and population immunity undermine the success of the entire program. Immunisation coverage on the Australian Childhood Immunisation Register (ACIR) is reported at a jurisdictional and statistical sub-division level [26]. Recent outbreaks of measles have been linked to under-immunised migrant groups in specific small geographic areas, not flagged as areas of low coverage on the ACIR, because the under-immunised people are not within the cohorts captured by the ACIR data [27 28]. Low rates of immunisation in newly arrived migrants and refugees pose a risk to their own health and to the ongoing success of Australia's most costly public health program. With the ongoing risk of importation of infectious diseases, maintenance of high levels of population immunity is required. Therefore, universal access to immunisation, including catch-up, has wider public health benefits for Australia beyond the benefits to the individual. Refugees and migrants are at greater risk of under-immunisation than Australian-born residents. They are also at increased risk of preventable infectious diseases during return travel to their countries of origin. Failure to address immunisation gaps in these vulnerable groups will lead to ongoing risk of outbreaks of infectious diseases. With increasing numbers of humanitarian entrants to Australia, it is crucial that barriers to immunisation for this sub-set of migrants are addressed.

Key recommendations

During the workshop, key issues identified included policy gaps impeding access to funded vaccines for migrants and refugees, ongoing issues related to the provision of care, identifying and documenting vaccination status by migrant and or refugee status, and the need to monitor surveillance data to identify high risk groups. Several potential solutions were put forward by panel members and workshop participants, as summarised below.

1. Whole-of-life immunisation register or health record

The Australian Childhood Immunisation Register (ACIR) is an important resource for the identification of immunisation status of children aged <7 years and monitoring coverage of vaccines on the NIP. Difficulties in assessing prior immunity and previous immunisations are major barriers to the delivery of immunisations in primary care for migrants and refugees aged over 7 years. These barriers are not limited to migrants and refugees and have been identified as a major barrier for a number of risk groups, including assessing NIP vaccines for adolescents and the elderly, and vaccines for travellers and those at occupational risk. However, with the additional barriers of poor prior documentation and cultural and language differences, migrant and refugee groups are at an additional disadvantage in the identification of immunisation needs.

A universal and functional tool for recording past immunisations is essential for the efficient provision of catch-up immunisations. The absence of a whole-of-life immunisation register has been described as a public health void in Australia [29]. **A key recommendation arising from this workshop is the expansion of the Australian Childhood Immunisation Register (ACIR) to all age groups. A whole-of-life immunisation register should have the capacity to include registration of previous, verified immunisation records including those from previous countries of residence.** A whole-of-life immunisation register has the potential to identify under-immunised migrants and refugees, to link coverage and disease surveillance data and enumerate differentials in risk, to improve immunisation coverage, reduce missed opportunities for immunisation, and reduce vaccine wastage from over-vaccination.

In the absence of a whole-of-life immunisation register, estimates of population immunisation coverage rely on population surveys and are generally limited to estimates of funded programs such as elderly influenza and pneumococcal programs in Australia, which do not collect data on refugee or migrant status. Recent outbreaks in migrant groups of vaccine-preventable diseases such as measles, considered eliminated in Australia, highlight the importance of identifying under-immunisation in at-risk groups which may not be reflected in historical geographic coverage data from the ACIR.

The Australian Government Department of Health (DoH) has previously investigated the feasibility and rationale for the expansion of the ACIR to all age groups. Despite ongoing endorsement of a whole-of-life immunisation register by public health advocacy groups [30] and academia [29], expansion of the ACIR has not yet occurred. Consumer consultation identified privacy, record ownership and accountability as key issues in the establishment of a whole-of-life immunisation register [31]. DoH has recently implemented a personally controlled e-Health record system which requires opt-in registration by the user to activate the account. This e-Health record allows data from the ACIR to be available in the eHealth record, if requested. However, there is no dedicated field to record immunisations not reported to ACIR (i.e. for those received after the age of 7 years). There are a number of impediments to the use of the current eHealth record in recording and monitoring a patient's immunisations. A patient's immunisations records can be uploaded by the patient's primary general practitioner into a Shared Health Summary together with other clinical

information from the patient's clinical record. Registration and navigation of the eHealth record requires the patient to have an understanding of the Australian health system and adequate health literacy as well as IT literacy to be able to consent to the establishment of an eHealth record. This is a barrier for recent arrivals. Continuity of care between healthcare providers requires providers to access the eHealth record. If a provider who is not the patient's primary provider provides an immunisation, then this vaccination would only be recorded in a clinical encounter document and would not be readily available in the health summary unless this information was later extracted and then uploaded as another summary. Immunisation data gathered in the eHealth record is therefore not an adequate substitute for a whole-of-life immunisation register without significant amendments to the current eHealth record. In the absence of an eHealth record, healthcare providers may record details of the vaccines administered on a personal immunisation card held by the patient, as well in the practice-based patient record. This information may not be readily available to subsequent practitioners. Immunisation records may be misplaced or not available when required. Neither the current iteration of the eHealth record, nor other practice and paper-based systems are sufficient to readily enable the identification of prior immunisation records of migrants and refugees. However, in the absence of a whole-of-life immunisation register, **a recommendation arising from the workshop was the inclusion of a separate immunisation section that can be completed by any provider in future iterations of the eHealth record.**

2. National Immunisation Strategy

Explicitly stating migrant and refugee immunisation addresses an important gap in national communicable disease control and represents good public health practice. Catch-up immunisation is an important component of a strong and comprehensive immunisation program, and the universal catch-up immunisation for newly settled migrants and refugees is a gap in Australia's national immunisation policy. Recommendations and funding for catch-up immunisation of recent migrants and refugees provides an opportunity to target the large, culturally and linguistic diverse populations that are particularly vulnerable to under-immunisation. Immunisation providers are required to have a comprehensive understanding of the eligibility rules for access to free or subsidised vaccines on the NIP and PBS and age-groups eligible for funded catch-up. Jurisdictions differ in their age cut-offs in eligibility for funded NIP vaccines. These jurisdictional differences in eligibility by vaccine and visa class add complexity and act as a barrier to the provision of catch-up immunisation.

The newly endorsed National Immunisation Strategy for Australia 2013-2018, co-ordinated by the National Immunisation Committee (NIC), broadly supports the objectives of equity of access without financial or geographical barriers and maintaining or improving immunisation coverage for high risk population groups. **A key recommendation arising from this workshop is to explicitly target equity of access for migrant, refugee and asylum seeker groups, in the implementation of the National Immunisation Strategy for Australia.** This includes a national agreement on eligibility and entitlements for age and visa groups for universal immunisation catch-up for all NIP listed vaccines and across all jurisdictions.

National legislation limits the eligibility to NIP funded vaccines. Changes to legislation are based on Pharmaceutical Benefits Advisory committee (PBAC) determinations with input from the Australian Technical Advisory Group on Immunisation (ATAGI). The waiving of the PBAC submission process for new migrants, refugees and asylum seekers was raised at the forum. A key action of the new National Immunisation Strategy is to develop an agreed position on the provision of free catch-up immunisation schedules. **It is recommended that federally funded vaccines should be available for catch-up immunisation for people of refugee or migrant background.** All Australian permanent residents, including

refugees who enter Australia on Permanent Protection Visas, are eligible for NIP and PBS vaccines at the recommended age specific schedule point. However, there is no universal funding of catch-up for people who miss out on scheduled vaccines. Recent arrivals may be outside the age cut-off for catch-up vaccines particularly the school-based programs for HPV and VZV and the hepatitis B and dTpa boosters. Further, people residing in Australia on certain visa types who are not Australian residents may not be eligible for NIP or PBS vaccines. These include those seeking asylum, migrants awaiting permanent residence status (bridging visas), those on student visas, certain work visas and their children.

3. Supporting immunisation delivery for migrants and refugees in primary care

Migrants and refugees are a specific cohort whose access to immunisation needs to be addressed. Approximately 190,000 permanent migrants (skilled and family visa categories) and 15,000 humanitarian entrants per year enter Australia (the number of visas granted under Australia's resettlement program varies per year) [32]. Refugees with humanitarian entrant visas are offered MMR vaccination during voluntary pre-departure health check prior to leaving for Australia. However, universal pre-arrival screening and immunisation requirements for entry into Australia on permanent visas would be challenging and would require legislative changes.. The logistics, legal implications and difficult cold-chain maintenance when delivering immunisations to refugees prior to embarkation (i.e. off-shore) as well as the transfer of immunisation records to settlement jurisdictions was deemed unfeasible by workshop attendees, particularly considering the differences in schedules for the large number of source countries.

On-shore immunisation for refugees upon arrival was deemed the most feasible option by workshop attendees, avoiding unnecessary re-vaccination and ensuring viable vaccines are administered in Australia with an intact cold chain. After arrival in Australia, a health assessment provides the best opportunity for catch-up vaccinations to be offered. Enabling health assessments for all newly arrived refugees requires the development of a national refugee health strategy and guidelines, a process for identifying refugees within the health system and improved provider education in refugee health care. Some newly arrived migrants to Australia in the family visa stream are from refugee-like backgrounds [3] with similar immunisation needs. However, there is no funding for the provision of a migrant health assessment for newly arrived migrants.

The following recommendations to improve the provision of immunisation to recent migrants and refugees in primary care were raised at the forum:

3.1 The provision of national immunisation guidelines for providers

Contributing to the challenges in the provision of immunisation in primary care is the diversity of models of care across the jurisdictions, particularly catch-up recommendations and funding. The Australian Immunisation Handbook includes migrants as a group with special vaccination requirements and supports the targeted catch-up vaccination of migrant and refugee children and adults [23]. However, there is no systematic identification of refugees or migrants when they encounter the Australian health system. Most are absorbed into mainstream health services and may not encounter specialised refugee health services. There are multiple pathways for screening of newly arrived refugees, including dedicated refugee health clinics, hospital clinics and mainstream general practice. These differ by jurisdiction. Workshop participants identified a degree of confusion among providers about whose responsibility it is to ensure catch-up immunisation, particularly for refugees in jurisdictions with dedicated refugee health services.

3.2 Immunisation support to primary care from Medicare Locals and refugee and migrant health services

Providers may not be aware of the health needs of recent migrants, and refugees and may not be aware of refugee health care resources available to them [33]. If refugee or recent migrant status is not flagged at the first encounter, opportunities for immunisation may be missed [15]. Primary care providers need to be able to identify refugees and migrants to facilitate assessment of their immunisation needs. Providing targeted education to providers delivering care to migrants and refugees, including practice nurses and case managers, would enable better continuity of care, assisting in identifying those who are under-immunised, developing catch-up schedules and delivering the required vaccinations in a timely manner. **Additional immunisation support to primary care, with greater involvement of Medicare Locals proposed as a possible solution at the forum.** Medicare Locals are funded to provide immunisation education to the primary care sector and could also support primary care providers in undertaking refugee health assessments.

While the funded Refugee Health Assessment (within twelve months of arrival) in the Medical Benefits Schedule [21] supports the provision of health screening for newly arrived refugees, there is currently no systematic approach to enabling a newly arrived refugee to access a health assessment in all States and Territories. As such, the proportion number of newly arrived refugees accessing these health assessments is unclear. The Medicare item numbers are standard for a number of high risk groups and as such, the number of refugees accessing this service cannot be identified. However, it is known that many recent refugees may not receive screening through primary health services [34 35]. **Workshop attendees were supportive of the need to work with organisations that assist refugees to settle in Australia to support the delivery of catch-up immunisations.** This includes access to the records of immunisations provided in detention and community detention by the Department of Immigration and Border Control or the International Health and Medical Services. However, it was acknowledged that communication and support for primary care providers has improved with the recent formation of the Refugee Health Network of Australia [36]. Provider education is required to improve awareness of the needs of recent migrants and refugees including screening and the importance of opportunistic immunisation. Support for interpreters and improved case worker co-ordination with primary care is needed to provide continuity of care for refugee families and reduce missed opportunities to vaccinate. Case worker co-ordination will assist identification of refugees who have not accessed refugee services and support refugees to initiate contact with a primary care provider.

3.3 Development of an online whole-of-life catch-up immunisation calculator

Determining prior immunisations and the need for catch-up for those not eligible for the ACIR is time-consuming and difficult for healthcare providers. This is compounded by refugees and migrants accessing multiple health providers. The WHO tool summarising country profiles of vaccines on national immunisation programs and reported coverage [14] is useful in determining the need for catch-up. However, it is not widely publicised and workshop participants reported that is not user friendly. In addition, it does not take into account immunisations provided in refugee camps or regional or within-country differences in vaccine coverage. The South Australian Department of Health immunisation calculator is a useful online system for determining catch-up requirements and scheduling these vaccines [37]. However, it is only designed for catch-up of children up to their 7th birthday. **The forum recommends the development of a national whole-of-life catch-up immunisation calculator to facilitate catch-up at any age. This could be a modification of the South Australian calculator.**

3.4 Provider and patient reminder systems

A number of successful models for practice and patient reminder systems were described at the forum, including SMS reminders to families and using provider recall systems. **A review of optimal models of provider care was recommended.**

3.5 Improvements to provider software

The recording of migration or refugee status in currently available provider software is limited. **The forum recommends the development of additional fields within provider software to record migration status with a minimum dataset to include country of birth, year of arrival in Australia, language spoken and interpreter requirements.**

3.6 Serological testing for immunity to vaccine-preventable diseases

In an effort to limit the number of vaccines provided in catch-up, providers may opt to first perform serological testing. This results in additional costs to the patient and to the health system. The Australian Immunisation Handbook does not routinely recommend serological testing [23]. However, serological testing may be appropriate for some antigens [38]. Hepatitis B is an important example and the inclusion of hepatitis B screening prior to vaccination has the additional benefit of identifying those with chronic hepatitis B as well as their susceptible intimate partners, household contacts and other close contacts. While it is clear that hepatitis B serology is necessary prior to vaccination for refugees and migrants (and is recommended as part of the refugee health assessment), it is less clear for other vaccine-preventable diseases. This may result in unnecessary testing or lack of testing when appropriate. The additional cost of serology and the additional visit are barriers to vaccination. **The forum recommends national antigen-specific guidelines outlining when serological testing should be considered** to assist with devising comprehensive best practice catch-up for new arrivals available to immunisation providers.

4. Identifying recent migrants and refugees in routine databases and disease surveillance systems

Little is known about the burden of vaccine-preventable diseases by country of birth, and yet many VPDs are imported into Australia through the movement of travellers, particularly travellers of migrant origin. **The forum recommends the inclusion of the minimum dataset as recommended above for primary care records and routine health system records, including disease surveillance records, the Australian Childhood Immunisation Register (ACIR), hospital records and death records, to enable the assessment of migration-related risk factors in the burden of vaccine preventable diseases in the Australian population.** Recommended variables to be collected include country of birth, year of arrival and language spoken. Year of arrival and country of birth have been used to approximate identification of those from refugee backgrounds [39]. The inclusion of these variables will provide an evidence-base for the provision of immunisation recommendations for migrant and refugee populations in Australia, including the potential health benefit gained from targeting under-immunised groups. It will allow longitudinal research and evaluation of immunisation coverage in specific groups and improve health service responsiveness for migrant and refugee groups such as responding to an outbreak of measles identified in specific population groups.

5. Community engagement and education

Anecdotally, opposition to vaccination in recent migrant groups is low. However, cultural differences in health-seeking behaviour and attitudes to preventative healthcare may result in a lack of knowledge of the importance of immunisation. Lack of awareness of the Australian health system, including rights to healthcare and the services provided under Medicare, are barriers to accessing services [15]. Refugees report language barriers, lack of interpreters and a lack of information in their own language as key barriers to healthcare utilisation [35]. Enabling and empowering migrant and refugee communities to navigate Australia's healthcare system and identify when they should attend for scheduled vaccines, will improve immunisation coverage. **Further research was recommended to identify barriers to healthcare access and immunisation in migrant and refugee communities and to develop culturally appropriate education and appropriate, accessible immunisation services.**

Presentation Summaries - First session - Immunisation issues for migrant and refugee groups

Immunisation issues among refugee and asylum seeker children, adolescents and adults - Dr Mitchell Smith

Summary

- Australia's Humanitarian Migration Program is increasingly complex and the demographics of humanitarian entrants are changing;
- Pre-departure health screening, including MMR vaccination, is voluntary. Catch-up immunisation is not a requirement of entry to Australia;
- People of refugee background are at risk of inadequate immunisation;
- Barriers to catch-up immunisations to refugees and asylum seekers include issues of access, documentation, lack of monovalent vaccines, and cultural challenges; and
- Jurisdictional differences in refugee and migrant services and eligibility for funded catch-up complicate the provision of immunisation to these groups.

Background

- Australia's Humanitarian Migration Program is increasingly complex with up to 20,000 visas processed per year. Those processed through off-shore resettlement programs arrive with permanent visas and have access to all health services available to Australian residents. Those who apply for asylum on-shore have varied access to health services, depending on their setting and visa class. As at 31 May 2013 approximately 12,000 asylum seekers were in immigration detention, the majority classified as irregular maritime arrivals. Other asylum seekers are located in the community on bridging visas. Demographics of Australia's refugee program are changing with fewer refugees from Africa now, while numbers from Asia and the Middle East have not changed significantly in recent years.
- Migrants and refugees are required to have a medical exam as part of the process of visa application to come to Australia. MMR vaccine is provided to offshore Humanitarian entrants aged 9 months to 54 years of age prior to departure for Australia as part of the voluntary pre-departure health check. Catch-up immunisation is not required for permanent migration to Australia.
- Immunisation services (including catch-up immunisation for on-shore arrivals processed in detention centres) are provided by the International Health and Medical Services (IHMS) according to the Australian schedule. Purportedly, data for children under 7 years of age are given to ACIR and summary data for all ages are provided to the Immigration Health Advisory Group (IHAG) (*note - disbanded in December 2013*). Immunisation services including catch-up immunisation for on-shore arrivals in community detention are provided by general practitioners or specialists.
- People of refugee background are at risk of inadequate immunisation. Their countries of origin have different schedules, there is disruption of health services by civil unrest or war and limited access to health care in exile.
- There is documented low immunity for a number of vaccine-preventable diseases in refugees arriving in Australia, including measles, rubella, tetanus, diphtheria and hepatitis B.

Barriers to catch-up immunisations include:

- Competing settlement priorities for refugees after arrival.
- Access to health services, movement between health care providers, and language barriers including in the provision of informed consent.
- Difficulties in identifying refugees in primary care.

- Poor or lack of immunisation records from countries of origin and refugee camps, and often for those received in Australia; date of birth is often missing or incorrect.
- Lack of monovalent vaccine availability, as an alternative, less expensive option.
- Ineligibility and insufficient funding for adolescent and adult catch-up; variation in vaccine availability and eligibility by jurisdiction, for example, in Victoria hepatitis B vaccine is not provided free for catch-up for adolescents and adults.
- Ineligibility for Medicare for some on-shore arrivals living in the community; scarcity of bulk billing providers in some locations for those with Medicare.

Models/access to immunisations for asylum seekers and refugees in Australia include:

- Dedicated refugee/asylum seeker health services.
- Enhanced school-based services such as Intensive English Centres in NSW.
- Dedicated clinics e.g. St Vincent's Hospital NSW provides immunisations for asylum seekers.

Challenges to providing catch-up immunisation to refugees and asylum seekers

- Anecdotally, there is little opposition to vaccination among refugee groups.
- However, migrant groups may not perceive vaccine-preventable diseases as serious [40].
- Use of traditional health care (such as shamans and herbalists) has been associated with perceived barriers to immunisation [41].
- In one study the number of years lived in USA was correlated with the perceived importance of immunisation [41].

Barriers in General Practice for the provision of catch-up immunisation to migrants and refugees – Dr Margaret Kay

Summary

- Systems of primary health care setting and immunisation policy/strategy for migrants and refugees vary across States and Territories;
- There is no national policy to inform migrant and refugee immunisation;
- Under-immunisation is the number one health issue among newly arrived refugees older than 15 years; and
- Major barriers to immunisation for migrants and refugees in primary health care are access and identification of migrants and refugees and insufficient knowledge of providers of the health needs of refugees.

Background

- Most refugee and asylum seekers receive chronic disease focused care. However, under immunisation is the number one health issue among newly arrived refugees over 15 years of age.
- Each State and Territory in Australia has different policies, strategies and pathways of care for migrant and refugee immunisation. School-based immunisation also varies by jurisdiction. There is no national policy.
    - For example: In Queensland, General Practices are active in providing the vaccines while Community Health Centres exist predominantly in Victoria.
    - Funding of vaccines is not appropriately secure with government decisions around such funding varying over time. This is especially true for vaccines for hepatitis B and HPV.
- In some States and Territories, routine health assessments are arranged for newly arrived refugees, including determination of their vaccination status and arrangements for catch up vaccinations. In other States and Territories, this is done on an ad hoc basis in some primary health care settings with no system to facilitate follow up for this population who often move several times during early resettlement.

- Humanitarian entrants (refugees) are granted permanent visas on arrival, they hold green Medicare cards and they can access all Medicare services. In addition, because of their permanent residency status they can access social security entitlements such as health care card to facilitate their access to health services.
- Most asylum seekers who are awaiting outcomes of their claims in the community have access to an interim "blue" Medicare card. They do not have access to a health care card. Visa restrictions may also exclude work rights. The cost of medications can be prohibitive when dispensed as private scripts. Similarly the cost of vaccines can also be prohibitive if they are not available through government funded schemes. This varies in different States and Territories.
- Migrants with work visas may receive work place support, including occupation health. Access to such health services may be intermittent and routine determination of immunisation status is not usually a part of this care, although tetanus prophylaxis may be provided after a workplace accident.
- The International Health and Medical Service (IHMS) provides immunisation to asylum seekers in detention centres. The documentation of these immunisations is difficult for other providers to access after the asylum seeker is released into the community. Without these records, the Australian Immunisation Handbook recommends that all vaccinations be given and it is possible for this population to be over-vaccinated.
- Once in the community, the mobility of asylum seeker populations can make it very difficult to trace and complete catch-up schedules initiated in detention centres. In this situation, immunisation can remain incomplete.

Primary Health Care Barriers:

- Barriers impeding access to immunisation services have been documented and include poor health system literacy (not knowing where to go) and language barriers, particularly with many reminders provided only in English. Health literacy can also be a barrier, however many refugees are well aware of the benefits of vaccination.
- Refugees don't necessarily perceive the Australian health system as a benevolent institution. It can be challenging to establish trust even in a primary health care centre where the refugee many encounter multiple people involved in their care including administrators, nurses and doctors. All personnel at the frontline of service delivery need access to training in culturally sensitive care.
- Refugees and migrants may have difficulty accessing health centres for immunisation catch-up. Costs include the financial cost of travel as well as those of the vaccine if they are not available through the NIP. Education courses and other commitments may be prioritised over their immunisations.
- Administrative staff play an important role in communicating with individual refugees, including coordinating appointments. General Practices require the support of interpreter services to enable communication with non-English speaking refugees and migrants. Language barriers also need to be considered when developing educational resources. Many refugees cannot read the more common languages that resources are available in. Many refugees have poor literacy and community information about vaccinations may be better provided through other health promotion tools such as 'talking posters'.
- The software packages currently used by General Practitioners such as 'Medical Director' do not have data fields for recording language spoken, country of birth and year of arrival so such data cannot be collected routinely. Similarly the current Personal Electronic Health Record does not have data fields to capture this information which is essential for the delivery of care to refugees and essential for gathering important demographic data about refugee health, including immunisation status for different communities.
- There is a need to follow up with patients who return to their countries of origin the visit friends and relatives. Many migrants and people of refugee background do not seek health information before leaving Australia because they are going to a country they have previously lived in.
- Immunisation service providers may only have basic knowledge of the health needs of refugees and the necessary information is difficult for health providers to access. GPs may not be aware of how

they can access basic information about providing health care to refugees. For example, many providers are not aware that refugees usually have access to Medicare and can be bulk billed.
- Settlement support case workers are not *health* case workers and often have limited health literacy (and health system literacy) themselves and this makes it difficult for them to facilitate the refugee's access to health care.
- The process of procuring funded vaccines for refugees varies in different states. In Qld, this process is complex, especially for first time users. This increases the barriers for the delivery of opportunistic immunisation if the practice is not able to ensure that some vaccines are available in the fridge for this purpose.
- Developing catch-up immunisation schedules for a particular child can be challenging: it is difficult to determine when and what vaccines should be given for catch-up especially for children aged 7 years and older. Primary health care providers, including practice nurses, need training in developing catch up schedules to ensure that the appropriate catch-up vaccines are given.
- Gender concordance and religious/cultural beliefs against immunisation may be an issue for some communities and these need to be better understood to enable better compliance with vaccinations. This is especially true for HPV vaccinations.

Recommended solutions:

<u>Solutions – primary care</u>

- If there are no records, migrants or refugees should be given catch-up immunisation, rather than requiring proof of lack of immunity through negative serology prior to vaccination. Common sense can help avoid revaccination; some parents know exactly what vaccines their children have had and a clear history can provide an adequate oral record of previous vaccinations given.
- Providing health education to refugees on arrival can enhance access to vaccinations. This should include education about the health system and education to enhance health literacy. Reinforcing this education in English classes provided to refugees can also help.
- Better systems to identify migrants and people of refugee background in the Australian healthcare system and to document the health needs, including immunisation requirements, of migrants and refugees.
- Refugee health assessments are currently Medicare funded if provided within twelve months of arrival. Primary health care providers need to be educated about how to provide these services and to ensure that immunisation assessment and catch up vaccinations are included in these assessments.
- Educating health care providers of the unique health needs of migrants and refugees, including their risk of being under-immunised.
- Funding a *health* case worker for newly arriving refugees/asylum seekers would facilitate access to an early health assessment as well as better access to catch-up vaccinations. The *health* case worker could help to ensure successful transition to a GP for continuing care.
- Training should be readily available to health providers to ensure they are able to effectively develop a catch-up immunisation schedule for all refugees.
- Training should be readily available to enable health providers to provide a high quality refugee health assessment for recently arrived refugees which would include and assessment of required vaccinations and arrangements in the management plan to provide these.
- Training should be available for health providers to enable the delivery of culturally sensitive care with the purpose of reducing the barriers to access to immunisation services.

<u>Solutions - system</u>

- States and Territories to ensure secure funding for all vaccines required to provide catch up vaccinations for all refugees and asylum seekers. This includes funding of HPV vaccine.
- A whole-of-life immunisation register would enable all providers to readily check on a person's immunisation status. While this is currently available for young children through the ACIR, it is appropriate for such a record to exist for everyone in Australia, including refugees and asylum seekers. If this document is available then vaccines provided to refugees in detention who come to

live in the Australian community could be recorded in this register and would be readily available to all health providers, avoiding the risks of under-vaccination and the costs of over-vaccination. The current personally controlled electronic health record (PCEHR) does not fulfil this purpose for a number of reasons, but it does merge with the ACIR and could merge in a similar fashion with such an immunisation record.

- Ensure adequate interpreter services are available for consultations with people who speak a language other than English.
- Many school programs require parental consent which is requested on a form that is sent home with the child. If the parents cannot read English, then they are often unaware that such a form has been sent home because they cannot read the school newsletters and are may be likely to communicate with other members of the school community. Even if they do receive the form, they may not be able to read this form and complete this form to enable the child to receive the vaccinations. Each school should ensure that a process is in place to ensure that children from families who speak a language other than English still have access to these vaccinations.
- While the cost of the vaccines may appear considerable, the cost of not vaccinating is even higher. The potential spread and the cost to the community of immunisation-preventable disease has been clearly demonstrated recently with many pockets of measles outbreaks.

Health needs of refugee children accessing comprehensive refugee health services health needs of refugee health services - Professor David Isaacs

Summary:

- Health Assessment for Refugee Kids clinic (HARK) at The Children's Hospital at Westmead provides screening, immunisation and treatment of infectious diseases;
- There is poor documentation of refugee children immunisation history both offshore and onshore; and
- Children with low immunity should be identified, monitored and receive full immunisation.

Health Assessment for Refugee Kids clinic (HARK) at Westmead hospital.

- The clinic provides health service to both refugees and asylum seekers. The number of patients has been increasing in recent years.
- Health screening is routinely provided for TB, Schistosomiasis, HIV, syphilis, Strongyloides and treatment of various infectious diseases for refugee children. The clinic offers some immunisation services, however children are referred to GPs for immunisation.
- The clinic increasingly uses secondary referrals such as the NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS).

Immunisation status of refugee children

- Records are often not available or not in English. In depth history taking is the most effective method of understanding refugee children's immunisation status.
- Serological testing is not usually performed for routine childhood immunisations as it is often not a good measure of protection (except for hepatitis B).
- Screening for hepatitis B chronic infection is performed, with chronic carriage commonly identified. The clinic provides follow-up for these children and gastroenterology referrals if symptomatic.
- There is need for clear documentation and communication between general practitioners and refugee clinics health workers regarding immunisations received.

Other health care needs

- Many refugee children have special immunisation needs.
- Refugee children with haemoglobinopathies, particularly children with sickle cell disease and children with thalassemia need to be immunised against capsulated organisms such as pneumococcus, Hib and meningitis. The risk of invasive pneumococcal disease is 600 times higher for a child with sickle cell disease compared to a normal child. It is important for these children to be identified and fully immunised.

- Some of refugee children attending the clinic have complex disability, such as cerebral palsy, neurological disorders, congenital heart disease or Down syndrome. The influenza vaccine should be provided to these children annually.

Refugee repatriation and immunisation catch-up: closing gap - Dr Mohamud Sheikh

Summary:

- Disease outbreaks are common issues in refugee camps due to inadequate sanitation, clean water or disease surveillance and poor access to vaccines; and
- High vaccine coverage and herd immunity is difficult to achieve in refugee camps due to constant movements, volatility and resettlement of refugees.

Current situation in refugee camps

- Outbreaks of infectious diseases are common in refugee camps. In recent months, outbreaks of measles, pertussis, polio, hepatitis B and rotavirus have been reported in refugee camps in Kenya.
- Settlements are outside designated residential areas and there is often no clean water supply or functioning sanitation systems.
- Close proximity of housing (overpopulated camps) results in an inadequate 'epidemiological barrier' that would have otherwise helped slow the rapid spread of infectious diseases.
- Failure of disease surveillance and control results in rapid spread of infectious diseases.
- Vaccination is inadequate, with many children receiving no vaccines or not completing immunisation schedules.

Challenges:

- Low literacy and socio-economic status, religious beliefs and young age are common barriers to adequate immunisation programs in refugee camps.
- Cold-chain is challenging during transportation of vaccines to remote places in arid conditions
- Achieving herd immunity is almost impossible when the population is mobile during resettlement and repatriation, often with frequent unvaccinated new arrivals.
- Lack of basic health infrastructure, resulting from internal conflicts, civil unrest and community opposition, affects delivery and distribution of vaccines in camps.
- Interagency collaborations – NGO's and MOH, is vital in order to communicate critical vaccination campaigns, especially pre-outbreak vaccination campaigns.
- Lack of viable vaccination records upon resettlement in new host nations.
- Vaccines potency in refugee camps, although regulated by host nations' authorities, may be hard to ascertain.

Recommendations:

- Screening for new arrivals at resettlement and strengthening screening of new arrivals at the camp level.
- Ensure that all children under five years old receive the full EPI immunisation schedule.
- Linking new arrivals to existing facilities for continuity of service and monitoring after settlement.
- Strengthening cross-border surveillance through stronger inter-agencies collaboration.
- Better communication between refugee agencies and resettlement services.
- Careful settlement planning of the refugee camps will help ensure important epidemiological barrier is in place, especially during outbreaks of infectious diseases. This can be achieved through integrating public health planning during the initial phase of camp planning.

Under-immunisation in migrant communities – the measles outbreak in South Western Sydney in 2012 - Dr Stephen Conaty [27]

Summary

- A measles outbreak occurred in South Western and Western Sydney between April and November 2012 with 168 confirmed cases;
- 36 (21.4%) of cases were of Pacific Island descent;
- 36 cases (21.4%) were health care acquired; and
- Delay in diagnosis and multiple health care presentations provided challenges.

- The outbreak began in April 2012. The source case was a 25 year old male returning from Thailand. He presented twice to a GP and to the Emergency Department, infecting one individual at ED and two others elsewhere. The local government areas of Campbelltown, Camden and Liverpool had the highest reported rates.

Case characteristics

- A high proportion of cases were children aged <1 year (n=36, 21.4%) and 10-19 years (n=29, 17.3%). Cases were also common in those aged 1-4 years and 30-34 years.
- The majority of cases were unimmunised or were unsure of their immunisation status.
- 36 cases (21.4%) were of Pacific Island descent, predominantly (29) of Samoan descent.
- Delay in diagnosis (median 6 days from symptom onset to notification) and multiple health care presentations were a major issue in the control of the outbreak.
- 21% of cases were health care acquired, in hospital emergency departments or general practice.

Specific actions to the community:

- MMR clinics were set up at 3 high schools in South Western Sydney with high enrolments of students of Pacific Island descent (note some of the initial cases in South Western Sydney were in a high school). About 50% of students were vaccinated - many without a clear history of measles immunisation.
- Samoan church groups were visited to talk to communities about measles.
- Preventive health materials in Samoan and Tongan were distributed.

Notes about Samoan community in Australia

- New Zealanders are not counted under the migration intake and many New Zealanders may be of Samoan decent due to the special intake quotas and sizeable Samoan minority in New Zealand.
- In the 2011 census 7,877 report Samoan birth in NSW (but there are many others of New Zealand or Australian birth who may identify with the Samoan community). In Sydney, Campbelltown and Blacktown have sizable Samoan communities.

Hepatitis B - from targeted screening and immunisation of migrant mothers to universal immunisation in Australia - Associate Professor Tilman Ruff

Summary

- Early immunisation against hepatitis B has health and economic benefits;
- In absence of immunisation, 2.2% of the annual birth cohort of West Pacific Region would be expected to die of hepatitis B related causes; and
- Best safety net for high risk infants is universal birth dose with a second dose within 2 months.

Hepatitis B

- Hepatitis B is the most contagious common blood borne viral disease, with 360 million cases globally.
- Chronic hepatitis B can cause chronic hepatitis, cirrhosis and accounts for up to 80% of liver cancer.
- Most infections asymptomatic are unrecognised until a complication develops, complications may develop after decades.
- Preventing hepatitis B is not so much a 'child survival' issue but primarily preventing premature adult death. Hepatitis B vaccine is the only infant vaccine where the timing of the first dose is critical.

Hepatitis B burden of disease in Western Pacific Region

- In absence of immunisation, 2.2% of annual birth cohort of West Pacific Region would be expected to die of hepatitis B related causes.
- Hepatitis B currently causes more deaths than any other disease targeted by universal immunisation, except pneumococcal disease. Neonates who acquire hepatitis B have the highest risk of chronic infection.

Hepatitis B immunisation in Australia:

- In 1983, NHMRC guidelines for hepatitis B immunisation were targeted to high risk groups such as infants of carrier mothers.
- In 1984, universal immunisation was proposed by the Director of Communicable Diseases Branch, Australian Department of Health and Ageing.
- In 2000, universal infant immunisation commenced, including a birth dose.
- Early success stories from Taiwan, Malaysia and Singapore demonstrate universal hepatitis B immunisation has been effective in significantly reducing liver cancer.

Australian lessons

- Screening of pregnant women, identification and immunisation of infants born to carrier mothers is difficult and often unreliable. Selective immunisation is logistically difficult to achieve.
- The best safety net for high risk infants is a universal birth dose with a second dose within 2 months.

WHO priorities for Hepatitis B immunisation

- Universal infant immunisation.
- Prevention of peri-natal transmission.
- Catch-up immunisation for older age groups.

Biographies

Professor Raina MacIntyre
Raina MacIntyre is Professor of Infectious Diseases Epidemiology and Head of the School of Public Health and Community Medicine at UNSW. She is an international leader in emerging infections and vaccinology, and is involved in numerous influenza and respiratory virus research studies that directly inform national and international policy and practice in communicable disease control. Professor MacIntyre is the lead investigator on this CRE with particular interests in the research themes covering frail elderly vaccinology, travel health and health care worker research.

Dr Anita Heywood
Dr Anita Heywood is an infectious disease epidemiologist and lecturer at School of Public Health and Community Medicine, UNSW Australia. Her research focuses on knowledge, attitudes and behaviours of international travellers to infectious disease risks and preventative health practices, particularly migrant travellers visiting friends and relatives (VFR) and their risk of vaccine-preventable diseases. Her additional research interests include the analysis of routine surveillance data to evaluate vaccine programs and evidence-based vaccination policy and practice.

Speaker and panel member biographies

Ms Sue Campbell-Lloyd
Ms Sue Campbell-Lloyd AM is the Immunisation Manager in NSW and is also a member of the National Immunisation Committee (NIC) and the Advisory Committee on the Safety of Vaccines (ACSOV). Ms Campbell-Lloyd has actively participated in the implementation and monitoring of a number of vaccines provided under the National Immunisation Program. She is also a former member of the Australian Technical Advisory Group on Immunisation (ATAGI). Ms Campbell-Lloyd provides expertise in the field of vaccine program implementation.

Dr Stephen Conaty
Dr Stephen Conaty is a public health physician. From 2007 – 2012 he was Public Health Unit Director at Sydney and South Western Sydney Local Health Districts. In 2012 the largest measles outbreak since 1997 occurred in NSW with the majority of cases located in south western Sydney. He is currently Medical Advisor, Environmental Health Branch, Health Protection NSW.

Dr Paul Douglas
Dr Paul Douglas is the Chief Medical Officer and Global Manager Health for the Department of Immigration and Border Protection. He graduated from the UNSW, has a Master degree in Health Administration as well as Fellowship with RACMA. His background includes rural general practice as well as remote Papua New Guinea. Before taking on his current role he was the Director of Population Health, Planning and Performance in two NSW area health services. His role as CMO entails senior leadership on all policy and operational health matters across the immigration portfolio. Amongst a variety groups he is a member of significance is a membership of the National TB Advisory Committee and Chair of the Intergovernmental Immigration Health and Refugee Working Group.

Professor David Isaacs
David was born in London and has an identical twin brother, Stephen, who is a child psychiatrist. They went to different schools and once swapped schools for a day. His mother was also a child psychiatrist and his father, Alick, discovered interferon in 1957.

David is Clinical Professor in Paediatric Infectious Diseases at the Children's Hospital at Westmead and the University of Sydney. He is also a general paediatrician who does a monthly clinic in Bourke and he has trained in bio-ethics. In 2004, David started the first Refugee Clinic at the Children's Hospital at Westmead and is an advocate for children who have suffered or are suffering due to their asylum seeker or refugee status.

Dr Margaret Kay
Dr Margaret Kay is senior lecturer at Discipline of General Practice, School of Medicine, The University of Queensland. Dr Kay's clinical and research areas of interest include doctors' health and refugee health. She is a Fellow of the RACGP, Hons Secretary of Doctors' Health Advisory Service Qld and was the inaugral chair of Refugee Health Network of Australia (RHeaNA). She is also a member of the Australasian Doctors' Health Network, a member of RACGP Refugee Health Special Interest Group (RHSIG) and member of the Australian Medical Association (Qld)

Dr Georgie Paxton
Dr Georgie Paxton is the Head of Immigrant Health at the Royal Children's Hospital. She has been involved in developing clinical guidelines, education resources and policy in paediatric immigrant health in Victoria. Her research/policy interests include health literacy, the health status of refugee children and young people, learning issues in non-English speaking students and vitamin D. She is the lead author of the Victorian Government's Refugee Status Report, published in 2011, and Chair of the Victorian Refugee Network.

Professor Tilman Ruff
Associate Professor Tilman Ruff AM is an infectious diseases and public health physician at the Nossal Institute for Global Health, University of Melbourne, and international medical advisor for Australian Red Cross. He has worked in travel medicine, hepatitis B control, and maternal and child health in Indonesia and Pacific Island countries, for a major vaccine manufacturer, and serves on the Expert Resource Panel for Hepatitis B Control for WHO's Western Pacific Region. He is Co-President of International Physicians for the Prevention of Nuclear War (Nobel Peace Prize 1985) and a founder and Co-Chair of the International Campaign to Abolish Nuclear Weapons (ICAN

Dr Mohamud Sheikh
Dr Mohamud Sheikh is a Senior Public Health Research Fellow at the School of Public Health and Community Medicine, UNSW and an international public health expert. Graduated from the University of Sydney with double master degrees and a doctorate, he has established himself as a young leader in international public health intervention and research to improve the health care of immigrants and refugees. His research interest is in global health, infectious and vaccine preventable diseases, migrant and refugee health. He has extensive links and networks with key refugee and migrant groups within Australia and internationally

Dr Mitchell Smith
Dr Mitchell Smith is a public health physician and Director of the NSW Refugee Health Service, based in Liverpool Sydney, since its inception in 1999. His roles include policy advice and advocacy for health care

for refugees at local, state and national levels. He is currently Chair of the Refugee Health Network of Australia.

Dr Vicky Sheppeard
Vicky is a Public Health Physician who has been working for NSW Health since 1999. Vicky commenced as Director, Communicable Diseases Branch, Health Protection NSW in May this year. Prior to that she managed health protection services in the Nepean Blue Mountains and Western Sydney Local Health Districts from 2008 to 2013.

Vicky is also a Senior Clinical Lecturer in the School of Public Health at the University of Sydney and Chair of the NSW Regional Committee of the Australian Faculty of Public Health Medicine

Dr Brett Sutton
Dr Brett Sutton has 20 years experience as a doctor. Since 2003 he has attained a Masters of Public Health and Tropical Medicine and practised Public Health in variety of country contexts. The focus of his international work has primarily been in communicable disease surveillance and control in Afghanistan, Ethiopia and Timor-Leste's. In the Victorian Department of Health he has recently been acting manager for the Communicable Disease Prevention and Control Section and helped shape policy and procedures for notifiable diseases and other Public Health issues. Dr Sutton is currently chair of Victoria's Salmonella working group and well as having representation on the Hepatitis B pathology reporting project, the CDI editorial advisory board. He has been the Victorian representative of CDNA since 2012.

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