



A joint venture between The University of Melbourne and The Royal Melbourne Hospital

## 2016-2017 Annual Report

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**WHO Collaborating Centre  
for Viral Hepatitis**

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## Director's report

It is a pleasure to present the 2016/2017 Annual Report of the WHO Collaborating Centre for Viral Hepatitis (the Centre), Victorian Infectious Diseases Reference Laboratory (VIDRL) at The Peter Doherty Institute for Infection and Immunity (Doherty Institute).

In our second year as a WHO Collaborating Centre, we have significantly extended the range of our work in partnership with the WHO in moving towards viral hepatitis elimination in our region and globally. Activities of note have included participation in the Regional Forum for WHO Collaborating Centres in Manila last November; further concrete steps towards the creation of a Regional Viral Hepatitis Laboratory Network in partnership with other WHO Collaborating Centres; and ongoing support for developing both laboratory diagnostic capacity and surveillance, monitoring and evaluation frameworks for viral hepatitis in our region and globally.

In addition to working with WHO colleagues in Geneva, Manila and other regional offices, and with partners at other collaborating centres, we have been honoured to be invited by member states to visit, learn from experts and stakeholders in country, and jointly develop strategies to address viral hepatitis locally and regionally.

A particular highlight was the first integrated laboratory and surveillance workshop to be held in our Region, in Ulaanbaatar, Mongolia in April 2017; the energy, commitment and expertise of all involved in the response made a profound impression on all Centre staff in attendance. We look forward to continuing to support our colleagues in the Western Pacific Regional Office of the WHO as these workshops move to other member states in our Region.

I would like to acknowledge the support of both VIDRL and the Doherty Institute for the work of the Collaborating Centre. Without substantial contributions of time, effort and resources from units both within and external to the Centre, our achievements to date would not have been possible.

In other developments, we are about to launch the WHO Collaborating Centre for Viral Hepatitis microsite within the Doherty Institute website; this will be an exciting opportunity allow all those interested to engage with our activities and plans into the

future. We are also looking forward to participating in the 2<sup>nd</sup> World Hepatitis Summit, in São Paulo, Brazil in November 2017; the model of community organisations and WHO working together with member states to achieve global elimination of viral hepatitis by 2030 is both exciting and inspiring.

A handwritten signature in black ink, appearing to read 'Ben Cowie', with a stylized, flowing script.

Associate Professor Benjamin Cowie

Director

## About the Centre

The WHO Collaborating Centre for Viral Hepatitis (the Centre), Victorian Infectious Diseases Reference Laboratory (VIDRL), Royal Melbourne Hospital at The Peter Doherty Institute for Infection and Immunity (Doherty Institute) was designated in June 2015 as one of only five Collaborating Centres for Viral Hepatitis around the world. The Centre works across a range of activities including surveillance, treatment and prevention initiatives, and training and regional capacity building activities. In addition, it also develops policy and assists the WHO to implement the WHO Global Health Sector Strategy on Viral Hepatitis. In conjunction with the designation as a WHO Regional Reference Laboratory for Viral Hepatitis in 2010, the Centre assists the WHO and Western Pacific Regional Office for the WHO (WPRO) with advice and support for approaches to the prevention and management of viral hepatitis, and provides reference testing for samples collected as part of national serosurveys conducted across the Western Pacific Region. The Centre also enables VIDRL and the Doherty Institute to extend the scope and geographic reach of their research, training and regional capacity building activities related to viral hepatitis in collaboration with the WHO, other WHO Collaborating Centres and research partners to support the global agenda for viral hepatitis control.

## About VIDRL

VIDRL is a leading Australian infectious diseases and public health reference laboratory located in Melbourne, Victoria. VIDRL is a department of Royal Melbourne Hospital at the Doherty Institute. VIDRL provides the Victorian Department of Health and Human Services with virology, mycobacterial and other public health reference laboratory services, including support for surveillance, outbreak investigations, reference testing and research. VIDRL also performs diagnostic testing, mainly in virology, for Victorian hospitals. VIDRL has National Reference Laboratory designations to the Australian Commonwealth Department of Health for polio and enteroviruses, measles, viral haemorrhagic fevers and smallpox. In addition to the Collaborating Centre for Viral Hepatitis, VIDRL has WHO Collaborating Centre designations for Reference and Research on Influenza, Mycobacterium ulcerans, and Biosafety together with WHO Regional Reference

Laboratory designations for poliovirus, measles and hepatitis B. VIDRL is also designated as a WHO National Influenza Centre.

## About the Doherty Institute

The Doherty Institute is a world-class institute combining research, teaching, public health and reference laboratory services, diagnostic services and clinical care into infectious diseases and immunity. It was officially opened in September 2014 and is a joint venture between the University of Melbourne and The Royal Melbourne Hospital. The Doherty Institute has a major focus on diseases that pose serious public and global health threats such as HIV, viral hepatitis, influenza, tuberculosis, and drug resistant bacteria. The Doherty's activities are multi-disciplinary and cross-sectoral, placing great emphasis on translational research and improving clinical outcomes. Teams of interdisciplinary scientists, clinicians and epidemiologists collaborate on a wide spectrum of activities - from basic immunology and discovery research, to the development of new vaccines and new preventative and treatment methods, to surveillance and investigation of disease outbreaks.

The Doherty Institute also hosts the secretariat for the International Coalition to Eliminate HBV (ICE-HBV) since its creation in September 2016. ICE-HBV brings together researchers and research stakeholders to support the discovery of a safe, affordable, scalable and effective cure, available to all persons living with chronic hepatitis B including children. ICE-HBV is an international, independent, research-based and patient-centred forum, aiming to coordinate, promote and foster collaborative partnerships working towards a cure for HBV. More information can be found here: [www.ice-hbv.org](http://www.ice-hbv.org)

## Terms of reference

Under its designation as a WHO Collaborating Centre for Viral Hepatitis, the Centre's Terms of Reference (for 2015-2019) are:

1. To support WHO in the implementation of the Framework for Global Action for the Prevention and Control of Viral Hepatitis;

2. To assist WHO in providing technical consultation, support, advice and training in the field of viral hepatitis diagnostics and characterisation;
3. To assist WHO in generating and analysing epidemiological data on viral hepatitis and related complications including liver cancer to guide public health policy and practice; and
4. To support WHO in providing guidance for screening, care and treatment of viral hepatitis, including strategies for minimizing the emergence of antiviral drug resistance.

## **Governance**

The Doherty Institute has created a governance structure that supports integration and fosters collaboration, strong leadership and management, creating a unified organisation. The Centre is based in VIDRL, a unit of the Doherty Institute, which is a joint venture between the University of Melbourne and the Royal Melbourne Hospital. The Centre reports directly through existing Doherty Institute governance structures as well as to the WHO.

In addition, the Centre is guided by an Advisory Group made up of representatives from affected communities, members of peak-community organisations, State and Federal Government, the research community and the health sector. Advisory group representatives have expertise in: Community engagement and advocacy, communicable disease surveillance, lived experience of viral hepatitis, clinical care of people living with viral hepatitis, Aboriginal and Torres Strait Islander health, data linkage/public health/social/epidemiological research, policy development, programmatic/policy responses to cancer, government policy response, education and workforce development, infectious disease modelling, and delivery of health support services to people from culturally and linguistically diverse backgrounds, people who inject drugs and Aboriginal and Torres Strait Islander people. The Advisory Group is guided by its own Terms of Reference (for 2016-2019), to:

1. Inform, advise and support the Centre at the Doherty Institute regarding the conduct of projects relating to viral hepatitis epidemiology;



2. Suggest approaches for translation and dissemination of findings to appropriate stakeholders, including those living with chronic viral hepatitis;
3. Provide guidance regarding how best to measure progress toward the objectives of Victorian, National and WHO Strategies for viral hepatitis; and
4. Provide recommendations around emerging priorities relating to viral hepatitis epidemiology, surveillance and research.

## Contact information

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## WHO reporting requirements

The World Health Organisation (WHO) outlines that Collaborating Centres are required to provide an Annual Progress Review (or Annual Report) on the annual anniversary of delegation as a Collaborating Centre. The Centre was delegated as a Collaborating Centre, effective 1 June 2015. Reporting requirements state that there are four key criteria that must be satisfied in an Annual Report:

- A. A brief description for each activity included in the work plan about progress made during the reporting period; any outputs delivered and results achieved; and any difficulties encountered (if applicable);
- B. A brief description of the collaboration with WHO (e.g. means of communication, frequency of contact, visits) in the context of the work plan activities; and any difficulties encountered (if applicable);
- C. A brief description of any interactions or collaborations with other WHO CCs in the context of the work plan activities (if applicable), including any involvement in a network of WHO CCs (if applicable);
- D. A brief description of any technical, programmatic, advisory or other support received from WHO (if applicable) during the reporting period in the context of the work plan activities.

### A. Work plan activities

At the designation of the Centre, the Doherty Institute committed to undertake six proposed work plan activities in order to satisfy the terms of reference of the Centre. These six activities are listed below, as well as a short description of the progress made over the past year since designation, and the outputs thus far delivered and results achieved.

#### 1. [In consultation with WHO, to play a leading role in the characterisation and classification of hepatitis viruses \(A-E\)](#)

Professor Stephen Locarnini and Professor Scott Bowden led this activity with the aim of identifying and characterising hepatitis virus isolates, with a focus on defining

sources of outbreaks, mutations associated with vaccine escape, and antiviral drug resistance. The expected outcomes of this project were to identify, characterise and genotype samples of hepatitis viruses (A-E) referred to VIDRL for further analysis. This aimed to include the identification and characterisation of HBV and HCV antiviral drug resistance and potential vaccine escape strains for HBV and, in addition, evaluate any polymorphisms associated with increased pathogenesis and specifically liver cancer. A further aim was, where applicable, to investigate the transmission and traceability of putative sources of hepatitis viruses (A-E). This activity builds upon VIDRL's Regional Reference Laboratory (RRL) for Hepatitis B by extending the scope outside the Region, but also including HCV antiviral drug resistance in particular, increasingly relevant as access to Direct Acting Antivirals (DAAs) becomes more common.

Over the past year, the Centre has provided assistance and technical expertise on a number of projects by identifying, characterising and genotyping samples referred to VIDRL for analysis. These main projects include:

- Stephen Locarnini, Kathy Jackson, Margaret Littlejohn, Laura Thomas, Suellen Nicholson, and Scott Bowden, in collaboration with WHO/WPRO and the Kiribati Ministry of Health and Medical Service initiated a two-part project. The project consists of a sero-prevalence survey to determine the current sero-prevalence of hepatitis delta in HBsAg positive patients, and of a pilot study to identify patients mono-infected with HBV who qualify for treatment and to begin the implementation of HBV treatment in Kiribati. As of reporting, stage one is currently being undertaken; The Regional Reference Laboratory at VIDRL has received samples and is currently undertaking the testing phase of the survey.
- Margaret Littlejohn, Kathy Jackson and Scott Bowden have published and presented a range of projects that have assisted with identifying, characterising and genotyping samples that have been referred to VIDRL for analysis, including on, hepatitis delta virus in Australia, molecular epidemiology of hepatitis delta in Oceania, hepatitis A outbreaks in Australia, and phylogeography of hepatitis B virus, sub-genotype c4 in Indigenous Australians.

This progress, and other related activities undertaken by the Centre, has also been documented and disseminated in a number of scientific journals, as listed in the **Communications and Advisory Section** of this report.

2. To work with WHO to provide technical consultation, support, advice and (where required) reagents to strengthen viral hepatitis diagnostic capacity in resource constrained settings, with special reference to rapid and molecular-based diagnostics

Activity 2 was headed by Professor Stephen Locarnini, and sought to provide technical support for sero-surveys and provide laboratory technical support for countries sero-prevalence surveys. This activity utilises VIDRL's existing designation as a Regional Reference Laboratory for Hepatitis B, but also provides support to other WHO Regions as appropriate. The expected outcomes of this project were to provide the best selection and acquisition of the most appropriate test kits, training, sample collection and handling, reporting and management of data and quality assurance for hepatitis research. Furthermore, the Centre aimed to participate in WHO meetings and consultations, with provision of expert advice on laboratory diagnostics in low resource settings.

Over the past year the Centre has successfully provided technical consultation, support and advice on a number of projects, namely:

- Stephen Locarnini was invited and attended the First Meeting of Hepatitis Program Focal Points from High Burden Countries in Asia in Hong Kong in June 2016
- Stephen Locarnini, Kathy Jackson, Margaret Littlejohn, Benjamin Cowie, Laura Thomas, Suellen Nicholson, Scott Bowden and Nicole Romero regularly participated in teleconference meetings with WHO (WPRO) and the Australian National Reference Laboratory to scope, design and plan the implementation/creation of a Regional Laboratory Network for Viral Hepatitis for the Western Pacific Region. As of reporting, Terms of Reference have been formalised and National Workshops have been planned and delivered as an aim of this. This network is ongoing and will include further delivery of

National Workshops as well as the identification of National Reference Laboratories in each country in the region.

- Nicole Allard and Benjamin Cowie have taught and facilitated a number of Healthcare Worker education programs on viral hepatitis testing, management and epidemiology around Australia (including in rural and remote communities).
- Benjamin Cowie, Margaret Littlejohn, Suellen Nicholson, Nicole Romero and Laura Thomas, assisted WHO (WPRO and HQ) and in collaboration with US CDC, Korean CDC and the Australian National Reference Laboratory, in the organisation, facilitation, delivery and rapporteuring of the First National Workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems, which was held in Ulaanbaatar, Mongolia in April 2017. This workshop was planned over a series of months from December 2016 to April 2017.

This progress has been documented and disseminated in a number of scientific journals, as listed in the **Communications and Advisory Section** of this report. Furthermore, the Centre has participated in a number of WHO meetings, consultation and country-missions in order to provide expert advice on laboratory diagnostics in low resource settings. These attendances are also listed in the **Communications and Advisory Section** of this report, with details regarding Centre participation.

### 3. [To train laboratory and public health personnel on behalf of WHO, to enhance the diagnostic capabilities of laboratories involved in the management of people living with viral hepatitis](#)

Director of the Centre, A/Prof Benjamin Cowie and Professor Scott Bowden were responsible for this work plan which, where requested by WHO HQ or WPRO, provided technical support and training for laboratory and public health personnel within Member States. The Centre aimed to provide training, technical support and advice in the area of viral hepatitis diagnostics, through participation in development of guidelines or delivery of specific training courses. The target audiences were laboratory/public health personnel in resource constrained settings, identified by

member states and WHO, with the training required and timing of training also determined in concert with the WHO. Over the past year:

- Nicole Allard and Benjamin Cowie have taught and facilitated a number of Healthcare Worker education programs on viral hepatitis testing, management and epidemiology around Australia (including in rural and remote communities).
- Suellen Nicholson regularly hosted visitors (e.g. Doctors, Registrars and Sexual Health clinic workers) in the Serology Laboratory with the aim of educating them about viral hepatitis serological testing.
- Stephen Locarnini, Kathy Jackson, Margaret Littlejohn, Benjamin Cowie, Laura Thomas, Suellen Nicholson, Scott Bowden and Nicole Romero regularly participated in teleconference meetings with WHO (WPRO) and the NRL to scope, design and plan the implementation/creation of a Regional Laboratory Network for Viral Hepatitis for the Western Pacific Region. As of reporting, Terms of Reference have been formalised and National Workshops have been planned and delivered as an aim of this. This network is ongoing and will include delivery of National Workshops as well as the identification of National Reference Laboratories in each country in the region.
- Benjamin Cowie, Margaret Littlejohn, Suellen Nicholson, Nicole Romero and Laura Thomas, assisted WHO (WPRO and HQ) and in collaboration with US CDC, Korean CDC and the Australian National Reference Laboratory, in the organisation, facilitation, delivery and rapporteuring of the First National workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems, which was held in Ulaanbaatar, Mongolia in April 2017. This workshop was planned over a series of months from December 2016 to April 2017.
- Benjamin Cowie, Margaret Littlejohn, Suellen Nicholson, Nicole Romero and Laura Thomas, assisted WHO (WPRO and HQ) and in collaboration with US CDC, Korean CDC and the Australian National Reference Laboratory, in the organisation of an earmarked National Workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems to be held in Tagaytay, Philippines on 6-8<sup>th</sup> September 2017.

This progress, and other related activities undertaken by the Centre, has been listed in the **Communications and Advisory Section** of this report.

4. To assist WHO in generating and analysing epidemiological data to guide public health policy and practice related to viral hepatitis and related complications including liver cancer, and as required to support Member States in the development of surveillance and monitoring systems relating to viral hepatitis control

Director of the Centre, A/Prof Benjamin Cowie, manages this work plan, which has four specific aims. These are: (1) to assist WHO in the development of tools and strategies to strengthen the capacity of health systems to implement and/or improve epidemiological surveillance in order to generate reliable information for guiding prevention and control measures; (2) to help WHO and other collaborating organisations establish the necessary guidelines, strategies, goals and tools for surveillance programs for viral hepatitis; (3) to contribute to improving the assessment of the global and regional burden of viral hepatitis, including the use of modelling for burden of chronic viral hepatitis and attribution of the causes of liver cancer (and trends over time) in key nations within the Western Pacific Region; and (4) to support the development and implementation of monitoring and evaluation tools in order to assess progress towards reducing the burden of viral hepatitis and guide evidence-based strategy for policy decisions related to preventive, diagnostic and treatment activities.

The expected outcomes of this project were to develop more reliable epidemiological information to guide prevention and control strategies; assist WHO in the production of resources to support the development and extension of surveillance and monitoring programs in member countries where these are lacking; develop tools to assess progress in control of viral hepatitis and related outcomes; and together with WHO and other relevant collaborators and institutions, to develop modelling of the burden and outcomes of chronic viral hepatitis infection (particularly liver cancer).

Over the past year, the Centre has successfully implemented and managed the aims of this work plan in a number of capacities:

- Benjamin Cowie was invited to attend and chair the inaugural meeting of the WHO Viral Hepatitis Strategic Information and Modelling Reference Group in Geneva, Switzerland in June 2016
- Benjamin Cowie and Laura Thomas were invited and attended the WHO Collaborating Centre's Forum in Manilla, Philippines in November 2016 and engaged in further meetings with WPRO about ongoing epidemiological support that the Centre can provide for WHO in the region relating to viral hepatitis.
- Jennifer MacLachlan, Nicole Romero, Laura Thomas and Benjamin Cowie are working closely with WPRO staff from the Viral Hepatitis Office within the HIV/AIDS and Sexually Transmitted Infection Units in the Division of Communicable Diseases to develop a manual for regional cascade development.
- Benjamin Cowie, Margaret Littlejohn, Suellen Nicholson, Nicole Romero and Laura Thomas, assisted WHO (WPRO and HQ) and in collaboration with US CDC, Korean CDC and the Australian National Reference Laboratory, in the organisation, facilitation, delivery and rapporteuring of the First National workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems, which was held in Ulaanbaatar, Mongolia in April 2017. This workshop was planned over a series of months from December 2016 to April 2017.
- Benjamin Cowie provided peer review of data and content for the WHO's first Global Hepatitis Report, 2017 - a document which provides a baseline for the global drive towards elimination. This document is available from:  
<http://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/>
- Benjamin Cowie was an invited technical expert in a Consultative Meeting on Viral Hepatitis Surveillance, Monitoring and Evaluation in the Philippines in February 2017. The objective of the meeting, in collaboration with the WHO Country Office of the Philippines and WPRO, was to allow dissemination of information and current WHO guidelines for viral hepatitis in preparation for a



national workshop on viral hepatitis laboratory testing, surveillance, monitoring and evaluation to be held later in 2017.

This progress has been documented and disseminated in a number of scientific journals, as listed in the **Communications and Advisory Section** of this report.

#### 5. To support WHO in providing guidance for screening, care and treatment of viral hepatitis

Director of the Centre, A/Prof Benjamin Cowie and Professor Stephen Locarnini are responsible for the work plan that aims (1) to provide expert guidance in the areas related to clinical management of viral hepatitis including testing, monitoring and antiviral treatment to WHO HQ, regional office, and member states; (2) to contribute to WHO guideline development in the management of chronic viral hepatitis infection at a global and regional level; and (3) to support evidence-based approaches to the prevention of liver cancer mortality in people living with chronic viral hepatitis. The activity expects to enhance patient management in chronic viral hepatitis; and to develop global and regional guidelines for hepatitis screening and treatment to improve the delivery of appropriate clinical care for people living with viral hepatitis.

Over the past year, the Centre's progress has been documented and disseminated through the Centre participating in a number of WHO meetings, consultation and country-missions in order to provide expert advice on laboratory diagnostics in low resource settings. These attendances are listed in the **Communications and Advisory Section** of this report, with details regarding Centre participation. This includes:

- Stephen Locarnini was invited and attended the First Meeting of Hepatitis Program Focal Points from High Burden Countries in Asia in Hong Kong in June 2016
- Benjamin Cowie and Laura Thomas were invited and attended the WHO Collaborating Centre's Forum in November 2016 and engaged in further meetings with WPRO about the development of a regional laboratory network and national workshops for the integration of laboratory and surveillance capacity for viral hepatitis.

- Stephen Locarnini, Kathy Jackson, Margaret Littlejohn, Benjamin Cowie, Laura Thomas, Suellen Nicholson, Scott Bowden and Nicole Romero regularly participated in teleconference meetings with WHO (WPRO) and the NRL to scope, design and plan the implementation/creation of a Regional Laboratory Network for Viral Hepatitis for the Western Pacific Region. As of reporting, Terms of Reference have been formalised and National Workshops have been planned and delivered as an aim of this. This network is ongoing and will include further delivery of National Workshops as well as the identification of National Reference Laboratories in each country in the region.
- Stephen Locarnini, Kathy Jackson, Margaret Littlejohn, Laura Thomas, Suellen Nicholson, and Scott Bowden, in collaboration with WHO/WPRO and the Kiribati Ministry of Health and Medical Service initiated a two-part project. The project consists of a sero-prevalence survey to determine the current sero-prevalence of hepatitis delta in HBsAg positive patients, and of a pilot study to identify patients mono-infected with HBV who qualify for treatment and to begin the implementation of HBV treatment in Kiribati. As of reporting, stage one is currently being undertaken; the Regional Reference Laboratory has received samples and is undertaking the survey.
- Benjamin Cowie, Margaret Littlejohn, Suellen Nicholson, Nicole Romero and Laura Thomas, assisted WHO (WPRO and HQ) and in collaboration with US CDC, Korean CDC and the Australian National Reference Laboratory, in the organisation, facilitation, delivery and rapporteuring of the First National workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems, which was held in Ulaanbaatar, Mongolia in April 2017. This workshop was planned over a series of months from December 2016 to April 2017.
- Benjamin Cowie attended the 5<sup>th</sup> meeting of the Hepatitis B Expert Resource Panel, on which he has served since 2011, in Manila in February 2017. This Panel is charged with supporting WPRO in achieving hepatitis B control through immunisation. He has also served on member state verification panels assessing progress towards the Regional hepatitis B control goals.

- Benjamin Cowie was invited and attended the 1<sup>st</sup> Expert Consultation on the Triple Elimination of Mother-to-Child Transmission of HIV, Hepatitis B and Syphilis in the Western Pacific in Manila in February. The primary purpose of the Consultation was to support WPRO in the development of an integrated regional framework for the elimination of mother-to-child transmission of communicable diseases, focussing on HIV, hepatitis B and syphilis, with the goal of zero new HIV infections among infants by 2020 and the elimination of hepatitis B and congenital syphilis as public health threats by 2030.

This progress, and other related activities undertaken by the Centre, has been listed in the **Communications and Advisory Section** of this report.

#### 6. To provide technical consultation and advice to WHO on strategies for minimizing the emergence of antiviral drug resistance and guide evidence-based strategies for policy decisions related to treatment activities

Professor Stephen Locarnini heads up this activity with the aim to provide access to appropriate training materials and other resources on antiviral drug resistance. The activity expects to develop guidelines for preventing, monitoring, and responding to antiviral drug resistance in hepatitis treatment. Over the past year, the Centre has successfully documented and disseminated the progress of this work plan activity in a number of scientific journals, as listed in the **Communications and Advisory Section** of this report. Furthermore, the Centre has participated in a number of WHO meetings, consultation and country-missions in order to provide expert advice on laboratory diagnostics in low resource settings. These attendances are listed in the **Communications and Advisory Section** of this report, with details regarding Centre participation.

## B. Collaboration with WHO

Over the past 12 months, the Centre has been asked to provide support and expertise to the WHO in a number of capacities. The majority of our collaborative work with the WHO has been coordinated with the Regional Office for the Western Pacific

(WPRO), with the Viral Hepatitis Office within the HIV/AIDS and Sexually Transmitted Infection Units in the Division of Communicable Diseases.

As well as Benjamin Cowie, Margaret Littlejohn, Suellen Nicholson, Nicole Romero and Laura Thomas assisting WHO (WPRO and HQ) with the organisation, facilitation, delivery and rapporteuring of the First National workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems, which was held in Ulaanbaatar, Mongolia (24-27 April 2017), the Centre provided assistance to WPRO in the drafting, compiling and editing of the Executive Summary and the Review Report for Mongolia that resulted from the Workshop.

The Centre has also undertaken discussions with WPRO to provide ongoing priority support in the establishment of a Regional Network of Viral Hepatitis Reference Laboratories for the Western Pacific Region and the ongoing role out of WHO surveillance guidelines, and activities of the national laboratory hepatitis work including validation of testing algorithms, and the design of hepatitis pilot projects (screening, diagnosis and treatment linked to prevention).

Further, a number of Centre staff have been contacted by the WHO (Head office and WPRO) to provide information and support for a number of requests, specifically for epidemiological research and modelling the centre has undertaken, as well as requests for Australian prevalence statistics relating to HBV, HCV, cirrhosis, data linkage projects relating to HBV and HCV, and care and treatment cascades for both HBV and HCV.

As outlined previously and in the **Communications and Advisory Section** of this report, Centre staff have also been invited to consult and present at a number of WHO meetings and workshops to support the ongoing work and growth of the Global Health Sector Strategy on Viral Hepatitis, 2016-2021.

### **C. Collaboration with other WHO Collaborating Centres**

There are currently five designated Collaborating Centres for Viral Hepatitis around the world: the WHO Collaborating Centre for Chronic Hepatitis and Liver Cancer at the Department of Gastroenterology, Kanazawa University Hospital in Japan; The WHO Collaborating Centre for Reference & Research on Viral Hepatitis at the Centres for Disease Control and Prevention (CDC) in Atlanta, USA; The WHO Collaborating Centre on Viral Hepatitis and Liver Diseases at The Institute of Liver and Biliary Sciences in New Delhi, India; the WHO Collaborating Centre on HIV and viral hepatitis at the Institute of International Health, Immunology and Microbiology, University of Copenhagen in Copenhagen, Denmark; and the WHO Collaborating Centre for Viral Hepatitis, VIDRL at the Doherty Institute. In addition to these distinct Collaborating Centres for Viral Hepatitis, there are further Collaborating Centres globally that also have research foci and activities associated with viral hepatitis and the WHO determined outputs for viral hepatitis. Four such centres are: The WHO Collaborating Centre for Diagnostics and Laboratory Support for HIV/AIDS and Other Blood-borne Infections at St Vincent's Institute of Medical Research in Melbourne, Australia; The WHO Collaborating Centre for Harm Reduction at Vilnius University in Vilnius, Lithuania; The WHO Collaborating Centre for Laboratory and Diagnostic Support at Public Health England (PHE) in London, England; and the WHO Collaborating Centre for Training and Research in Blood Transfusion at the Sharjah Blood Transfusion and Research Centre in Sharjah, United Arab Emirates.

The Centre has directly engaged in collaborative work with the WHO Collaborating Centre for Diagnostics and Laboratory Support for HIV/AIDS and Other Blood-borne Infections at St Vincent's Institute of Medical Research in Melbourne, Australia and the WHO Collaborating Centre for Reference & Research on Viral Hepatitis at the Centres for Disease Control and Prevention (CDC) in Atlanta, USA with the assistance and facilitation of WHO and WPRO. Furthermore, the Centre has established professional relationships with staff at WHO Collaborating Centre for Reference & Research on Viral Hepatitis at the Centres for Disease Control and Prevention (CDC) in Atlanta, USA, the WHO Collaborating Centre on Viral Hepatitis and Liver Diseases at The Institute of Liver and Biliary Sciences in New Delhi, India,

and the WHO Collaborating Centre for Diagnostics and Laboratory Support for HIV/AIDS and Other Blood-borne Infections at St Vincent's Institute of Medical Research in Melbourne, Australia. The Centre also has a professional relationship with the WHO Collaborating Centre for Reference and Research on Influenza at the Victorian Infectious Diseases Reference Laboratory (VIDRL), which is also located within the Doherty Institute.

The WHO Executive Board has encouraged all WHO Collaborating Centres to “develop working relations with other centres and national institutions recognized by WHO, by creating or joining collaborative networks.”<sup>1</sup> The WHO has also encouraged that instead of WHO Collaborating Centres collaboration one on one, WHO Collaborating Centres are encouraged to establish networks of WHO Collaborating Centres. Although no such thematic network of WHO Collaborating Centres exists in the field of viral hepatitis, over the past year the Centre has collaborated with a number of the other WHO Collaborating Centres that work in the context of viral hepatitis, including WHO Collaborating Centre for Chronic Hepatitis and Liver Cancer at the Department of Gastroenterology, Kanazawa University Hospital in Japan; The WHO Collaborating Centre for Reference & Research on Viral Hepatitis at the Centres for Disease Control and Prevention (CDC) in Atlanta, USA; The WHO Collaborating Centre on Viral Hepatitis and Liver Diseases at The Institute of Liver and Biliary Sciences in New Delhi, India; and the WHO Collaborating Centre for Diagnostics and Laboratory Support for HIV/AIDS and Other Blood-borne Infections at St Vincent's Institute of Medical Research in Melbourne, Australia. In order to further satisfy the implementation of the agreed work plan, the Centre will continue to interact and collaborate with other WHO Collaborating Centres in the context of viral hepatitis and the Terms of Reference, as well as work towards the development of a network of WHO Collaborating Centres for the thematic field of viral hepatitis.

Over the past year, Centre staff have been working closely with WHO/WPRO and the WHO Collaborating Centre for Diagnostics and Laboratory Support for HIV/AIDS

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<sup>1</sup> World Health Organisation, *Guide for WHO Collaborating Centres*, WHO Document Production Services, Geneva, 2016, p. 28.

and Other Blood-borne Infections at St Vincent's Institute of Medical Research in Melbourne, Australia to develop and implement a Regional Network of Viral Hepatitis Reference Laboratories for the Western Pacific Region. The aim of this Network of laboratories is to provide quality assurance and quality management programmes to increase and monitor quality of testing in the region, provide advice to implementing partners, surveillance data to monitor intervention and the ability to rapidly respond to outbreaks and emergencies. Establishing a Viral Hepatitis Laboratory Network will also facilitate enhanced surveillance activities by providing guidance and support for sero-prevalence surveys and data management systems to collect WHO recommended viral hepatitis diagnosis and treatment monitoring indicators. Currently, no such network exists at the global or regional level within the WHO. WPRO will be the first region to develop a Regional Hepatitis Reference Laboratory Network. The integrated laboratory and surveillance workshops (that have been delivered in Ulaanbaatar, Mongolia in April 2017 and will be delivered in Tagaytay, Philippines in early September 2017) are the first steps towards the successful establishment of a Regional Network of Hepatitis Reference Laboratories.

#### **D. WHO support**

The Centre has been fortunate enough to have received support from the WHO, and more specifically WPRO, in a number of capacities. During the reporting period, WPRO staff from the Viral Hepatitis Office within the HIV/AIDS and Sexually Transmitted Infection Units in the Division of Communicable Diseases have provided the Centre with guidance on the priorities the WHO would like the Centre to focus their efforts on. These include that the Centre will provide support for the establishment of a Regional Network of Viral Hepatitis Reference Laboratories for the Western Pacific Region and the ongoing role out of WHO surveillance guidelines, activities of the national laboratory hepatitis work including validation of testing algorithms and design of hepatitis pilot projects (screening, diagnosis and treatment linked to prevention), and designing of a manual for the development for treatment cascades for both HBV and HCV in the region.

## Communications and advisory activities

The Centre, and its staff, actively contributes to the knowledge and understanding of viral hepatitis in both the scientific and public health domains through a number of forums. Centre staff publish in a wide range of scientific journals, draft reports for the Australian Government and local and international health organisations, and also participate in WHO meetings and workshops to support the ongoing work and growth of the Framework for Global Action for the Prevention and Control of Viral Hepatitis and the WHO Global Health Sector Strategy for Viral Hepatitis. Centre staff also presented numerous presentations at domestic and international conferences, educational lectures and seminars to wide audiences, served on a number of governing boards, committees and advisory groups, and were often approached by the media to provide expert opinions on viral hepatitis for the general public.

## Publications and reports

The Centre built its research, surveillance and innovation profile with a number of publications, including original research papers published in peer-reviewed journals, reviews, reports and book chapters in 2016-2017. Below is a list of all publications by staff relating to the Centre's Terms of Reference in the annual reporting period:

1. Audsley J, Bent SJ, **Littlejohn M**, Avihingsanon A, Matthews G, **Bowden S**, Bayliss J, Luciani F, Yuen L, Fairley CK, **Locarnini S**, Lewin SR, Sasadeusz J. (2016). "Effects of long-term tenofovir-based combination antiretroviral therapy in HIV-hepatitis B virus coinfection on persistent hepatitis B virus viremia and the role of hepatitis B virus quasispecies diversity." *AIDS* 30(10): 1597-1606.
2. Schlupe T, Lickliter J, Hamilton J, Lewis DL, Lai CL, Lau JY, **Locarnini SA**, Gish RG, Given BD. (2016). "Safety, Tolerability, and Pharmacokinetics of ARC-520 Injection, an RNA Interference-Based Therapeutic for the Treatment of Chronic Hepatitis B Virus Infection, in Healthy Volunteers." *Clin Pharmacol Drug Dev* [epub ahead of publication].
3. Valaydon Z, Pellegrini M, Thompson A, Desmond P, **Reville P**, Ebert G. (2016). "The role of tumour necrosis factor in hepatitis B infection: Jekyll and Hyde." *Clin Transl Immunology* 5(2): e115.



4. **Revill P, Locarnini S.** (2016). “Antiviral strategies to eliminate hepatitis B virus covalently closed circular DNA (cccDNA).” *Curr Opin Pharmacol* 30: 114-150.
5. Bayliss J, Yuen L, Rosenberg G, Wong D, **Littlejohn M, Jackson K**, Gaggar A, Kitrinis KM, Subramanian GM, Marcellin P, Buti M, Janssen HL, Gane E, Sozzi V, Colledge D, Hammond R, Edwards R, **Locarnini S**, Thompson A, **Revill PA.** (2016). “Deep sequencing shows that HBV basal core promoter and precore variants reduce the likelihood of HBsAg loss following tenofovir disoproxil fumarate therapy in HBeAg-positive chronic hepatitis B.” *Gut* 17 Aug 2016.
6. Sugarman J, **Revill P**, Zoulim F, Yazdanpanah Y, Janssen HL, Lim SG, **Lewin SR.** (2016). “Ethics and hepatitis B cure research” *Gut* [epub ahead of publication].
7. Thompson A, **Locarnini S, Revill P.** (2016). “Reply: 'More viral mutants, less HBsAg clearance? One size may not fit all'.” *Gut* [epub ahead of publication].
8. **MacLachlan JH, Cowie BC.** (2016). “Hepatitis B Mapping Project: Estimates of chronic hepatitis B diagnosis, monitoring and treatment by Medicare Local.” Victorian Infectious Diseases Reference Laboratory & Australasian Society for HIV Medicine. Melbourne, Australia.
9. Thompson AJ, **Bowden DS.** (2016). “Vidal LL, et al. NS3 protease polymorphisms and genetic barrier to drug resistance of distinct HCV genotypes from worldwide treatment-naïve subjects.” *J Viral Hepat* 23(11): 838-839.
10. Betz-Stablein BD, Töpfer A, **Littlejohn M**, Yuen L, Colledge D, Sozzi V, Angus P, Thompson A, **Revill P**, Beerenwinkel N, Warner N, Luciani F. (2016). “Single-Molecule Sequencing Reveals Complex Genome Variation of Hepatitis B Virus during 15 Years of Chronic Infection following Liver Transplantation.” *J Virol* 90(16): 7171-7183.
11. Sozzi V, **Walsh R, Littlejohn M**, Colledge D, **Jackson K**, Warner N, Yuen L, **Locarnini SA, Revill PA.** (2016). “In vitro studies show that sequence variability contributes to marked variation in Hepatitis B virus replication, protein expression and function observed across genotypes.” *J Virol* 90(22): 10054-10064.
12. Thurnheer MC, Edwards R, Schulz TR, Yuen L, **Littlejohn M, Revill P**, Bannister E, Chu M, Tanyeri F, Wade A, Biggs BA, Sasadeusz J. (2016). “Genotypic profiles of hepatitis B in African immigrants and their clinical relevance.” *Journal of Medical Virology* [epub ahead of publication].

13. Lim L, Thompson A, Patterson S, George J, Strasser S, Lee A, Sievert W, Nicoll A, Desmond P, Roberts S, Marion K, **Bowden S, Locarnini S**, Angus P. (2016). “Five-year efficacy and safety of tenofovir-based salvage therapy for patients with chronic hepatitis B who previously failed LAM/ADV therapy.” Liver Int. [epub ahead of publication].
14. Yapa CM, Furlong C, Rosewell A, Ward KA, Adamson S, Shadbolt C, Kok J, Tracy SL, **Bowden S**, Smedley EJ, Ferson MJ, Sheppard V, McAnulty JM. (2016). “First reported outbreak of locally acquired hepatitis E virus infection in Australia.” Med J Aust 204(7): 274.
15. **MacLachlan JH, Cowie BC.** (2016). “Uptake and trends in ordering of funded hepatitis B immunisation for priority populations in Victoria, Australia, 2013-2014.” Sexual Health [epub ahead of publication].
16. **Brown CR, Allard NL, MacLachlan JH, Cowie BC.** (2017). “Deaths from liver cancer continue to rise in Australia: is elimination by 2030 possible?” Internal Medicine Journal 47(5): 604-605.
17. **MacLachlan JH, Allard NL, Carville K, Haynes K, Cowie BC.** (2017). “Mapping progress in chronic hepatitis B: geographic variation in prevalence, diagnosis, monitoring and treatment, 2013-15.” Australian and New Zealand Journal of Public Health [epub ahead of publication].
18. Wade A, Draper B, Doyle J, **Nicole Allard**, Paul Grinzi, Alexander Thompson, Margaret Hellard. (2017). “A survey of hepatitis C management by Victorian GPs after PBS listing of direct-acting antiviral therapy.” Australian Family Physician 46(4): 235-240.
19. Block TM, **Locarnini S**, McMahon BJ, Rehermann B, Peters MG. (2017). “Use of Current and New Endpoints in the Evaluation of Experimental Hepatitis B Therapeutics.” Clin Infect Dis 64(9): 1283-1288.
20. Aitken CK, Agius PA, Higgs PG, Stoové MA, **Bowden DS**, Dietze PM. (2017). “The effects of needle-sharing and opioid substitution therapy on incidence of hepatitis C virus infection and reinfection in people who inject drugs.” Epidemiol Infect 45(4): 796-801.
21. Sugarman J, **Revill P**, Zoulim F, Yazdanpanah Y, Janssen HL, Lim SG, **Lewin SR.** (2017). “Ethics and hepatitis B cure research.” Gut 66(3): 389-392.

22. Cornberg M, Wong VW, **Locarnini S**, Brunetto M, Janssen HL, Chan HL. (2017). “The role of quantitative hepatitis B surface antigen revisited.” J Heptol 66(2): 398-411.
23. Thurnheer MC, Edwards R, Schulz TR, Yuen L, **Littlejohn M**, **Revill P**, Bannister L, Chu M, Tanyeri F, Wade A, Biggs BA, Sasadeusz J. (2017). “Genotypic profiles of Hepatitis B in African immigrants and their clinical relevance.” J Med Virol 89(6): 1000-1007.
24. Fitzmaurice C, Allen C, Barber RM, ..., **Cowie BC**, et al. (2017). “Global, regional, and national cancer incidence, mortality, years of life lost, years lived with disability and disability adjusted life years for 32 cancer groups, 1990 to 2015 - a systematic analysis for the Global Burden of Disease Study 2015.” JAMA Oncology 3(4): 524-548.
25. Hoad VC, Gibbs T, Ravikumara M, Nash M, Levy A, Tracy SL, Mews C, Perkowska-Guse Z, Faddy HM, **Bowden S**. (2017). “First confirmed case of transfusion-transmitted hepatitis E in Australia.” Med J Aust 206(7): 289-290.
26. Salpini R, Surdo M, Warner N, Cortese MF, Colledge D, Soppe S, Bellocchi MC, Armenia D, Carioti L, Continenza F, Di Carlo D, Saccomandi P, Mirabelli C, Pollicita M, Longo R, Romano S, Cappiello G, Spanò A, Trimoulet P, Fleury H, Vecchiet J, Iapadre N, Barlattani A, Bertoli A, Mari T, Pasquazzi C, Missale G, Sarrecchia C, Orecchini E, Michienzi A, Andreoni M, Francioso S, Angelico M, Verheyen J, Ceccherini-Silberstein F, **Locarnini S**, Perno CF, Svicher V. (2017). “Novel HBsAg mutations correlate with hepatocellular carcinoma, hamper HBsAg secretion and promote cell proliferation in vitro.” Oncotarget 8(9): 15704-15715.
27. Colledge D, Soppe S, Yuen L, Selleck L, **Walsh R**, **Locarnini S**, Warner N. (2017). “Stop codons in the hepatitis B surface proteins are enriched during antiviral therapy and are associated with host cell apoptosis.” Virology 501(15): 70-78.
28. Stanaway JD, Flaxman AD, Naghavi M, Fitzmaurice C, Vos T, Abubakar I, Abu-Raddad LJ, Assadi R, Bhala N, **Cowie B**, Forouzanfour MH, Groeger J, Hanafiah KM, Jacobsen KH, James SL, **MacLachlan J**, Malekzadeh R, Martin NK, Mokdad AA, Mokdad AH, Murray CJ, Plass D, Rana S, Rein DB, Richardus JH, Sanabria J, Saylan M, Shahraz S, So S, Vlassov VV, Weiderpass E, Wiersma ST,

- Younis M, Yu C, El Sayed Zaki M, Cooke GS. (2016). “The global burden of viral hepatitis from 1990 to 2013: findings from the Global Burden of Disease Study 2013.” The Lancet 388(10049): 1081-1088.
29. **Allard N**, Dev A, Dwyer J, Srivatsa G, Thompson A, **Cowie B**. (2017). “Factors associated with poor adherence to antiviral treatment for hepatitis B.” Journal of Viral Hepatitis 24(1): 53-58.
30. Snow K, Scott N, Clothier H, **MacLachlan JH**, **Cowie BC** (2017). “Limited Provision of Diagnostic Services to Victorians Living with Hepatitis C Antibodies, 2001-2012: A Multi-level Modelling Analysis.” Australian and New Zealand Journal of Public Health 41(2): 193-198
31. Davies J, Li S, Tong SY, Baird RW, Beaman M, Higgins G, **Cowie BC**, Condon JR, Davis JS. Establishing contemporary trends in hepatitis B sero-epidemiology in an Indigenous population. PLOS One 2017; in press
32. **Brown CR**, **MacLachlan JH**, **Cowie BC**. Addressing the increasing global burden of viral hepatitis. Hepatobiliary Surgery and Nutrition 2017; doi: 10.21037/hbsn.2017.05.02
33. Wang H, Naghavi M, Allen C, ..., **Cowie BC**, et al. Global, regional, and national life expectancy, all-cause and cause-specific mortality for 251 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet 2016; 388 (10053): 1459-1544
34. Degenhardt L, Charlson F, Stanaway J, Larney S, Alexander LT, Hickman M, **Cowie BC**, Hall WD, Strang J, Mathers B, Whiteford H, Vos T. Estimating the burden of disease attributable to injecting drug use as a risk factor for HIV, hepatitis C and hepatitis B: findings from the Global Burden of Disease Study 2013. Lancet Infectious Diseases; 16 (12): 1385-1398
35. Lim SL, Allen K, Bhutta ZA, ..., **Cowie BC**, et al. Measuring the health-related Sustainable Development Goals in 188 countries: a baseline analysis from the Global Burden of Disease Study 2015. The Lancet 2016; 388 (10053): 1813-1850
36. Wattiaux A, Yin JK, Beard F, Wesselingh S, **Cowie BC**, Ward J, Macartney K. Hepatitis B immunization for Indigenous adults, Australia. Bulletin of the World Health Organization 2016; 94 (11): 826-834A

## Oral presentations

Centre staff members presented talks at numerous events during the reporting year 2016-2017, including national and international conferences, and educational lectures and research seminars.

<b>Event; location, date</b>	<b>Centre Staff, Title</b>
VIDRL/MDU Seminar at the Doherty Institute; Melbourne, Australia, 22/06/16	Margaret Littlejohn, <i>Phylogeography of Hepatitis B virus, sub-genotype C4 in Indigenous Australians</i>
Westmead Institute of Medical Research; Sydney, Australia, 19/07/16	Peter Revill, <i>ICE-HBV</i>
8th Annual Victorian Hepatitis B Alliance Spotlight on Hepatitis B for Health Care Workers; Melbourne, Australia, 27/07/16	Nicole Allard, <i>Hepatitis B testing and management</i>
8th Annual Victorian Hepatitis B Alliance Spotlight on Hepatitis B for Health Care Workers; Melbourne, Australia, 27/07/16	Jennifer MacLachlan, <i>The transmission, prevention and natural history of hepatitis B</i>
8th Annual Victorian Hepatitis B Alliance Spotlight on Hepatitis B for Health Care Workers; Melbourne, Australia, 27/07/16	Benjamin Cowie, <i>Understanding the epidemiology of hepatitis B</i>
Doherty Institute World Hepatitis Day, Hepatitis Symposium; Melbourne, Australia, 28/07/16	Benjamin Cowie, <i>National strategies for viral hepatitis</i>
Doherty Institute World Hepatitis Day, Hepatitis Symposium; Melbourne, Australia, 28/07/16	Peter Revill, <i>ICE-HBV Cure</i>
Doherty Institute World Hepatitis Day, Hepatitis Symposium; Melbourne, Australia, 28/07/16	Stephen Locarnini, <i>The changing face of viral hepatitis</i>

Doherty Institute World Hepatitis Day, Hepatitis Symposium; Melbourne, Australia, 28/07/16	Renae Walsh, <i>Curing HBV: Are we there yet?</i>
Doherty Institute Symposium on Hepatitis B Research: Past, Present and Future; Melbourne, Australia, 30/07/16	Benjamin Cowie, <i>Understanding the epidemiology of hepatitis B</i>
Hepatitis B and C in primary care presentation for Western Victoria PHN; Horsham, Australia, 18/08/16	Nicole Allard, <i>Hepatitis B testing and management</i>
Hepatitis B and C in primary care presentation for Western Victoria PHN; Horsham, Australia, 18/08/16	Benjamin Cowie, <i>Understanding the epidemiology of hepatitis B</i>
ASHM Advanced management course for hepatitis B; Alice Springs, Australia, 19-21/10/16	Nicole Allard, <i>Hepatitis B testing and management</i>
ASHM Advanced management course for hepatitis B; Alice Springs, Australia, 19-21/10/16	Benjamin Cowie, <i>Understanding the epidemiology of hepatitis B</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Benjamin Cowie, <i>Hepatitis B vaccination in the era of elimination</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Jennifer MacLachlan, <i>Invited symposium presentation: Interventions to enhance the hepatitis B cascade of care</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Jennifer MacLachlan, <i>Launch of the National Hepatitis B Mapping Project for the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Kathy Jackson, <i>Hepatitis Delta Virus in Australia</i>
10th Australasian Viral Hepatitis	Kathy Jackson, <i>Molecular epidemiology</i>

Conference; Gold Coast, Australia, 29/09/16-01/10/16	<i>of hepatitis delta virus in Oceania</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Kylie Carville, <i>Trends in Hepatocellular Carcinoma</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Nicole Allard, <i>Viral outcomes in patients with CHB and correlation with pharmacy adherence measures</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Nicole Romero, <i>Responding to notifications of unspecified hepatitis B and C in Victoria</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Peter Revill, <i>Global strategies required to cure and eliminate HBV</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Scott Bowden, <i>HBV Treatment: Past, Present and the Future</i>
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Scott Bowden, <i>Hepatitis A Outbreaks in Australia</i>
NRL Workshop; Melbourne, Australia, 18/10/16	Kathy Jackson, <i>Molecular Epidemiology of Hepatitis Delta Virus in Oceania</i>
Hepatitis Queensland Annual General Meeting; Brisbane, Australia, 1/11/16	Jennifer MacLachlan, <i>Invited Speaker: Mapping chronic hepatitis B in Queensland</i>
Fudan-Melbourne Infection and Immunity Workshop at the Doherty Institute; Melbourne, Australia, 11/11/16	Margaret Littlejohn, <i>Working towards HBV Cure</i>
Hepatitis B and C in Primary care GP event; Mildura, Australia, 17/11/16	Nicole Allard, <i>Hepatitis B testing and management</i>
Sunraysia Regional Hepatitis Forum; Mildura, Australia, 17/1/16	Nicole Allard, <i>Hepatitis B testing and management</i>

AFAO's BBV and STI Research Roundtable; Sydney, Australia, 31/03/17	Nicole Allard, <i>Hepatitis B Unmet Needs</i>
World Public Health Congress: World Leaders Dialogue; Melbourne, Australia, 1/04/17	Peter Revill, <i>HBV cure- How far away is it and how will we ensure equity of access when we achieve it?</i>
National workshop for strengthening and linking viral hepatitis laboratory, surveillance & patient monitoring systems; Ulaanbaatar, Mongolia, 25-27/04/17	Benjamin Cowie, <i>Overview of HBV, HCV and HDV epidemiology and virology, natural history and treatment</i>
National workshop for strengthening and linking viral hepatitis laboratory, surveillance & patient monitoring systems; Ulaanbaatar, Mongolia, 25-27/04/17	Nicole Romero, <i>Approaches to surveillance and monitoring the treatment cascade for hepatitis—experience from Australia</i>
National workshop for strengthening and linking viral hepatitis laboratory, surveillance & patient monitoring systems; Ulaanbaatar, Mongolia, 25-27/04/17	Margaret Littlejohn, <i>WHO guidelines on viral hepatitis testing</i>
National workshop for strengthening and linking viral hepatitis laboratory, surveillance & patient monitoring systems; Ulaanbaatar, Mongolia, 25-27/04/17	Suellen Nicholson, <i>Hepatitis Serology</i>

## Poster presentations

Centre staff members presented posters at events during 2015/2016, including at national and international conferences (presenting authors are noted with an asterisk).

**Event; location, date**

**Authors (Centre staff in bold), Title**



<p>WHO Collaborating Centre Forum; Manilla, Philippines, 25/11/16</p>	<p><b>Laura Thomas*</b>, <b>Sharon Lewin</b>, <b>Benjamin Cowie*</b>, <i>In 12 Months: WHO Collaborating Centre for Viral Hepatitis, Victorian Infectious Diseases Reference Laboratory, Doherty Institute, Melbourne, Australia.</i></p>
<p>EASL International Liver Congress Annual Meeting; Amsterdam, The Netherlands, 19-23/04/17</p>	<p><b>Peter Revill*</b>, Ani Abdi-Halane, <b>Capucine Penicaud</b>, Ventzislava Petrov-Sanchez, Jake Liang, John Tavis, Massimo Levrero, <b>Stephen Locarnini</b>, Fabien Zoulim, <i>International coalition to eliminate hepatitis B – progress report</i></p>
<p>EASL International Liver Congress Annual Meeting; Amsterdam, The Netherlands, 19-23/04/17</p>	<p>Darren Wong*, <b>Margaret Littlejohn</b>, Lilly Yuen, <b>Kathleen Jackson</b>, Hugh Mason, Anuj Gaggar, Kathryn Kitrinis, Mani Subramanian, Patrick Marcellin, Maria Buti, Harry Janssen, Ed Gane, Julianne Bayliss, Vitina Sozzi, Danni Colledge, <b>Stephen Locarnini</b>, Alexander Thompson, <b>Peter Revill</b>, <i>On-treatment decline in HBeAg level at week 24 predicts for HBeAg seroconversion during long-term tenofovir therapy for HBeAg-positive CHB</i></p>
<p>EASL International Liver Congress Annual Meeting; Amsterdam, The Netherlands, 19-23/04/17</p>	<p>Darren Wong*, <b>Renae Walsh</b>, Rachel Hammond, Lilly Yuen, <b>Peter Revill</b>, Anuj Gaggar, Mani Subramanian, Kathryn Kitrinis, <b>Stephen Locarnini</b>, Alexander Thompson, <i>On-treatment ALT flares are associated with HBsAg loss in genotype A chronic hepatitis B-infected patients treated with nucleotide analogue</i></p>

EASL International Liver Congress  
Annual Meeting; Amsterdam, The  
Netherlands, 19-23/04/17

Henry L. Chan\*, Anna Lok, **Stephen  
Locarnini**, Fabien Zoulim, Marc Ghany,  
Geoff Dusheiko, Anuj Gaggar, George  
Wu, G Mani Subramanian, Maria Buti,  
Patrick Marcellin, *Durability of HBsAg  
loss with nucleotide analogs and  
pegylated interferon in patients infected  
with hepatitis B virus*

EASL International Liver Congress  
Annual Meeting; Amsterdam, The  
Netherlands, 19-23/04/17

Edward Gane, Christian Schwabe, Bruce  
Given, Thomas Schlupe, James  
Hamilton\*, Ching-Lung Lai, **Stephen  
Locarnini**, Johnson Lau, Carlo Ferrari,  
Robert Gish, *A phase I study to evaluate  
safety and tolerability of escalating single  
doses of the hepatitis B virus RNA  
interference drug ARC-521 in a healthy  
volunteer population*

EASL International Liver Congress  
Annual Meeting; Amsterdam, The  
Netherlands, 19-23/04/17

Ondrej Podlaha\*, **Peter Reville**, Neeru  
Bhardwaj, Luting Zhuo, Kathryn  
Kitrinos, Anuj Gaggar, Zhaoshi Jiang,  
Patrick Marcellin, **Stephen Locarnini**,  
Henry Ly Chan, *Whole-genome deep  
sequencing of hepatitis B virus in chronic  
hepatitis B patients reveals single  
nucleotide variants associated with  
baseline HBV DNA levels and HBeAg  
status*

EASL International Liver Congress Annual Meeting; Amsterdam, The Netherlands, 19-23/04/17	Zina Valaydon*, Gregor Ebert, Marc Pellegrini, Paul Desmond, Tina Sozzi, <b>Peter Revill</b> , Liana Mackiewicz, Alexander Thompson, <i>The e antigen of the Hepatitis B virus enables evasion of Type 1 Interferon immune response</i>
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## Other conference participation

On top of presentations at conferences, a number of Centre staff also attended and participated in other roles at a wide range of events/conferences.

Event; location, date	Centre staff, involvement
Doherty Institute World Hepatitis Day, Hepatitis Symposium; Melbourne, Australia, 28/07/16	Peter Revill, presenter Stephen Locarnini, presenter Scott Bowden, presenter Benjamin Cowie, presenter Margaret Littlejohn, organiser, presenter Kathy Jackson, organiser, attendee Jennifer MacLachlan, facilitator Laura Thomas, attendee Nicole Romero, attendee Nicole Allard, attendee Kylie Carville, attendee
AASLD-EASL Workshop on HBV Treatment Endpoints, DC, USA, 1/09/16	Peter Revill, attendee and facilitator
Burnet Institute Eliminate HEP C Symposium; Melbourne, Australia, 26/07/16	Margaret Littlejohn, attendee Jennifer MacLachlan, attendee Benjamin Cowie, attendee
2016 Menzies HBV Colloquium; Darwin, Australia, 6-9/08/16	Nicole Allard, presenter Benjamin Cowie, presenter Margaret Littlejohn, presenter
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia,	Peter Revill, chairperson, presenter Benjamin Cowie, chairperson, presenter

29/09/16-01/10/16	Margaret Littlejohn, chairperson, presenter Kathy Jackson, presenter Scott Bowden, chairperson, presenter Jennifer MacLachlan, presenter Laura Thomas, attendee Nicole Romero, presenter Nicole Allard, facilitator, presenter Kylie Carville, presenter
AASLD Conference; Boston, USA, 10-15/11/16	Peter Revill, attendee Stephen Locarnini, attendee Kathy Jackson, attendee
EASL International Liver Congress Annual Meeting; Amsterdam, The Netherlands, 19-23/04/17	Peter Revill, attendee Stephen Locarnini, attendee

### Media/Community engagement

The Director and other staff members participated in requests from media representatives for interviews and comments throughout the year. Media and community engagements are supported by the communications teams at the Doherty Institute and Royal Melbourne Hospital, as required.

Media, date	Centre staff; title	Link
Doherty Institute News, 1/06/17	Laura Thomas, <i>Working with Mongolia to reduce Hepatitis B.</i>	<a href="http://www.doherty.edu.au/news-events/news/working-with-mongolia-to-reduce-hepatitis-b">http://www.doherty.edu.au/news-events/news/working-with-mongolia-to-reduce-hepatitis-b</a>
Good Liver Magazine, Hepatitis Victoria, 03/2017	Peter Revill; <i>Interview with Lien Tran and Nicole Allard: Pursuing a cure for Hepatitis B.</i>	<a href="https://www.hepvic.org.au/page/60/good-liver-magazine">https://www.hepvic.org.au/page/60/good-liver-magazine</a>

Good Liver Magazine, Hepatitis Victoria, 03/2017	Nicole Allard; <i>Interview with Lien Tran with Peter Revill: Pursuing a cure for Hepatitis B.</i>	<a href="https://www.hepvic.org.au/page/60/good-liver-magazine">https://www.hepvic.org.au/page/60/good-liver-magazine</a>
Hepatitis Victoria Fundraising Event, 01/02/17	Jennifer MacLachlan, <i>Host of 'StreetShot' Jasper Jones Movie Screening Fundraiser</i>	<a href="http://www.hepvic.org.au/events/46/jasper-jones-streetshot-fundraiser">http://www.hepvic.org.au/events/46/jasper-jones-streetshot-fundraiser</a>
Doherty Institute News, 31/11/16	Laura Thomas, <i>Highlights from the 10<sup>th</sup> Australian Viral Hepatitis Conference</i>	<a href="http://www.doherty.edu.au/news-events/news/highlights-from-the-10th-australasian-viral-hepatitis-conference">http://www.doherty.edu.au/news-events/news/highlights-from-the-10th-australasian-viral-hepatitis-conference</a>

## Professional engagement

The Director and other staff members were invited to attend a number of meetings with other research institutes and organisations across the world to provide their professional expertise and comment throughout the year.

Event; location, date	Centre staff; involvement
The Doherty Institute Hepatitis B Virus Symposium; Melbourne, Australia, 27/07/16	Jennifer MacLachlan, Invited Session Chair - Viral Hepatitis
8th Annual Victorian Hepatitis B Alliance Spotlight on Hepatitis B for Health Care Workers; Melbourne, Australia, 27/07/16	Jennifer MacLachlan, Invited Speaker Chronic Hepatitis B Epidemiology
8th Annual Victorian Hepatitis B Alliance Spotlight on Hepatitis B for Health Care Workers; Melbourne, Australia, 27/07/16	Nicole Allard, Invited Presenter, Hepatitis B testing and management
Hepatitis B and C in primary care presentation for Western Victoria PHN;	Nicole Allard, Presenter, Facilitator, Teacher: Hepatitis B testing and

Horsham, Australia, 18/08/16	management
Hepatitis B and C in primary care presentation for Western Victoria PHN; Horsham, Australia, 18/08/16	Benjamin Cowie, Presenter, Facilitator, Teacher: Understanding the epidemiology of hepatitis B
ASHM Advanced management course for hepatitis B; Alice Springs, Australia, 19-21/10/16	Nicole Allard, Presenter, Facilitator, Teacher: Hepatitis B testing and management
ASHM Advanced management course for hepatitis B; Alice Springs, Australia, 19-21/10/16	Benjamin Cowie, Presenter, Facilitator, Teacher: Understanding the epidemiology of hepatitis B
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Jennifer MacLachlan, Invited symposium presentation: Interventions to enhance the hepatitis B cascade of care
10th Australasian Viral Hepatitis Conference; Gold Coast, Australia, 29/09/16-01/10/16	Jennifer MacLachlan, Launched The National Hepatitis B Mapping Project for the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine
Hepatitis Queensland Annual General Meeting; Brisbane, Australia, 1/11/16	Jennifer MacLachlan, Invited Speaker: Mapping chronic hepatitis B in Queensland
Hepatitis B and C in Primary care GP event; Mildura, Australia, 17/11/16	Nicole Allard, Presenter, Facilitator, Teacher: Hepatitis B testing and management
Sunraysia Regional Hepatitis Forum; Mildura, Australia, 17/11/16	Nicole Allard, Presenter, Facilitator, Teacher: Hepatitis B testing and management
Advanced management of hepatitis B: Hep B S100 course; Melbourne, Australia, 05/03/17	Benjamin Cowie, Presenter, Facilitator, Teacher: Understanding the epidemiology of hepatitis B
Advanced management of hepatitis B: Hep B S100 course; Melbourne, Australia, 05/03/17	Nicole Allard, Presenter, Facilitator, Teacher: Hepatitis B testing and management

CRCSI Key Collaborator Meeting with Commonwealth Department of Health and other Key Stakeholders; Canberra, Australia, 09/03/17	Benjamin Cowie, Participant to clarify data sources and limitations, refine key questions for the CRCSI project – 'Improving equity of hepatitis B treatment access and outcomes by informing spatial targeting of resources'
CRCSI Key Collaborator Meeting with Commonwealth Department of Health and other Key Stakeholders; Canberra, Australia, 09/03/17	Nicole Romero, Participant to clarify data sources and limitations, refine key questions for the CRCSI project – 'Improving equity of hepatitis B treatment access and outcomes by informing spatial targeting of resources'
CRCSI Key Collaborator Meeting with Commonwealth Department of Health and other Key Stakeholders; Canberra, Australia, 09/03/17	Karen Mcculloch, Participant to clarify data sources and limitations, refine key questions for the CRCSI project – 'Improving equity of hepatitis B treatment access and outcomes by informing spatial targeting of resources'
AFAO's BBV and STI Research Roundtable; Sydney, Australia, 31/03/17	Nicole Allard, Hepatitis B Unmet Needs
World Public Health Congress: WHO Collaborating Centres Meeting: "Think Globally, Act Locally"; Melbourne, Australia, 05/04/17	Laura Thomas, Centre Representative and Participant

## Engagement in WHO activities and meetings

The Director and other Centre staff were invited to attend and engage in a variety of WHO activities and meetings around the world throughout the reporting period on matters relating to viral hepatitis and the global agenda for viral hepatitis control.

### Event; location, date

### Centre staff; involvement

WHO First meeting of the Viral Hepatitis	Benjamin Cowie, Participant
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Strategic Information and Modelling Reference Group; Geneva, Switzerland, 14-16/06/16	
First Meeting of Hepatitis Program Focal Points from High Burden Countries in Asia; 22-24/06/16	Stephen Locarnini, Participant
2nd Regional Forum of WHO Collaborating Centres in the Western Pacific; Manila, Philippines, 28-29/11/16	Benjamin Cowie, Participant Laura Thomas, Participant
WHO Collaborating Centre Regional Reference Laboratory Scoping meeting; Teleconference, 13/10/16	Stephen Locarnini, Participant Kathy Jackson, Participant Margaret Littlejohn, Participant Ben Cowie, Participant Laura Thomas, Participant Suellen Nicholson, Participant
Kiribati Serosurvey Collaboration with Kiribati Ministry of Health and Medical Services, WPRO and WHO CC VH; Teleconference, 12/10/16	Stephen Locarnini, Participant Kathy Jackson, Participant Margaret Littlejohn, Participant Ben Cowie, Participant Laura Thomas, Participant Suellen Nicholson, Participant
Kiribati Serosurvey Collaboration with Kiribati Ministry of Health and Medical Services, WPRO and WHO CC VH; Teleconference, 05/12/16	Stephen Locarnini, Participant Kathy Jackson, Participant Margaret Littlejohn, Participant Ben Cowie, Participant Laura Thomas, Participant Suellen Nicholson, Participant
Viral Hepatitis in Asia: collaborating for results; Hong Kong, 1-9/06/17	Stephen Locarnini, WHO Regional Reference Laboratory Representative
International Roundtable Summit on Funding for Elimination of Viral Hepatitis; Hong Kong, 20-21/06/17	Stephen Locarnini, WHO Regional Reference Laboratory Representative



WHO Collaborating Centre Regional Reference Laboratory Meeting; Teleconference, 17/01/17	Stephen Locarnini, Participant Kathy Jackson, Participant Margaret Littlejohn, Participant Scott Bowden, Participant Suellen Nicholson, Participant
WHO Collaborating Centre Regional Reference Laboratory Technical Meeting; Teleconference, 19/01/17	Kathy Jackson, Participant Margaret Littlejohn, Participant Scott Bowden, Participant Suellen Nicholson, Participant
WHO Collaborating Centre Regional Reference Laboratory Terms of Reference Meeting; Teleconference, 17/01/17	Stephen Locarnini, Participant Kathy Jackson, Participant Margaret Littlejohn, Participant Scott Bowden, Participant Suellen Nicholson, Participant Nicole Romero, Participant Laura Thomas, Participant
Consultative Meeting on Viral Hepatitis Surveillance, Monitoring and Evaluation; Manilla, Philippines, 16-17/02/17	Ben Cowie, Technical Expert
5th meeting of the Hepatitis B Expert Resource Panel; Manilla, Philippines, 18-19/02/17	Ben Cowie, Participant
1st Expert Consultation on the Triple Elimination of Mother-to-Child Transmission of HIV, Hepatitis B and Syphilis; Manilla, Philippines, 20-21/02/17	Ben Cowie, Participant
First National workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems Planning Meeting; Teleconference, 11/04/17	Ben Cowie, Participant Margaret Littlejohn, Participant Suellen Nicholson, Participant Nicole Romero, Participant

First National workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems Planning Meeting; Teleconference, 20/04/17	Ben Cowie, Participant Margaret Littlejohn, Participant Suellen Nicholson, Participant Nicole Romero, Participant Laura Thomas, Participant
WHO Regional Cascade Development Meeting; Teleconference, 04/04/17	Nicole Romero, Participant Laura Thomas, Participant
WHO Global Hepatitis Report Launch, Amsterdam, The Netherlands, 20/04/17	Stephen Locarnini, Attendee Peter Revill, Attendee
First National workshop for strengthening and linking viral hepatitis laboratory, surveillance and patient monitoring systems; Ulaanbaatar, 23-27/04/17	Ben Cowie, Organiser, Facilitator, Presenter Margaret Littlejohn, Organiser, Facilitator, Presenter Suellen Nicholson, Organiser, Facilitator, Presenter Nicole Romero, Organiser, Presenter, Rapporteur Laura Thomas, Organiser, Facilitator, Rapporteur

## Visitors to the Centre

The Centre hosted a number of visitors from a range of organisations and institutes around the world, as well as representatives from WHO.

Date	Visitor; affiliation and <i>purpose</i>
28/07/16	Mr Jack Wallace, Australian Research Centre in Sex, Health and Society, LaTrobe University, <i>Hepatitis Day Symposium: Towards Hepatitis Elimination</i>
28/07/16	Prof Margaret Hellard, Centre for Population Health, Burnet Institute, <i>World Hepatitis Day Symposium: Towards Hepatitis Elimination</i>

28/07/16	Prof Alex Thompson, Dept. Gastroenterology, St Vincent's Hospital, Melbourne, <i>World Hepatitis Day Symposium: Towards Hepatitis Elimination</i>
28/07/16	Ms Lien Tran, Hepatitis Victoria, <i>World Hepatitis Day Symposium: Towards Hepatitis Elimination</i>
03/02/17	Ms Stacey Rowe, Department of Health and Human Services (Vic), <i>WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group</i>
03/02/17	Ms Lien Tran, Hepatitis Victoria, <i>WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group</i>
03/02/17	Mr Jack Wallace, Australian Research Centre in Sex, Health and Society, LaTrobe University <i>WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group</i>
03/02/17	Ms Emily Adamson, Cancer Council of Victoria, <i>WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group</i>
2016-2017	Regular visitors (e.g. Doctors, Registrars and Sexual Health clinic workers) to the Serology Laboratory with the <i>aim of educating them about viral Hepatitis serological testing.</i>

## Committees and advisory groups

Centre staff members served on the following governing boards, committees and advisory groups during 2016-2017.

Centre staff	Committee/Group
Scott Bowden	Member, Basic Science Committee, Australasian Viral Hepatitis Conference Member, Committee reviewing National Hepatitis B Testing Policy

	<p>Member, Committee reviewing National Hepatitis C Testing Policy</p> <p>Member, External Peer Review Group, WHO Guidelines on Hepatitis B and C Testing</p>
Stephen Locarnini	<p>Member, External Peer Review Group, WHO Guidelines on Hepatitis B and C Testing</p>
Benjamin Cowie	<p>Chair, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group</p> <p>Member, Departmental Advisory Committee for Blood Borne Viruses and Sexually Transmissible Infections, Victorian Government Department of Health and Human Services</p> <p>Chair, Abstract Sub-committee, 2<sup>nd</sup> World Hepatitis Summit, São Paulo November 2017</p> <p>Member, Organising Committee and Chair, Epidemiology, Public Health &amp; Prevention sub-committee, Australasian Viral Hepatitis Conference, Gold Coast 2016</p> <p>Member, Organising Committee, Australasian Viral Hepatitis Elimination Conference, Cairns 2017</p> <p>Member, Global Hepatitis Programme, WHO Strategic Information and Modelling Reference Group</p> <p>Member, WPRO, WHO, Hepatitis B Expert Resource Panel</p> <p>Member, WPRO, WHO, Strategic and Technical Advisory Committee for Viral Hepatitis</p> <p>Member, Hepatitis Australia, Hepatitis B Community Education Project Steering Committee</p> <p>Member, National BBV and STI Surveillance Sub-committee, Communicable Diseases Network Australia (CDNA)</p>

	<p>Member, STI/BBV Strategic Directions Committee, Australian Research Centre in Sex Health and Society (ARCSHS), La Trobe University</p> <p>Member, Victorian Hepatitis B Alliance</p> <p>Member, Victorian Planning Committee for World Hepatitis Day 2017</p> <p>Member, Justice Health Clinical Advisory Committee, Victorian Government Department of Justice and Regulation</p> <p>Chair, National Hepatitis B Reference Committee, Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine</p>
Margaret Littlejohn	Secretary, ACHV
Jennifer MacLachlan	<p>Member, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group</p> <p>Member, Epidemiology, Public Health &amp; Prevention Committee, Australasian Viral Hepatitis Conference</p> <p>Member, Board, Hepatitis Victoria</p> <p>Member, Blood-Borne Virus and Sexually Transmissible Infection Surveillance Data Subcommittee, Victorian Government Department of Health and Human Services</p> <p>Member, Victorian Planning Committee for World Hepatitis Day</p>
Peter Revill	<p>President, ACHV Committee, ICE-HBV</p> <p>Member, ICE-HBV Governing Board</p> <p>Member, ICE-HBV Virology Group</p> <p>Member, ICE-HBV Immunology Group</p> <p>Member, ICE-HBV Innovative Tools Group</p> <p>Member, Victorian Planning Committee for World</p>

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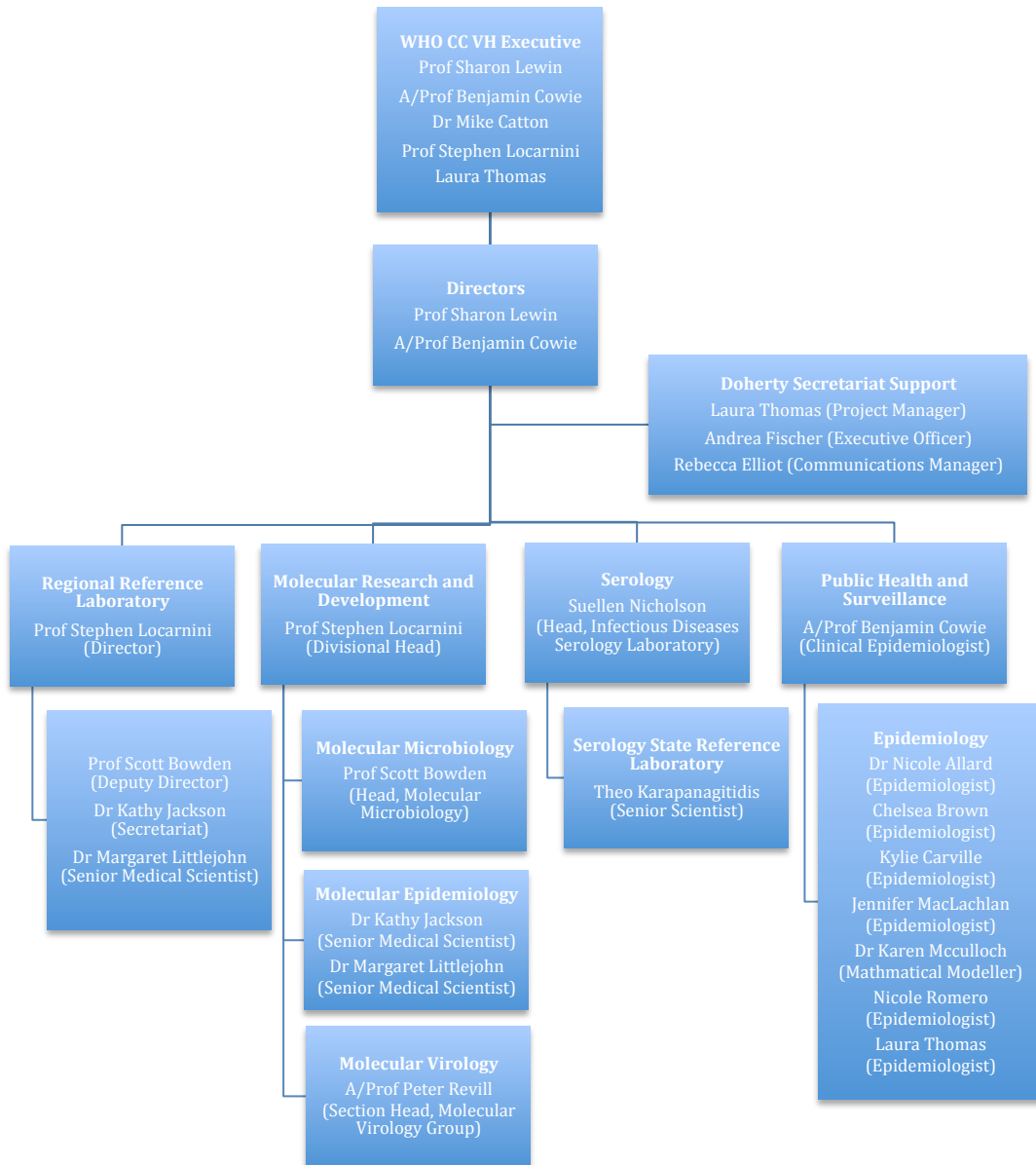
## Hepatitis Day 2017

Laura Thomas	Member, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group Member, Committee, Australasian Association of Bioethics and Health Law Conference Member, Abstract Sub-committee, 2 <sup>nd</sup> World Hepatitis Summit, São Paulo November 2017 Member, Victorian Planning Committee for World Hepatitis Day 2017
Nicole Allard	Member, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group Committee Member, Australasian Viral Hepatitis Elimination Conference
Nicole Romero	Member, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group
Chelsea Brown	Member, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group
Karen Mcculloch	Member, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group
Kylie Carville	Member, WHO Collaborating Centre for Viral Hepatitis Epidemiology and Public Health Research Advisory Group

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# Management and staff

## Organisational Structure



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