

*A Centre for Infectious Diseases and Microbiology - Public Health (CIDM-PH), and
Sydney Emerging Infections and Biosecurity Institute (SEIB) publication*

The Broad Street Pump

“A World United Against Infectious Diseases: Cross-Sectoral Solutions”

**The 2nd International One Health Congress
30 January - 1 February 2013, Bangkok, Thailand**

**Michael Ward and Siobhan Mor
SEIB and Faculty of Veterinary Sciences, University of Sydney**

This meeting was embedded within the prestigious Prince Mahidol Award Conference series. At the same time, the 1st Global Conference on Regional Surveillance Networks, the Centennial Commemoration of the Rockefeller Foundation and many specific side meetings, were held. In total, there were 966 invited participants from 73 countries, representing academics, governments (including public health, animal health and agricultural instrumentalities), WHO (World Health Organisation), OIE (Organisation for Animal Health) and FAO (Food and Agricultural Organisation, NGOs, funders (including the World Bank) and other bodies.

This congress followed the first One Health conference, held in Melbourne just over 2 years ago, at which it was recognised that inter-sectoral collaborations are required to maintain and improve the health of the planet as a whole (i.e. the sustainability of our world relies on the inter-related health of the environment, agriculture, animals and humans). Furthermore it was agreed that promotion of the concept of one health and achievement of positive outcomes, are a systems issue, not one that would prosper from absorbing specialties and sectoral strengths into yet another administrative and professional silo. *Continued next page.....*



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“A World United Against Infectious Diseases: Cross-Sectoral Solutions”

There were 3 major themes at this second congress: local to global surveillance, cross-sectoral policies, strategies and tools, and sustainability and paradigm shifts. There was a strong emphasis on maintaining specialities and sectoral strengths, and finding ways of linking them to develop solutions. Our own efforts in the Sydney Institute for Emerging Infections and Biosecurity echo this philosophy. Much of the conference focussed on the work that is being done to enhance disease surveillance and preparedness through promoting information exchange across sectors and regions. At the global level, WHO/FAO/OIE (the “tripartite”) spoke of their efforts to share information on health threats detected through their respective systems. The conference also marked the official launch of CORDS, a new non-governmental organization which will facilitate improved communication across regional surveillance networks (www.cordsnetwork.org/).

There were many examples of national activities and efforts by individuals to integrate work at the human, animal and ecosystem (geographical, physical and behavioural) interface. As an example, a nurse and epidemiologist working on the Thai/Laos border spoke about breaking down borders that act as barriers- real and conceptual, through teamwork. In her case this involved building trust between different nationalities, ethnic groups, disciplines and use of innovative approaches to problem-solving.

The importance of promoting both public and professional understanding of one-health issues, as a basis for community action, was discussed by Larry Brilliant (MD and MPH). Larry is the President of Skoll Global Threats Fund, USA, whose mission is to confront global threats that imperil humanity, including pandemics (www.skollglobalthreats.org). The founder of the organisation, Jeff Skoll, is better known as the founder of eBay (the world’s largest on-line marketplace). Production of the acclaimed feature length movie, *Contagion*, resulted from collaboration between the two men. Larry outlined how the story was developed and the difficulty of combining science and public health messages within the same script. This type of product reaches a wide audience and a sequel to *Contagion* is in production. Research into public engagement with contemporary issues including one-health initiatives is increasingly important.

Several social scientists – including U. Sydney’s Cynthia Hunter – outlined their research into the influence of culture on transmission and risk of diseases such as avian influenza and anthrax. Cultural practices and beliefs highly influenced the effectiveness of control measures attempted by medical and veterinary teams. Julienne Anoko – an anthropologist from Niger – spoke of her experience working with epidemiologists in Angola to contain a Marburg outbreak. Through her inputs,

they were able to “humanize” their response activities and, in so doing, improve community acceptance of their work.

In reflecting on the side-meetings and presentations at the Congress, the closing session sought to outline the way forward for the One Health community of practice. The need to move beyond the current emphasis on surveillance to a greater focus on prediction and prevention was noted. To achieve this, it was proposed that we must develop methods and tools to improve knowledge on transmissibility and pathogenicity – things which are currently difficult to anticipate when isolating novel pathogens – for instance by linking spatial systems with molecular data. Systems strengthening – particularly on the animal health side – was also supported as a key area for future emphasis, as was the need to better integrate the environmental and business sectors. Equity and rights were a continuing theme, with recognition that we need to increase community engagement – particularly in remote areas – to ensure that disease control strategies are culturally, socially and economically appropriate. As Veronica Amazigo – one of the Prince Mahidol Award recipients – said: “Villagers know less, but they understand more.”

Seeing beyond Emerging Infectious Diseases. With the current emphasis on EIDS, there is a danger that we are starting to see nature (especially wildlife and fish) as a source of infectious risk rather than a “primordial source of health which is to be cultivated” (Craig Stephen, Centre for Coastal Health, Canada). It was proposed that for One Health to be sustainable, it must be integrated into national and international strategic plans for human development and food security. David Nabarro (United Nations) reminded the audience that this requires the current focus on zoonotic disease to be expanded to include diseases of importance to animal production and trade. It was boldly suggested that RIO+20 consider redefining the post-Millennium Development Goals (www.to to include food security, the environment and animal sectors. Further, the role of educational institutions was noted as the key to mainstreaming One Health through ensuring that workplaces are transformed, for instance by providing a fresh supply of keen, collaborative and One Health-sensitized graduates.

Overall, One Health has to avoid creating just another silo. As part of the concept of cross-sectoral solutions, individual sectors (such as animal health) and regional networks (such as in Africa and Asia) need to be strengthened and scaled-up for the common good. How to expand One Health by involving more disciplines and the private sector is likely to be addressed at the next One Health Congress, to be held in Amsterdam in 2015. Speaker documents and presentations are available for download at the conference website (www.pmaconference.mahidol.ac.th).

SEIB and One Health

Tania C Sorrell, Lyn Gilbert, Ben Marais, Michael Ward

The terminology of One Health is problematic as it has different meanings in different contexts. SEIB endorses the broadest meaning of the term as exemplified in the following opinion piece, written for the (2012) GO8 meeting, Camp David, USA.

Beyond the Millennium Development Goals:

One planet – one health: moving towards sustainable solutions.

The most important challenge to health is the pace of change in a world where all types of interaction are becoming increasingly complex and interconnected

The Millennium Development Goals (MDGs) are an important United Nations initiative to improve global health. They recognise that alleviation of poverty, adequate nutrition and clean water, education and the integrity of the environment are critical requirements for a healthier planet. Despite some progress, one in eight children in sub-Saharan Africa still die before the age of five, from malnutrition, diarrhoea, malaria and pneumonia; in South Asia, maternal and newborn deaths from sepsis, malnutrition, HIV and malaria are common. HIV, malaria and tuberculosis are being targeted specifically, but a greater emphasis on underlying factors is needed. Funding for research into the sociopolitical determinants of health is limited and health systems are failing in the current climate of economic and environmental instability. It is in such a setting that infectious diseases emerge and spread.

Infectious diseases will continue to challenge and erode global health initiatives if we cannot address these underlying problems in developing countries, and prevent and control the spread of infections to, and within, developed countries. Research and capacity building across discipline boundaries are needed to unravel the complex interactions that drive the emergence and re-emergence of infectious diseases. Known factors include changes in commerce and agriculture; population displacement due to natural catastrophes and wars; climate change; human incursions into animal habitats and vice versa; increased global travel; uncontrolled use of antibiotics and chemicals driving microbial evolution.

A critical barrier to health improvement is antimicrobial resistance, acknowledged by WHO early in 2012 as a serious, growing and global threat to health. Totally drug-resistant (untreatable) malaria and tuberculosis were reported in 2012; many bacteria that cause potentially fatal sepsis, pneumonia, diarrhea and meningitis are now resistant to commonly available, and sometimes all, antibiotics.

Serious infections regularly cross the species barrier from domestic and wild animals into human populations, causing

major financial and social impacts as demonstrated by the HIV pandemic and more recent SARS and “swine flu” outbreaks. The frequency of these events is predicted to increase, given greater human-animal contact and increased exposure caused by habitat disturbance and climate change-induced natural disasters.

The Asia-Pacific region is an important “hot spot” for emerging infectious diseases, with favourable climatic conditions, high population densities, livestock intensification to meet increasing demands for protein and poorly regulated antimicrobial use. Because of extensive international travel and global trade that rapidly bypass geographic and social boundaries, these infections are a global threat.

The Sydney Institute for Emerging Infections and Biosecurity (SEIB) promotes multidisciplinary partnerships in research and capacity building, primarily in the Asia-Pacific region. We are developing novel insights into complex infectious disease interactions, through research that engages environmental, biological, health, social (media and communications) and political sciences, law and ethics.

To support and implement new research findings and rein in epidemic infections, we need political will, adequate tools for detection, intergovernmental and interdisciplinary cooperation, an educated constituency and functional health systems, now.

News & Events

Genetics of Tasmanian Devil facial tumour disease

Professor Kathy Belov

When: Monday, 18 March 2013

Where: Lecture Theatre 3, Westmead Education & Conference Centre, Westmead Hospital

Time: 12.30pm - 1.30pm

Information & RSVP: seib@sydney.edu.au

Whole Genome Sequencing in Diagnostic Microbiology

When: Friday, 31 May 2013

Where: Auditorium, Westmead Education & Conference Centre, Westmead Hospital

Time: 8.30am - 5.00pm

Information & RSVP:

lou.orszulak@swahs.health.nsw.gov.au



Dr Grant Hill-Cawthorne

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Grant studied medicine in Cambridge and during his junior doctor years was very interested in both neurology and infectious diseases. Clinically he specialised in medical microbiology, keeping a particular interest in neurological infections. For the past 3 years he has been in Saudi Arabia developing a pathogen genomics laboratory, gaining firsthand experience of second generation sequencing and bioinformatics.

RESEARCH INTERESTS

Infectious diseases and medical microbiology are undergoing the most significant shift since PCR was introduced. By the end of this decade, sequencing will have become the main option when investigating any outbreak or infection. Grant studies the interface between genomics as a pure science and its translation into clinical benefits. In particular he is interested in using sequencing as a diagnostic tool and for prognostication, including assessing drug resistance.

Much of his recent work has been on the global genomic diversity of tuberculosis and markers of drug resistance. In Sydney he will be continuing to explore the clinical application of sequencing for tuberculosis and the diagnosis of non-tuberculous mycobacteria.

Grant's clinical interest is neurological infections and examining the use of sequencing to aid in the diagnosis of the 50% of cases of encephalitis in which a causative aetiology is currently not identified.

CONTACT US

For more information on any articles or CIDM-PH & SEIB events, or to join the e-lists and receive regular updates, please contact us.

CIDM-PH

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The Western Sydney Sexual Health Centre - the beginning of a new era in sexual health in Western Sydney.

The WSSHC, officially opened on 14th February 2013, brings together clinical services, research and teaching in order to improve sexual health outcomes at both an individual and population level. Our goal is to enhance service to our community and provide a world-class resource in sexual health through our graduate education programs for local and international students and clinical research programs. Our research currently centres on improving service delivery to marginalised groups and evaluation of acceptance and impact of HPV vaccination.

<http://sydney.edu.au/medicine/wsshc/>



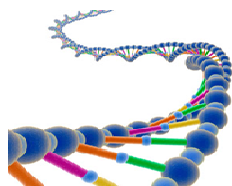
Opening of Western Sydney Sexual Health Centre

Left to right: Dr Shailendra Sawleshwarkar, Senior Lecturer, HIV & Sexual Health; Ms Jennifer Walsh, Nurse Unit manager, WSSHC; A/Professor Richard Hillman, Acting Academic lead, WSSHC; Dr Geoff Lee, Member for Parramatta; Professor Tania Sorrell, Acting Director, WSSHC; Dr Catriona Ooi, Clinical Services Lead, WSSHC.

WHOLE GENOME SEQUENCING IN CLINICAL AND PUBLIC HEALTH MICROBIOLOGY

FRIDAY 31ST MAY 2013

CIDM-PH & SEIB Workshop



Loewenthal Auditorium, Westmead Hospital,
Sydney

Invited Speakers:

*Professor Eddie Holmes, University of Sydney and
Fogarty International Center, National Institute of
Health, USA*

*Dr Grant Hill-Cawthorne, SEIB and the University of
Cambridge, UK*

*Dr Tanya Golubchik, Departments of Medicine and
Statistics, University of Oxford, UK*

A/Prof Ruiting Lan, University of New South Wales

*Dr Sebastian van Hal, Royal Prince Alfred Hospital,
Sydney*



The aim of this workshop is to give microbiologists an overview of the applications of next generation sequencing (NGS) in diagnosis and surveillance of infectious diseases. The emphasis will be on methods of analysis of bacterial and viral genome sequencing data generated by NGS platforms, principally by benchtop Illumina and Ion Torrent, and on the utility of NGS for infection control and public health.

**A Centre for Infectious Diseases & Microbiology –
Public Health (CIDM-PH) and Sydney Emerging
Infections and Biosecurity Institute (SEIB), University
of Sydney, Workshop**

Program and Registration

www.cidmpublichealth.org
www.sydney.edu.au/seib

Workshop Enquiries

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