

PROGRAMME FOR MONDAY – 8th NOVEMBER 2010	
Time	Session
8:30am – 9:00am	Registration and Welcome
9:00am – 9:10am	Opening Address
9:10am – 9:30am	Professor Philip Hill Centre for International Health, Preventive and Social Medicine, University of Otago International Health at the University of Otago
9:30am – 9:50am	Professor David Murdoch Pathology, Christchurch School of Medicine, University of Otago PERCH-Pneumonia etiology research for child health
9:50am – 10:00am	Discussion
10:00am – 10:30am	Morning Tea
SESSION THEME	HEALTH ECONOMICS
10:30am – 11:00am	Professor David Fielding Economics, University of Otago Inertia and Herding in Humanitarian Aid Decisions
11:00am – 11:15am	Ms Aurelia Lepine (PhD Candidate) Economics, University of Otago Health care utilization in rural Senegal: A multilevel modelling approach *Presentation eligible for student prize
11:15am – 11:30am	Dr Rick Audas Economics & Preventive and Social Medicine, University of Otago International and Inter-regional migration of doctors: The case of New Zealand
11:30am – 11:45am	Professor Brendan Gray Centre for Entrepreneurship, School of Business, University of Otago Is entrepreneurship good for you? Exploring links between entrepreneurship, community development and health

11:45am – 12:00pm	Ms Carmel Williams (PhD Candidate) School of Population Health, University of Auckland Assessing the impact of global health programmes: first do no harm *Presentation eligible for student prize
12:00pm – 12:15pm	Discussion
12:15pm – 1:15pm	Lunch
SESSION THEME	NATURAL DISASTERS AND CONFLICT
1:15pm – 1:30pm	Dr Tai Sopoaga Preventive and Social Medicine & Associate Dean - Pacific, Health Sciences, University of Otago Tsunami in Samoa: public health evaluation and intervention
1:30pm – 1:45pm	Drs Elspeth Macdonald and Theresia (Citra) Citraningtyas Centre for Mental Health Research(Elspeth)/Psychology (Theresia), The Australian National University, Canberra A multi-faceted model of disaster mental health: Case examples from the 2003 Canberra bushfire and the 2004 tsunami in Aceh
1:45pm – 2:00pm	Ms Holly Guthrey (PhD Candidate) Peace and Conflict Studies, University of Otago Victim Healing in Post-Conflict Societies *Presentation eligible for student prize
2:00pm – 2:15pm	Ms Christine Briasco NZAID, Ministry of Health Partners in Development
2:15pm – 2:30pm	Discussion
2:30pm – 3:00pm	Afternoon Tea

SESSION THEME	CENTRE FOR INTERNATIONAL HEALTH AND COLLABORATORS RESEARCH PROJECTS
3:00pm – 3:15pm	<p>Ms Fulisia Aiavao¹ and Dr Tamasailau Suaali'i-Sauni²</p> <p>¹Faculty of Nursing and Health Sciences, National University of Samoa ²Centre for International Health, Preventive and Social Medicine, University of Otago</p> <p>The Fa'atosaga Gift: Reflections on the "public health" value of Samoan Traditional Birth Attendants in Samoa</p>
3:15pm – 3:30pm	<p>Dr Tamasailau Suaali'i-Sauni</p> <p>Centre for International Health, Preventive and Social Medicine, University of Otago</p> <p>Activities of the Centre for International Health in Samoa</p>
3:30pm – 3:45pm	<p>Ms Merrin Rutherford</p> <p>Centre for International Health, Preventive and Social Medicine, University of Otago</p> <p>Quantiferon Gold-IT Assay vs Tuberculin Skin Test for the Diagnosis of TB Infection in Indonesian Children in Contact with an Adult TB Case</p>
3:45pm – 4:00pm	<p>Ms Merrin Rutherford</p> <p>Centre for International Health, Preventive and Social Medicine, University of Otago</p> <p>Management of Child case contacts in Indonesia: Using a public health framework to bridge the policy-practice gap</p>
4:00pm – 4:15pm	<p>Dr Susan Jack (PhD Candidate)</p> <p>World Health Organisation, Cambodia & Preventive and Social Medicine, University of Otago</p> <p>Verbal Autopsy Study to Determine Cause of Death in Children Under Five Years in Rural Cambodia. *Presentation eligible for student prize</p>

4:15pm – 4:30pm	<p>Ms Onalenna Seitio (PhD Candidate)</p> <p>Preventive and Social Medicine, University of Otago</p> <p>Restructuring of the Botswana health system: an evaluation*Presentation eligible for student prize</p>
4:30pm – 4:45pm	<p>Dr Uzoh Egere (MPH Candidate)</p> <p>Preventive and Social Medicine, University of Otago</p> <p>Randomised controlled trial of pneumococcal conjugate vaccine in rural Gambia: infant analysis*Presentation eligible for student prize</p>
4:45pm – 5:00pm	Discussion
5:30pm – 6:30pm	<p>KEYNOTE ADDRESS: McAuley Oration</p> <p>Professor Brian Greenwood</p> <p>London School of Hygiene and Tropical Medicine</p> <p>Epidemic Meningitis in Africa: Is the end in sight?</p> <p>Venue: Colquhoun Lecture Theatre, 1st Floor Dunedin Hospital</p> <p>ALL ARE WELCOME</p>
7:00pm	<p>Conference Dinner (optional)</p> <p>Ombrellos Café & Bar</p> <p>10 Clarendon Street</p> <p>Limited Seats. Contact Vanessa (021 055 4022) to book your seat.</p>

PROGRAMME FOR TUESDAY – 9th NOVEMBER 2010	
Time	Session
9:00am – 9:45am	<p>DCC – Economic Development Unit Sponsored Session</p>  Applying to International Funders
	<p>Opening Comments Dr Graham Strong, Economic Development Unit Dunedin City Council</p> <p>Discussion Panel:</p> <ol style="list-style-type: none"> 1. Professor Rosalind Gibson, Human Nutrition, University of Otago 2. Professor Brian Greenwood, London School of Hygiene and Tropical Medicine 3. Professor Philip Hill, Preventive and Social Medicine, University of Otago 4. Professor David Murdoch, Pathology-Christchurch School of Medicine, University of Otago 5. Professor Donal Robertson, Pro-Vice Chancellor, Health Sciences Division
9:45am – 10:00am	Discussion
10:00am – 10:30am	Morning Tea
SESSION THEME	NUTRITION AND HUMAN HEALTH
10:30am- 10:45am	<p>Ms Kavitha Menon (PhD Candidate) Human Nutrition, University of Otago</p> <p>Iron Status of Pregnant Tribal Women from Ramtek Block, Nagpur, India*Presentation eligible for student prize</p>
10:45am – 11:00am	<p>Dr Sian Halcrow Anatomy and Structural Biology, University of Otago</p> <p>Investigating human health in the past: insights from prehistoric infants and children</p>
11:00am – 11:15am	<p>Dr Nancy Tayles Anatomy and Structural Biology, University of Otago</p> <p>The price of agriculture: health in late prehistoric Southeast Asia</p>

11:15am – 11:30am	Ms Angela Clark (PhD Candidate) Anatomy and Structural Biology, University of Otago Sexual dimorphism and health during the intensification of rice agriculture in early prehistoric Southeast Asia *Presentation eligible for student prize
11:30am – 11:45am	Dr Hallie Buckley Anatomy and Structural Biology, University of Otago New Lapita Burials from the SAC site on Watom Island, East New Britain
11:45am – 12:15pm	Professor Rosalind Gibson Department of Human Nutrition, University of Otago Combating micronutrient deficiencies during early childhood in low income countries: supplementation vs. fortification vs. food-based interventions
12:15pm – 12:30pm	Discussion
12:30pm – 1:15pm	Lunch
SESSION THEME	MALARIA AND INFECTIOUS DISEASES GENETICS
1:15pm – 1:30pm	Professor Stephen Duffull School of Pharmacy, University of Otago Adjunctive Use of Arginine for Treatment of Malaria
1:30pm – 1:45pm	Dr Nicholas Douglas (PhD Candidate) Menzies School of Health Research, Australia & Nuffield Department of Clinical Medicine, University of Oxford The burden and control of vivax malaria *Presentation eligible for student prize
1:45pm – 2:00pm	Professor Frank Griffin Microbiology and Immunology, University of Otago Heritable Resistance and Susceptibility to pathogenic Mycobacteria: A Deer Model

2:00pm – 2:30pm	Professor Brian Greenwood London School of Hygiene and Tropical Medicine Malaria elimination
2:30pm – 2:45pm	Discussion
2:45pm – 3:15pm	Afternoon Tea
SESSION THEME	INTERNATIONAL HEALTH AND PRIMARY CARE
3:15pm – 3:30pm	Ms Andrea McDonald (MSc Candidate) London School of Hygiene and Tropical Medicine How twins differ – not just a common occurrence: Analysis of care-seeking in pregnancy from the 2008 Nigeria Demographic and Health Survey *Presentation eligible for student prize
3:30pm – 3:45pm	Ms Rebecca Psutka London School of Hygiene and Tropical Medicine & Preventive and Social Medicine, University of Otago Microbiological effectiveness and cost of disinfecting drinking water by boiling in peri-urban Zambia
3:45pm- 4:00pm	Dr Susan Heydon School of Pharmacy, University of Otago Changing patterns in medicines use in a Himalayan community
4:00pm – 4:30pm	Prize-giving and Closing

ABSTRACTS (IN ORDER OF PRESENTATION AND WHERE RECEIVED)

Inertia and Herding in Humanitarian Aid Decisions

D. Fielding, Department of Economics, University of Otago
Dunedin, New Zealand

Using panel data for the period 1995-2008, we model the aid allocation decisions of the three largest official donors of humanitarian aid: the United States government, the United Kingdom government and the European Commission. We find evidence that donor decisions depend on both the recipient's need and the donor's economic interest, but with marked asymmetries in the relative importance of different factors across the three donors. Moreover, some donors exhibit much more inertia than others in responding to new areas of need, and some are much more influenced by the decisions of other donors. Despite being a relatively small donor, the United Kingdom is particularly influential.



Health care utilization in rural Senegal: A multilevel modelling approach

A. Lepine¹ and A. Le Nestour²

^{1,2}Department of Economics, University of Otago
Dunedin, New Zealand

In the context of the national debate on the extension of health insurance for farmers in Senegal, we collected information about 505 households and 18 health posts in order to know the determinants of health care utilization before the project implementation. The aim of our study is to analyze the determinants of the use of curative care from qualified workers in an area where 94% of the population do not have health insurance coverage. We use a multilevel logistic regression model to control for the unobserved effects at the household and community level that affect people's health-seeking behaviour. While most studies focus on characteristics of the demand, we also add characteristics of the closest facility to analyze the impact of accessibility, price and quality of medical services on health-seeking behaviour. To analyze the impact of economic status, we include the cost of time of health inputs to take into account that the better off have a higher opportunity cost of time. We find that household economic status, price and quality of care are important determinants of the likelihood of seeking treatment from a qualified provider. The socio-economic inequalities in the use of curative care suggest the importance to expand health insurance coverage to low and middle-income households.



Assessing the impact of global health programmes: first do no harm

C. J. Williams, MA ¹
G. Brian, FRANZCO ²

¹ School of Population Health, University of Auckland

² Dunedin School of Medicine, University of Otago

Background

Historically, there has been complacency about the outcomes of global health interventions, resulting from an underlying attitude that any aid-funded health project will be an improvement on what is available in developing countries. However, there is enough evidence now to know this is not the case, with some health programmes further weakening fragile health systems and jeopardising their ability to provide basic health care. Therefore, in order to protect people's right to health, proposed global health interventions should undergo a health systems impact assessment.

Method

Using a rights-based health system impact assessment tool, an eye health intervention proposed by NGOs for Papua New Guinea was examined for its likely impact on each of the component parts of the health system.

Results

The proposed plan was found to weaken every aspect of the health system.

Conclusions

The rights-based assessment showed the proposal was not just damaging, unworkable, and unsustainable, but also a breach of international health law. In weakening the health system, the availability, accessibility and quality of other essential health care services would have been jeopardised. Global health partners must acknowledge they are legally obliged to respect, protect and fulfill the right to health, and demonstrate their initiatives will do so.



A multi-faceted model of disaster mental health: Case examples from the 2003 Canberra bushfire and the 2004 tsunami in Aceh

E.M. Macdonald¹ and T. Citraningtyas²

¹University of Otago, Dunedin, New Zealand

²The Australian National University, Canberra, Australia

We present a multi-faceted model of disaster mental health using case examples from interviews with adults affected by the 2003 Canberra bushfire and adults affected the 2004 tsunami in Aceh. Issues that interplay with people's mental health and well-being can present in

different life domains. For example, in Canberra, interviewees reported medical complaints following severe stress in the bushfire, expressed their anger through political struggles, and experienced conflict in intimate relationships.

These different presentations may or may not receive appropriate support from the community and different professionals or services. For example, survivors who present their struggle in a legal-political domain rarely get a response that considers emotional aspects. At the same time, medicalization of issues related to disaster mental health may not always provide the best solution. In Aceh, for example, the community has encouraged interviewees to pray, get married, or learn healthy coping within the context of a job. Some interviewees reported these to be most helpful. A culturally-appropriate interdisciplinary approach to disaster mental health is thus needed.



Victim Healing in Post-Conflict Societies

H. L. Guthrey, Peace and Conflict Studies, University of Otago
Dunedin, New Zealand

Victim healing is often stated as a goal of post-conflict justice processes undertaken in societies transitioning from periods of conflict to periods of peace. Although transitional justice literature places substantial focus on this issue, minimal systematic research exists to determine whether victims are actually healed through participating in transitional justice mechanisms such as trials or truth commissions. Recent studies undertaken in Rwanda and the Balkans have suggested that the psychological benefits of truth-telling in transitional settings are limited; however, the conditions that increase the potential for victim healing in these processes have yet to be clarified. Whether a link exists between victim participation in transitional mechanisms, victim healing, and positive perceptions of transitional justice processes also remains to be empirically validated.

Through surveying existing literature, this paper examines justifications for focusing on victim healing in transitional nations and identifies factors that theoretically promote victim healing, thus illuminating conditions under which victim healing is more likely to occur. Through unpacking the issues that surround victim healing in transitional nations, a foundation will be built to facilitate the understanding of how victim healing can be achieved and the role that victim healing plays in creating positive perceptions of transitional justice processes.



The Faatosaga Gift: Reflections on the "public health" value of Samoan Traditional Birth Attendants in Samoa

F. Aiavao¹ and T. Suaalii-Sauni²

¹Faculty of Nursing and Health Sciences, National University of Samoa

²Centre for International Health, Dunedin School of Medicine, University of Otago

In 2007 Samoa legislated for the formal registration of traditional birth attendants (faatōsaga). The Samoa maternal health system is a combination of public and non-public service providers, including the National Health Service, NGOs, private medical practitioners, traditional healers and traditional birth attendants. The involvement of faatosaga within the public health sector raises interesting questions about the uneasy relationship between national practice standards and indigenous faatosaga values and practices. This presentation reflects on this relationship using preliminary findings from a joint National University of Samoa and University of Otago qualitative study looking at the life-stories of faatosaga resident and practising within Samoa



Quantiferon Gold-IT Assay vs. Tuberculin Skin Test for the Diagnosis of TB Infection in Indonesian Children in Contact with an Adult TB Case

M. Rutherford¹, B. Alisjahbana², L. Apriliani², W. Maharani², I. Yulita³, H. Sampurno³, R. Van Crevel⁴, P. Hill¹.

¹Center for International Health, University of Otago, Dunedin, New Zealand

²Health Research Unit, University of Padjadjaran, Bandung, Indonesia

³Community Lung Clinic, Bandung, Indonesia

⁴ Infectious diseases, Radbound University, Nijmegen, The Netherlands

Background:

Children infected with Mycobacterium tuberculosis (MTB) have relatively high risk of progression to disease. The tuberculin skin test (TST) for detection of latent MTB infection is problematic. We compared the performance of the Quantiferon Gold-In-tube assay (QFN) to the TST in Indonesian child contacts of TB cases.

Methods:

Child contacts of TB cases and age and sex matched healthy community control children were recruited. The QFN and TST tests were performed and results compared across a gradient of exposure. Child contacts over five years of age were retested after three months to assess test conversion and reversion rates. Test concordance and discordance were estimated using the kappa statistic and McNemar's test.

Results:

In 321 child case contacts test positivity was 49% and 49% for QFN and TST respectively, versus 30% and 14% in 100 community controls. Thus, for both, test positivity increased with increasing exposure. Overall test agreement was 80.0%, discordance was not significant (p -value 0.52). Agreement varied by exposure level largely driven by the relatively high proportion of QFN positive community controls. Conversion and reversion rates at three months were 23% and 15% respectively for QFN and 20% and 0% for TST.

Conclusion:

The QFT test performs similarly to the TST in Indonesian child contacts of a TB case, being at least as sensitive but there is evidence that it is less specific when community controls are tested. Early QFN test reversion is significant and indicates that a negative test should be regarded with caution.



Management of Child case contacts in Indonesia: Using a public health framework to bridge the policy-practice gap

M. Rutherford¹, B. Alisjahbana², H. Sampurno³, R. Van Crevel⁴, P. Hill¹

¹Center for International Health, University of Otago, Dunedin, New Zealand

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⁴Infectious diseases, Radbound University, Nijmegen, The Netherlands

Background:

Tuberculosis is the second largest killer among children worldwide. Children living with an infectious TB case are at high risk of disease progression. Due to this WHO policy recommends all children less than 5 years of age living with an infectious TB case be treated with six months Isoniazid Prophylactic Treatment (IPT). However in high burden countries this policy is seldom carried out. Comprehensive evaluation of barriers to policy implementation is required.

Objective:

To present a public health framework that comprehensively evaluates current practice and identifies methods to overcome barriers to policy implementation.

Setting:

An urban community lung clinic in Bandung, Indonesia.

Methods:

The framework includes a situational analysis to establish current practice regarding child case contact management, a gap analysis to identify gaps between current practice and

recommended policy and an options analysis to identify interventions to overcome policy-practice gaps. Investigations within the framework are mixed-method and multi-disciplinary.

Conclusion:

Comprehensive evaluation of all aspects of IPT in child case contacts in a high burden country will allow for the creation of an effective IPT program for this and other similar settings.



Verbal Autopsy Study to Determine Cause of Death in Children Under 5 Years in Rural Cambodia

S. J. Jack¹ and S. Sann Chan²

¹ World Health Organization, Cambodia

² Ministry of Health, Cambodia

Background

Cause-of-death data derived from verbal autopsy (VA) are increasingly used for health planning, priority setting, monitoring and evaluation in countries with incomplete or no vital registration systems. Cambodia estimates on the causes of death for children under 5 years from the last Demographic and Health Survey were less robust than expected so this study was undertaken.

Method

This study took a sample of children under 5 years who had died in Svay Rieng District during a 15 month period, August 2008 until September 2009. Parents underwent detailed interviews using a standard VA tool for 2 age groups: neonates and post-neonates. These were reviewed by 2 expert physicians with consensus cause of death assigned for each case

Results

A total of 367 deaths were reviewed with 37 neonates. Most deaths occurred in children under 6 months of age. Most neonates died in the first 3 days of life. Pneumonia is the leading cause of death for post-neonates, followed by diarrhoea, meningitis and sepsis. Infectious disease (sepsis and pneumonia) was the leading cause of death in neonates followed by birth asphyxia

Conclusions

These findings will help shape the strategic direction for improving child mortality in Cambodia over the next 5 years.



Iron Status of Pregnant Tribal Women from Ramtek Block, Nagpur, India

K.C.S. Menon¹, S.A. Skeaff², C. D. Thomson³, A.R. Gray⁴, E.L. Ferguson⁵, S. Zodpey⁶, A. Saraf⁷,
P.K. Das⁸, C. S. Pandav⁹

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^{6,7}Public Health Foundation of India, New Delhi

⁸Health and Family Welfare Training Centre, Nagpur

⁹All India Institute of Medical Sciences, New Delhi, India

Background

A comprehensive evaluation of iron status is essential to determine the aetiology of anaemia of pregnancy.

Method

A prospective, observational study was conducted in 2008 at Ramtek Block, Nagpur, India. Pregnant women (n=220) were recruited in the second trimester and followed into their third trimester (n=183). Blood samples and information on mineral-vitamin supplement use were collected. Iron status was evaluated using a combination of haemoglobin (Hb), serum ferritin (SF) and serum transferrin receptors (sTfR).

Results

Based on trimester specific CDC cut-off value for Hb concentration 41% at recruitment and 55% at the second visit had any anaemia (p<0.001). The proportion of women with SF <15 ng/mL and sTfR >4.4 ng/mL was <4% at both recruitment and at second visit. Together, these iron indices suggest that these pregnant women, although anaemic, had good iron status. The proportion of women who used iron supplements at recruitment was 62% and 71% at the second visit, respectively. Women who used iron supplements for more than seven days in the past month had a 3.23 g/L (95% CI: 0.55, 5.92) higher maternal Hb concentration than women who used iron supplements for less than 7 days in the past month.

Conclusions

The use of iron supplements for more than seven days in the past month improved iron status of these tribal pregnant women, suggesting that the government sponsored iron supplementation programme is beneficial.



Investigating human health in the past: insights from prehistoric infants and children

S.E. Halcrow¹, N. Tayles²

^{1,2} Department of Anatomy and Structural Biology, University of Otago
Dunedin, New Zealand

The development of agriculture marked a turning point in history, having significant consequences for social inequality, health and demography in past populations, and implications for current health issues, including overcrowding and malnutrition. Just as infant and child mortality and morbidity are accepted measures of community health today, it is becoming well-known that infant and child health, as evidenced from their skeletal remains, is a sensitive barometer for assessing community health in the past. Very little health research has been undertaken on infants and children from past rice-based subsistence economies, despite the current dependence of the majority of the world's population on this staple. With a recent increase in excavated skeletal collections from prehistoric mainland Southeast Asia, we now have large enough samples of infants and children to address questions of population responses to agriculture. This paper describes the standard indicators of infant and child health in the past, and presents results from several samples, which collectively span from the inceptions of agriculture to its intensification. Results suggest this region does not fit the pattern of health consequences recorded elsewhere in the world. Interpretations of this are presented and current work described, which is assessing the relationship between health and diet determined from analysis of skeletal tissues, and health and social status, measured from mortuary objects.



The price of agriculture: health in late prehistoric Southeast Asia

N. Tayles¹, S.E. Halcrow²

^{1,2} Department of Anatomy and Structural Biology, University of Otago
Dunedin, New Zealand

The development of agriculture and the ability to control the supply of staple foods is recognised as a significant event in human history, with consequences reaching until today. The demographic and biological effects on human populations at the time of the initial acquisition of these skills are frequently characterised as increased fertility and consequent population growth, along with a paradoxical deterioration in health. However, not all populations followed this trajectory. Here we consider the evidence for the effect on human health of the introduction of rice as a staple in the Southeast Asian diet, and examine why this region does not fit the model. Our research is based on a large (n~635) sample of human skeletal remains from a prehistoric site in a tributary valley of the Mekong River, Thailand. We identified a stable population with no obvious deterioration in health for many centuries of rice farming. We

suggest that the rich tropical environment initially allowed the maintenance of a broad-spectrum diet that included rice, so agriculture contributed but did not dominate subsistence. Only later do we see population growth, accompanied by a dramatic increase in infant mortality. We suggest this may be a consequence of climate change stimulating the intensification of paddy rice and the introduction of malaria.



Sexual dimorphism and health during the intensification of rice agriculture in early prehistoric Southeast Asia

Angela Clark¹, Nancy Tayles¹, Siân Halcrow¹.

¹Department of Anatomy & Structural Biology, University of Otago, Dunedin, New Zealand.

Population sexual dimorphism, the size and shape differences between the sexes, is a useful measure of human adaptation. The main sexual dimorphism model posits that males are less genetically buffered than females against adverse conditions for growth and development. It is expected that in a stressful environment males would not reach their maximum genetic potential resulting in a decrease in sexual dimorphism.

Understanding what happened in the past can help address problems in modern populations. The intensification of agriculture resulted in changes in diet and consequently affected population health. This paper tests the sexual dimorphism model during the intensification of rice agriculture using a prehistoric Thai adult skeletal sample (1750 to 900 B.C) by comparing sex differences in stature to an accepted measure of health in early childhood (dental defects of enamel).

Sexual dimorphism decreased over time as a result of a significant increase in female stature, while the prevalence of enamel defects remained constant suggesting no diachronic change in childhood health. This paper provides evidence that a decline in the level of sexual dimorphism does not directly correspond with health during the intensification of rice agriculture. These results do not fit the expected pattern of the sexual dimorphism model.



New Lapita Burials from the SAC site on Watom Island, East New Britain

Hallie Buckley¹, Dimitri Anson², Peter Petchey³, Herman Mandui⁴, John Reynolds⁵, Rebecca Kinaston⁶ and Kasey Robb⁷

¹ University of Otago, Dunedin, New Zealand

² University of Otago, Dunedin, New Zealand

- ³ University of Otago, Dunedin, New Zealand
⁴ National Museum and art gallery of Papua New Guinea
⁵ University of Otago, Dunedin, New Zealand
⁶ University of Otago, Dunedin, New Zealand
⁷ University of the South Pacific, Suva, Fiji

Little is known about the health of prehistoric migrants into the Pacific 3000 years ago and the influences of diversity in pathogens and diet on the success of early settlements. The SAC site on Watom Island in East New Britain, Papua New Guinea is one of only three Lapita-associated cemetery sites found in the Pacific Islands to date. Recent excavations in 2008 and 2009 have yielded further inhumations from a Lapita horizon at this site. This paper will report on the burial practices and health of the new Watom burials in the context of the skeletons previously excavated at Watom and other Lapita-associated cemetery sites from the Pacific. This paper will also report a case of trephination and artificial cranial deformation from the Watom site, the earliest found in the Pacific Islands to date.



**Combating micronutrient deficiencies during early childhood in low income countries:
supplementation vs. fortification vs. food-based interventions**

R.S Gibson, Department of Human Nutrition, University of Otago
Dunedin, New Zealand

The importance of co-existing micronutrient deficiencies among young children in low income countries is gaining increasing recognition, prompted by disappointing responses with single micronutrient supplements. Further, of concern is the feasibility and sustainability of supplementation as a mode of delivery in poor resource settings. Consequently, there is increasing emphasis on food-based approaches: fortification, dietary diversification and modification, and biofortification. Fortification can be a cost-effective method with the potential to improve micronutrient status without any change in existing dietary patterns, and can be used in the household for young child feeding by using micronutrient sprinkles and fat-based spreads. Dietary diversification and modification focuses on improving the availability, access, and utilization of foods with a high content and bioavailability of micronutrients throughout the year. Dietary strategies include enhancing the energy and micronutrient density of plant-based porridges; increasing production and consumption of micronutrient-dense foods (especially animal-source foods); and incorporating enhancers and reducing intake of inhibitors of micronutrient absorption. In the future, biofortification of staple crops will be used to improve micronutrient status of the entire household and across generations. To maximize effectiveness, attention should be given to monitor delivery, utilization, and impact of these interventions, and integrate them with public health and behavior change strategies.

The burden and control of vivax malaria

N. M. Douglas^{1,2} and R. N. Price^{1,2}

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²Centre for Tropical Medicine, Nuffield Department of Clinical Medicine, University of Oxford, United Kingdom

Plasmodium vivax is the most widely transmitted human malaria parasite threatening almost half the world's population. This species is responsible for a significant but underappreciated burden of disease and, due to several unique biological characteristics, is highly resilient to eradication efforts. In Southern Papua, Indonesia we have been conducting large-scale population studies to define the epidemiology of *Plasmodium vivax* and investigate the effectiveness of classical and novel treatment approaches for reducing its transmission. *Plasmodium vivax* in early childhood is associated with a high burden of severe anaemia and although directly attributable deaths are rare, vivax malaria is likely to be an important indirect cause of mortality. In co-endemic regions, *P. vivax* relapse is the most common cause of parasitological failure following treatment of *P. falciparum* malaria and is likely to fuel transmission of this species. Primaquine is active against the dormant liver forms of *P. vivax* and although it is capable of preventing relapses, unsupervised provision of the WHO-recommended 14-day treatment regimen has had no perceivable benefit in Southern Papua. The long-acting artemisinin combination therapy, dihydroartemisinin-piperaquine, is active against chloroquine-resistant *P. vivax* and suppresses the first liver stage relapse but introduction of this regimen for all malaria in Southern Papua in 2006 has had a proportionately greater effect on *Plasmodium falciparum*. The implications of these findings for future research priorities and *P. vivax* control efforts will be discussed.

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Heritable Resistance and Susceptibility to pathogenic Mycobacteria: A Deer Model

Frank Griffin¹, Simon Liggett¹, Brooke Dobson¹, Rory O'Brien¹, Mark Robinson² and Colin Mackintosh³

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University of Otago, Dunedin, New Zealand.

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³AgResearch, Invermay, Mosgiel, New Zealand.

While population and family studies have identified a number of candidate immune genes that appear to influence susceptibility to disease, there is a paucity of information on the effects of these individual genes in the context of a broader view of the immune system pathways.

We are currently studying the impact of host immune responses and host genetics on infection with *Mycobacterium paratuberculosis* (*M.ptb*) that causes Johne's disease in farmed ruminants. Red deer are an ideal natural host to study this disease as they have a short interval to develop clinical symptoms, and produce polarised phenotypes for resistance (R) and susceptibility (S) following *M.ptb* infection. We have identified pure breeds of deer that are highly resistant (R) or susceptible (S) to clinical disease. Overall heritability is 0.30 +/- 0.06 and we have established heritability values for S and R in more than 5,000 individual deer. Our current research aims to identify the immunological basis that underlies these S or R phenotypes. Data will be presented on immune markers and gene expression following *in vivo* or *in vitro* experimental *M.ptb* infection of R or S animals. Parameters studied include conventional markers of humoral (ELISA) and cellular immunity (cytokines), candidate immune gene expression (rtPCR) and mononuclear cell transcriptomics (454 sequencing).



How twins differ - not just a common occurrence: Analysis of care-seeking in pregnancy from the 2008 Nigeria Demographic and Health Survey

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Background

Multiple births experience increased morbidity and mortality for both mother and child, yet there is little evidence concerning care-seeking in pregnancy and quality of antenatal care (ANC) for multiple gestations.

Methods

This cross-sectional data analysis of a population-based survey of 17,635 women with births 2003-2008, compared singleton vs. multiple pregnancies in terms of neonatal mortality (NM), determinants of skilled attendance (SA), care-seeking in pregnancy, quality of ANC and how ANC affects the use of SA at delivery.

Results

There were 18.5 multiple gestations per 1,000 maternities. Multiples experienced more than five times increased NM (OR 5.31). Education was a stronger determinant of SA for multiple gestations than singletons. Mothers with multiple births had more SA (OR 1.75), more facility deliveries (OR 1.50), more postnatal care (PNC) (OR 1.32) and three times more caesarean sections (OR 3.43) but similar ANC coverage (OR 0.95). When multiple gestations received ANC, they had more visits and more BP (OR 1.52) and urine tests (OR 1.51). ANC was of no additional benefit to women with multiple gestations in encouraging SA utilisation.

Conclusions

Women with a high risk multiple gestation pregnancy seek more care, have reduced barriers to seeking it, yet gain little additional benefit from ANC. In Nigeria a multiple gestation should not just be perceived as a common occurrence, but an indicator of a high risk pregnancy that requires quality ANC and SA.



Microbiological effectiveness and cost of disinfecting drinking water by boiling in peri-urban Zambia

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Background

Boiling is the most common method of disinfecting water in the home and its effectiveness has become a benchmark standard against which other point-of-use water treatment strategies are compared. In a 6-week study in peri-urban Zambia we assessed the microbiological effectiveness and cost of boiling among 49 households without a water connection who reported “always” or “almost always” boiling their water before drinking it.

Method

We measured levels contamination in water by counting thermotolerant (faecal) coliforms (TTCs). Weekly over the five following weeks, each household provided paired drinking and source water samples that were compared to determine the effectiveness of boiling at disinfecting source water. Demographics, costs, fuels and boiling practices of the study group were assessed through surveys and structured observations.

Results

In this setting stored drinking water was associated with an 82% *increase* in geometric mean thermotolerant coliforms compared to source water. Only 60% of the drinking water samples taken were reported as boiled. Reportedly “boiled” drinking water was not of substantially better quality than reportedly “not boiled” drinking water. While 55% of source water met WHO guidelines of 0 TTC/100mL only 38% of drinking water was up to this standard. Boiling water with the energy sources used in the study population – electricity or charcoal – costs a household 10 or 12 percent respectively of its monthly income. Indirect costs may also be substantial.

Conclusions

Given the high cost of boiling and the lack of demonstrated microbiological effect, there may be grounds to consider alternative methods of water disinfection and diarrhoeal disease prevention in this community.

Changing patterns in medicines use in a Himalayan community

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Background:

This paper explores medicines use among the inhabitants of the Mount Everest region of Nepal, where considerable change has occurred since the opening up of the area to Western visitors in the 1950s.

Method:

Hospital records, correspondence, visitor accounts, a field visit and oral sources have been used to build on an in-depth historical case study.

Results:

Until the 1960s people had very limited access to 'modern' medicines. Khunde Hospital, run by an international non-government organisation, became the main provider of health services and the main source of medicines for the community, although in an ongoing plural medical environment. Over forty years, changing patterns in the use of health services have emerged and these are being reflected in changing patterns of medicines use.

Conclusions:

Medicines have had a central role in the introduction and spread of 'modern' healthcare in the region. As with use of health services more broadly, multiple factors influence medicines use. An understanding of their complexities over time is important in developing strategies to improve healthcare and contain costs.