**OIE Collaborating Centres Reports Activities**

*Activities in 2015*

This report has been submitted: 2016-01-11 20:12:02

<table>
<thead>
<tr>
<th><strong>Title of collaborating centre:</strong></th>
<th>Veterinary Epidemiology and Public Health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Address of Collaborating Centre:</strong></td>
<td>EpiCentre P/Bag 11 222 Palmerston North 4442 NEW ZEALAND</td>
</tr>
<tr>
<td><strong>Tel.:</strong></td>
<td>+64 06 350 5195</td>
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<tr>
<td><strong>Fax:</strong></td>
<td>+64 06350 5716</td>
</tr>
<tr>
<td><strong>E-mail address:</strong></td>
<td><a href="mailto:T.E.Carpenter@massey.ac.nz">T.E.Carpenter@massey.ac.nz</a></td>
</tr>
<tr>
<td><strong>Website:</strong></td>
<td>epicentre.massey.ac.nz</td>
</tr>
<tr>
<td><strong>Name of Director of Institute (Responsible Official):</strong></td>
<td>Steve Maharey</td>
</tr>
<tr>
<td><strong>Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):</strong></td>
<td>Tim Carpenter Professor Director, EpiCentre Head, OIE Collaborating Centre</td>
</tr>
<tr>
<td><strong>Name of writer:</strong></td>
<td>Tim Carpenter</td>
</tr>
</tbody>
</table>
ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories

ToR: To identify and maintain existing expertise, in particular within its region

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by the OIE

<table>
<thead>
<tr>
<th>Disease control</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title of activity</strong></td>
<td><strong>Scope</strong></td>
</tr>
<tr>
<td>Advice to veterinary practitioner, health promotion officer, general practitioner and medical officer of health</td>
<td>Three human cases of leptospirosis in an unvaccinated dairy herd.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Epidemiology, surveillance, risk assessment, modelling</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title of activity</strong></td>
<td><strong>Scope</strong></td>
</tr>
<tr>
<td>Expert consultation</td>
<td>Participated in study on sheep and goat farmers’ willingness to accept for compensation for culling, Inner Mongolia, Xinjiang, Shandong, Henan, China.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training, capacity building</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title of activity</strong></td>
<td><strong>Scope</strong></td>
</tr>
<tr>
<td>Refresher Workshop for OSPRI (formerly TB-free) NZ staff</td>
<td>The use and application of bacterial genomics in disease ecology and epidemiological investigations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zoonoses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title of activity</strong></td>
<td><strong>Scope</strong></td>
</tr>
<tr>
<td>Invite Steering Committee Member.</td>
<td>Global Leptospirosis Environmental Action Network.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aquatic animal diseases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title of activity</strong></td>
<td><strong>Scope</strong></td>
</tr>
<tr>
<td>Invited expert panel member</td>
<td>Ministry of Primary Industries/Department of Conservation sea-lion risk assessment advisory panel.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnosis, biotechnology and laboratory</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title of activity</strong></td>
<td><strong>Scope</strong></td>
</tr>
<tr>
<td>Research into diagnostic test utility for acute leptospirosis in humans.</td>
<td>Comparison of 3 PCRs on urine, whole blood and serum.</td>
</tr>
</tbody>
</table>
**ToR** : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare

<table>
<thead>
<tr>
<th>Proposal title</th>
<th>Scope/Content</th>
<th>Applicable area</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Epidemiological Investigation Plan and Performance Scheme in Major Animal Diseases in China.</td>
<td>Drafted the plan</td>
<td>☐Surveillance and control of animal diseases  ☐Food safety  ☐Animal welfare</td>
</tr>
</tbody>
</table>

**ToR**: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines

**ToR**: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations

3. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

<table>
<thead>
<tr>
<th>Name of OIE CC/RL/other organisation(s)</th>
<th>Location</th>
<th>Region of networking Centre</th>
<th>Purpose</th>
</tr>
</thead>
</table>
4. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

No

*ToR: To place expert consultants at the disposal of the OIE.*

5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?

Yes

<table>
<thead>
<tr>
<th>Name of expert</th>
<th>Kind of consultancy</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tim Carpenter</td>
<td>Epidemiology</td>
<td>FMD Control in Southeast Asia</td>
</tr>
</tbody>
</table>

*ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries*

6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?
### ToR: To organise and participate in scientific meetings and other activities on behalf of the OIE

7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?

Yes

<table>
<thead>
<tr>
<th>National/International</th>
<th>Title of event</th>
<th>Co-organiser</th>
<th>Date (mm/yy)</th>
<th>Location</th>
<th>No. Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>4th International Symposium on Newcastle Disease and Peste des Petits Ruminants</td>
<td>to be identified</td>
<td>11/15</td>
<td>China</td>
<td>31</td>
</tr>
</tbody>
</table>

### ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty

8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE

a) Articles published in peer-reviewed journals: 58


Neglected Tropical Diseases, 9(1)

Bolwell, C. F., Gilpin, B. J., Campbell, D., & French, N. P. Evaluation of the representativeness of a sentinel surveillance site for campylobacteriosis. Epidemiology and Infection/Volume 143/Issue 09. doi: 10.1017/S09502688140031


Bolwell, C. F., Rosanowski, S. M., Scott, I., Sells, P. D., Rogers, C. W. Questionnaire study on parasite control practices on Thoroughbred and Standardbred breeding farms in New Zealand. Veterinary parasitology. doi: 10.1016/j.vetpar.2015.02.011


Li Yan, Li Yin, Yu Chuanhua, Wu Guangyu, Sun Xiangdong. Analysis of H7N9 influenza susceptible population in China, Chinese Animal Health Inspection (Chinese), 32:14-15

Liu Linlin, Zhang Yi, Guo Xuejin, etc. Complete genome sequence analysis of two H9N2 subtype avian influenza virus strains bearing different virulences. Progress in Veterinary Medicine (Chinese), 2015, 36:42-45


Lucas-Roxburgh, R., Benschop, J., Dunowska, M., Perrott, M. Prevalence of Human Papilloma Viruses in the mouths of New Zealand women. Accepted New Zealand Medical Journal


Ridler, A. L. Vallee, E. Corner, R. A. Kenyon, P. R. Heuer, C. Factors associated with fetal losses in ewe lambs on a New Zealand sheep farm. doi: 10.1080/04480169.2015.1037813


Shi Yuanyuan Li Yan, Sun Xiangdong, Review and prospect of epidemiology technology development, Chinese Animal Health Inspection (Chinese), 32:85-89


Theoret, C. L., Bolwell, C. F., Riley, C. B. A cross-sectional survey on wounds in horses in New Zealand. Accepted New Zealand Medical Journal


Toombs-Ruane, L., Rosanowski, S., Riley, C., Kendall, A., Bolwell, C., Benschop, J. Antimicrobial sensitivities of aerobic isolates from respiratory samples of young New Zealand horses submitted to a commercial laboratory. Accepted Journal of Veterinary Internal Medicine


Xiaoyan Zhou, Yin Li, Youming Wang et al. The role of live poultry movement and live bird market biosecurity in the epidemiology of influenza A (H7N9): a cross-sectional observational study in four eastern China provinces, Journal of Infection, 71:470-479


Yu Liping, Kang Jingli, Wang Youming, Qu Zhina, Huang Baoxu. The general principles of CAC for animal health inspection at slaughtering section. Chinese Animal Health Inspection (Chinese), 32:13-16


International conferences:

Tim Carpenter presented an invited talk entitled, “Epidemiology at Massey University, as part of the OIE Collaborating Centre with the China Animal Health and Epidemiology Center (CAHEC),” 24 August, at the CAHEC in Qingdao, PR China

Tim Carpenter attended the SEACFMD Animal Movement Meeting, 25 August, Qingdao, PR China

Tim Carpenter attended the 18th SEACFMD National Coordinators Meeting, 26-28 August, Qingdao, PR China

Tim Carpenter presented an invited talk entitled, “Economics of Transboundary Animal Disease Control: Case Studies of FMD Planning/Response in the US and New Zealand,” 31 August, at Hong Kong City University, Hong Kong

Tim Carpenter gave an invited presentation entitled, “Economics of foot-and-mouth disease control measures: perspectives from New Zealand and the US,” 5-6 February, Melbourne University, Melbourne, Australia

Tim Carpenter gave an invited presentation entitled, “FMD: The economic importance of rapid implementation of effective control measures,” to the Ministry of Agriculture, 9 February, Canberra, Australia

Tim Carpenter was an invited participant at the RAPIDD Workshop entitled, “A Bayesian ensemble approach for epidemiological predictions: a technique for utilizing multiple models to determine a single optimal control strategy for future FMD outbreaks,” 25-28 February, Miyazaki, Japan

Cord Heuer presented a talk entitled, “Estimating the economic impact of leptospirosis on public health and livestock farming in New Zealand. 2nd ELS meeting on Leptospirosis and other rodent borne haemorrhagic fevers,” 16-18 April, Amsterdam

Anou Dreyfus presented a talk entitled, “Leptospirosis in New Zealand. 2nd ELS meeting on Leptospirosis and other rodent borne haemorrhagic fevers,” 16-18 April, Amsterdam

Patricia Jaros presented a talk entitled, “Genomic epidemiology of bovine and human Escherichia coli O157:H7 in New Zealand - ancestry and evolution in an island ecosystem” at the 9th VTEC conference, Boston, Mass., USA

David Hayman was an invited speaker at “CALIconf: International on Mitigation Strategies for Emerging Infectious Disease,” Colombia

David Hayman attended the NGO Global Health Security Agenda meeting at US Department of State, Washington DC, USA

Jackie Benschop organised a one-health workshop at the 5th Global Leptospirosis Environmental Action Network Meeting and the 1st International Workshop for Leptospirosis Translational Research Based on Country Needs in Rio de Janeiro, Brazil
David Hayman spoke at a special Global Health Security session in Seoul Defense Dialogue 2015 meeting. Other attendees: US Director of CDC’s Division of Preparedness and Emerging Infections, former Principal Deputy Assistant Secretary for Preparedness and Response at the Department of Health and Human Services (DHHS), Commander of the U.S. Army Medical Research Institute of Infectious Diseases, and Biotechnology & Vice Director, Institute for National BioDefense Research, Korea University, Korea.

Tim Carpenter presented a paper entitled, “A financial analysis of the justification for subsidization of disease surveillance: a case study of infectious salmon anemia in Chile” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Tim Carpenter and Arata Hidano were invited participants in the Inception Workshop of the OIE’s New Zealand FMD Control Project in Southern Lao PDR, 23-27 November, Vientiane and Pakse, Lao PDR.

Chris Compton presented a paper entitled, "Use of probabilistic bias analysis to adjust the association between clinical mastitis and culling or mortality due to misclassification in a secondary database" at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Carolyn Gates presented a paper entitled, “Controlling infectious disease through the targeted manipulation of contact network structure” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Arata Hidano presented two papers entitled, “Influence of disease control zones on dairy cattle movement patterns” and “Risk factors for Bovine Enzootic Haematuria among cattle in the Kingdom of Bhutan” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Cord Heuer presented a paper entitled, “New for the epidemiology toolbox: confidence interval for the population attributable risk” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Nelly Marquetoux presented a paper entitled, “Meta-analysis of the transmission of Mycobacterium avium subsp. paratuberculosis in experimentally infected sheep to inform mathematical modelling” and a poster entitled, “Using pathogen strain-typing to inform transmission dynamics in social networks of livestock movements” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Kendarp Patel presented a poster entitled, "Fetal wastage in New Zealand Deer - estimating misclassification bias" at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Juan Sanhueza presented two papers entitled, “Population impact of leptospirosis on public health and livestock production” and “A systematic review and meta-analysis of vaccine efficacy to prevent urinary shedding of Leptospira in cattle, sheep and deer” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Emilee Vallée presented three papers entitled, Population impact of leptospirosis on public health and livestock production,” “A method to visualise natural infection patterns of Leptospira serovars Hardjo and Pomona micro-agglutination test titres in sheep and cattle on New Zealand farms” and “The effect of Leptospira serovars Hardjo and Pomona on sheep growth and reproduction, and cost effectiveness of vaccination” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Masako Wada presented a paper entitled, Optimisation of an emergency vaccination strategy for an FMD epidemic in New Zealand” and two posters entitled “Economic assessment of alternative eradication strategies against FMD in New Zealand” and “Estimation of FMD local spread hazard” at the International Society of Veterinary Epidemiology and Economics (ISVEE) meeting, November, Merida, Mexico.

Zoe Grange presented a paper entitled, “Genomic analysis demonstrates continuing evolution, recombination and environmental sources of enteric bacteria in isolated wildlife populations” at the 64th Annual International conference of the Wildlife Disease Association, Maroochydore, Australia.

Lindsay Earl, presented a paper entitled, “Acute human leptospirosis in New Zealand: suspects, symptoms and
Cord Heuer presented three papers entitled, “Can vaccination of animals protect humans against Leptospirosis,” “Hardjo vs Pomona - two pathogens with different ecological risk,” and “Leptospirosis and sources of infection in New Zealand farmers,” 9th Scientific meeting of international leptospirosis society, 7 October, Semarang, Indonesia.

Yuni Yupiana presented a paper entitled, “Epidemiological investigation of leptospiral infection in a Non-vaccinated dairy cattle herd associated with three affected workers,” 9th Scientific meeting of international leptospirosis society, 7 October, Semarang, Indonesia.

Juan Sanhueza presented a paper entitled, “Meta-analysis of leptospira vaccine efficacy in farm animals,” 9th scientific meeting of international leptospirosis society, 7 October, Semarang, Indonesia.

Julie Collins-Emerson presented a paper entitled, “Whole genome sequence and rMLST analysis of New Zealand strains of Leptospira,” 9th scientific meeting of international leptospirosis society, 7 October, Semarang, Indonesia.

Jackie Benschop made a poster presentation entitled, “Prevalence of Leptospirosis in Serum Samples Submitted to a Commercial Laboratory from New Zealand Cats,” 9th scientific meeting of international leptospirosis society, 7 October, Semarang, Indonesia.

Nine staff and students from the mEpilab attended the International Campylobacter, Helicobacter and Related Organisms Conference in Rotorua, New Zealand. Oral presentations and published abstracts included:
- Classification of three newly identified Campylobacter species isolated from New Zealand birds and water sources.
- Using enteric Campylobacter spp. to explore host-microbe dynamics in isolated wildlife populations.
- Pathogenicity of Campylobacter jejuni, C. upsaliensis and C. helveticus in the invertebrate disease model Galleria mellonella.
- Diagnosis of campylobacteriosis in humans from the Manawatu, New Zealand.
- Rapid emergence of tetracycline and fluoroquinolone resistant Campylobacter jejuni ST-6964 in poultry and humans in New Zealand.
- Short-term evolutionary dynamics of Campylobacter jejuni in chickens.
- Molecular epidemiology of C. coli isolated from different sources in New Zealand between 2005 and 2014.
- Campylobacter, crossing the ditch: genomic comparison of host associated Campylobacter jejuni sequence types after temporal-spatial separation” (poster).
- Evolution of Campylobacter in a persistently infected human host.
- Comparative genomic analysis of human bacteraemic Campylobacter jejuni isolates from New Zealand.

Zhang Yi - Invited presentation entitled, “AIV Animal Infections and Surveillance in China” to the LinkTADs Epidemiology Workshop, 9th -10th April 2015, Qingdao, Shandong, China.

Xu Quangang - Invited presentation entitled, “Official Control Program for FMD in China” to Workshop on OIE procedure for endorsement of official national control programme and for official recognition of Member Countries disease status with regard to Foot-and-Mouth-Disease (FMD), 7th -8th, July 2015, Bangkok, Thailand.

Li Yin - Invited presentation entitled, “Epidemiology of avian influenza in China: implications for vaccination programs” to the LinkTADs Diagnostic Workshop, 16th -17th July 2015, Harbin, Heilongjiang, China.

Xu Quangang - Invited presentation entitled, “Risk factors for brucellosis seropositivity of para-vets in Inner Mongolia, China”, to The 2015 Training Course on Veterinary Technologies and Animal Disease Prevention and Control, 24th -27th, September 2015, Qingdao, Shandong, China.

Li Yin - Invited presentation entitled, “The role of live poultry movement and live bird market biosecurity in the epidemiology of influenza A (H7N9)”, to The 2015 Training Course on Veterinary Technologies and Animal Disease Prevention and Control, 24th -27th, September 2015, Qingdao, Shandong, China.


David Hayman presented a paper entitled, “Modelling cholera and malaria in historical perspective: database and methods of analysis” at the Otago International Health Research Network meeting, Dunedin, New Zealand.

Patrick Biggs gave a demonstration and presented in a workshop at the eResearch 2015 conference, Queenstown, New Zealand.

Kang Jingli - Invited presentation entitled, “Risk communication of Rabies in Guangxi province”, to Joint Field Epidemiology Training in Western Areas with CFETP, 4th June, 2015, Xining, Qinghai, China.

Sun Xiangdong - Invited presentation entitled, “Ovine Brucellosis prevention and control policy research in Hinggan League of Inner Mongolia ,China,” to Joint Field Epidemiology Training in Western Areas with CFETP, 4th June, 2015, Xining, Qinghai, China.

Shen Chaojian - Invited presentation entitled, “Poultry value chain analysis in China ” to CFETPV-E training in 7th July 2015, in Qingdao, Shandong, China.

d) Other
(Provide website address or link to appropriate information): 18
Jackie Benschop co-authored a public release of a systematic literature review of cat management, a New Zealand Veterinary Associated commissioned review to evaluate the impact of stray, feral and companion cats on New Zealand’s wildlife and local communities.

Wei Xinjie - Invited presentations entitled, “Study design and investigation plan of sheep and goat compensation policy for culling”, to the training for investigation visitors from 18 counties, 27th May 2015, Qingdao, China.

Xu Guangang - Invited presentations entitled, “Approach of questionnaire investigation of sheep and goat compensation policy for culling”, to the training for investigation visitors from 18 counties, 27th May, 2015, Qingdao, China.


Shen Chaojian - Invited as a trainer to Veterinary epidemiology training in June 2015, Shanghai, China. Training courses included case definition, questionnaire design, test characteristics, sampling and sample size calculation, outbreak investigation, and risk analysis of animal disease.

Shen Chaojian - Invited as a trainer to Joint Field Epidemiology Training in Western Areas with CFETP in June, 2015, Qinghai, China. Training courses included animal disease control, introduction of Chinese BSE risk assessment and poultry value chain analysis in east china.

Li Yin - Invited presentation entitled, “Disease Frequency” and “Outbreak Investigation” to Epidemiology Training in Western Areas, 16th -19th June, 2015, Yinchuan, Ningxia, China.

Wei Xinjie - Invited presentation entitled, “Study design: Analysis of sheep and goat farmers’ willingness to accept for compensation”, to China FETPV 3rd cohort training Module 2, 1st July 2015, Qingdao, China.


Shen Chaojian - Invited presentation entitled, “Sampling and sample size calculation,” and “Animal disease risk analysis” to Veterinary Epidemiology and Animal Disease Risk Analysis Training in August, 2015, in Ningxia, China.
Li Yin - Invited presentation entitled, “Disease Frequency” and “Outbreak Investigation on H7N9” to Epidemiology Training in Northeast Areas”, 14th -18th Sep, 2015, Shenyang, Liaoning, China.

Shen Chaojian - Invited presentation entitled, “Test Characteristics, Sampling Theory and Sample Size Calculation, Outbreak Investigation, Animal Disease Risk Analysis” to Epidemiology Training in Northeast Areas”, 14th -18th Sep, 2015, Shenyang, Liaoning, China.

Li Yin - Invited presentation entitled, “Sampling” in the epidemiological investigation training, which was sponsored by Animal Disease Prevention and Control Center of Sichuan province, 27th October, 2015, Chengdu, Sichuan, China.

Shen Chaojian - Invited as a trainer to veterinary epidemiology and poultry value chain analysis training which is a FAO project in Nov 2015, in Mangshi, Yunnan, China.

Shen Chaojian - Invited as a trainer to FETPV in Nov 2015, in Qindao, China. Training courses included the introduction of animal disease risk analysis, model development, Pathway analysis--Scenario tree development, overviews of probability, distributions for data representation and processes, application of @Risk or PopTool, Quantitative RA—deterministic and probabilistic RA, etc.

Li Yin - Invited presentation entitled, “Introduction of Risk Analysis” in the epidemiological investigation training, which was sponsored by Inner Mongolia Animal health inspection, 8th December, 2015, Huhhot, Inner Mongolia, China.

Shen Chaojian - Invited as a trainer to veterinary epidemiology training in Dec 2015, in Kunming, Yunnan province, China. Training courses included the introduction of veterinary epidemiology, sampling and sample size calculation, poultry value chain analysis.