



MED-VET-NET NEWS

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Med-Vet-Net Communications Unit

In this month's Med-Vet-Net News we continue our overviews of Med-Vet-Net projects with Workpackage 6, which aims to develop and apply geographical information systems and spatio-temporal methods to the epidemiology of bacterial food-borne zoonoses.

We have a student's-eye-view of the 3rd Med-Vet-Net Annual Scientific Meeting by James Collins, PhD student at the VLA.

We also outline some upcoming training opportunities, zoonoses news, and upcoming meetings and conferences.

GIS Overview

Development and application of geographical information systems (GIS) and spatio-temporal methods on the epidemiology of food-borne bacterial zoonoses – Workpackage 6

Background

A description of the distribution of cases in time and space forms the basis of most epidemiological studies. To plot disease cases on a map has always been part of epidemiology, but recent advances in geographic information systems (GIS) allow this to be done much faster and to be more exploratory than before, which helps to identify associations that are not otherwise easily noticed. Further, more sophisticated tools for spatial statistical analyses have also been developed, offering new possibilities for epidemiological studies.

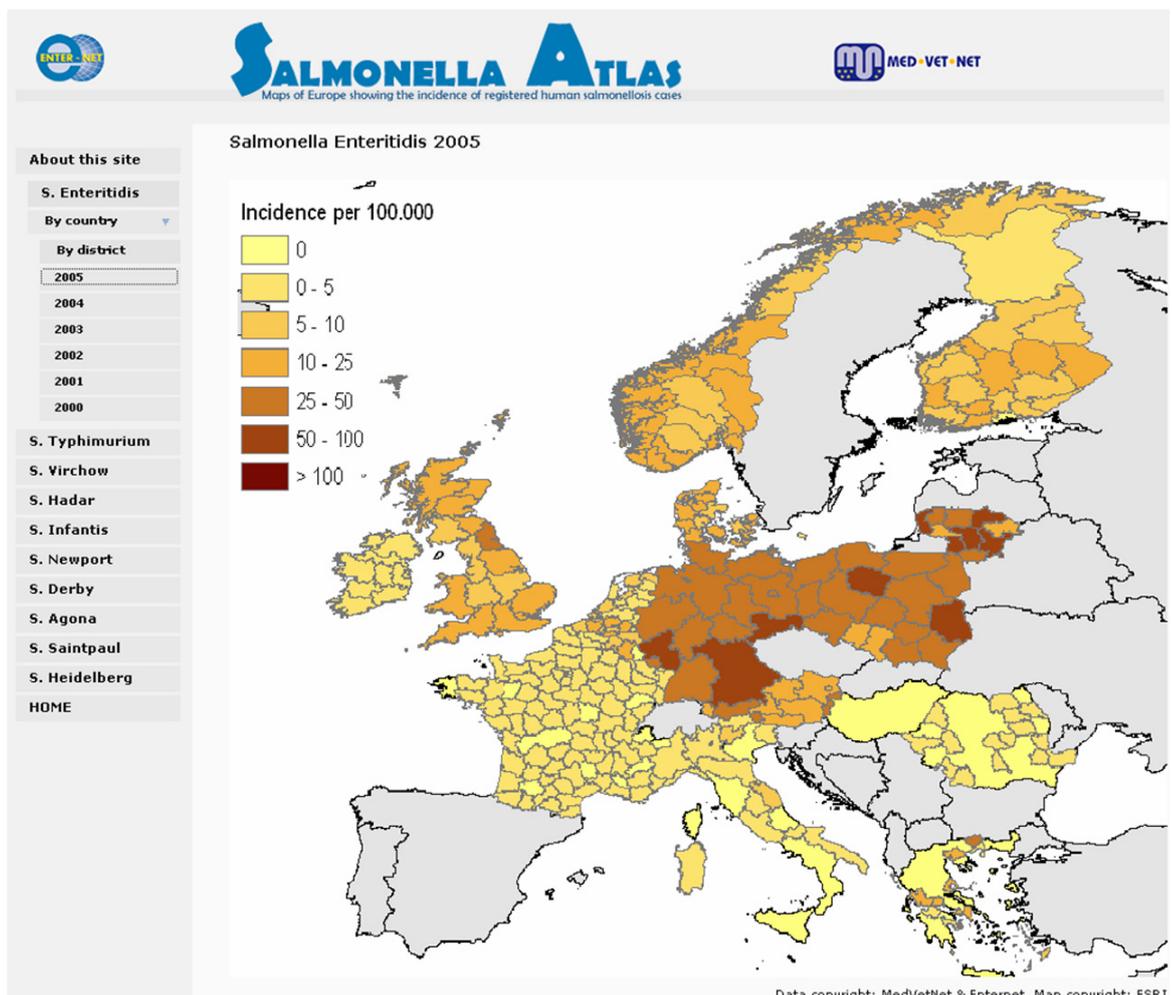
Within the field of the epidemiology of zoonotic diseases

and food-borne infections, GIS may be used for basic surveillance and outbreak investigations. It can be very helpful to produce relevant maps promptly whereby clustering of cases can be observed. Not only cases, but also other components in the farm-to-fork continuum can be analysed by GIS, including the distribution of zoonotic agents or the animals that serve as their reservoirs, patterns of trade in live animals, routes for contaminated food products from one country to another, or demographic characteristics of human and animal populations. Advanced spatial-temporal analysis tools allow

analysis of possible associations between different factors (e.g. an association between human disease and areas where a particular food item is consumed) and various types of cluster analyses can be made. Although the use of GIS within the epidemiology of food-borne infections is potentially a strong tool, GIS is not yet commonly applied.

Workpackage 6

WP6 was among the original first round of Med-Vet-Net Workpackages, but for a number of reasons the start was delayed. WP6 was reborn at the beginning of



2006, with the main task of encouraging the use of GIS and building capacity among Workpackage members through teaching activities and through a number of small-scale scientific projects. The main project has been the construction of a web-based atlas of the spatial distribution of human salmonellosis in Europe during the past five to ten years (depending on data availability). This project was based on data from Enternet (the EU designated surveillance network on *Salmonella*) and the result is now publicly accessible at www.epigis.dk. The major challenge in this project has been to 'translate' the coded data reported to Enternet to something that can be linked to a spatial unit, such as a county or region, a process called *geocoding*. In fact, all administrative districts within the EU are officially assigned a code according to the 'Nomenclature of Territorial Units for Statistics' (NUTS), which should ideally

be used by all reporting laboratories and authorities to ensure unique identification. To encourage the use of GIS among Workpackage members, a workshop was held where the competence of each participating institution was identified, and a short GIS training session was conducted. Following this, a training course in GIS in epidemiology open to all Med-Vet-Net scientists was organized and held in Copenhagen.

Current projects

Starting in early 2007, and new projects were added which are currently being worked on. One project concerns the spatial pattern of human VTEC cases related to the spatial location of cattle farms. This project will make use of simple spatial analysis such as *buffer analysis*, and basic spatial statistics like *Moran's I* or *Geary's C* depending on the data available

in the different participating countries. Another project deals with spatial-temporal analyses of human salmonella data with the aim of illuminating trends in the distribution over time of different types of salmonella. A third project, the construction of a dynamic, interactive web atlas, is an extension of the previous *Salmonella* Atlas project. This project will, if successful, allow the web user to specify which data is displayed, so that for instance all serotypes, phage types and travel data can be shown. These maps will be 'zoomable'.

Steen Ethelberg

Med-Vet-Net People

Dr Steen Ethelberg, Workpackage 6 Leader

Steen has a first degree in philosophy, a Master of Science degree in molecular biology and obtained his PhD in retrovirology in 1997 from Aarhus University. After a postdoctoral period at the Imperial Cancer Research Fund in England, Steen returned to Denmark in 2000 to work on zoonotic infections at the lab/epi interface – although the epidemiological aspects have tended to dominate in recent years.

Steen is a senior researcher at the Statens Serum Institut (the Danish national institute of infectious diseases) working on a variety of aspects concerning the epidemiology and control of zoonotic and food-borne infections, including disease surveillance and outbreak detection both through microbiological and epidemiological methods, outbreak investigations, determinants of virulence, risk-factor analysis of sporadic disease, and also geographical analyses of zoonotic disease data.



Dr Martin Rudbeck Jepsen, Workpackage 6 Deputy Leader



Martin graduated in Geography at the University of Copenhagen in 2001 and obtained a PhD in 2005 on a dissertation entitled 'Land, Man and Ecology' concerning nature-society interactions. After a brief detour around the European Topic Centre for Resource and Waste Management under the European Environment Agency, he was employed at Statens Serum Institut to construct dynamic models of disease transmission. While this remains a part of Martin's work, he quickly gravitated towards Workpackage 6 and the use of geographic information systems for surveillance and spatial epidemiological analysis.

Conference Review

The magnificent Il Ciocco conference centre was host to this year's Annual Med-Vet-Net Scientific Conference in the heart of Tuscany.

This year, 198 delegates were treated to the historic town of Lucca, which is set in the remote mountainous area surrounding Pisa. Lucca is known worldwide for the production of fine wine and food, which many of the attendees found out first hand with the lavish continental breakfasts and six course dinners that were provided. This was the 3rd Med-Vet-Net Annual Scientific Conference on the prevention and control of zoonoses in Europe, and took place from 27 to 30 June. With this year's conference being host to delegates from over 19 countries, with many of the delegates attending from non-Med Vet

the spread of bluetongue and tick-borne diseases for example Lyme borreliosis and tick-borne encephalitis virus. I found this lecture to be extremely enlightening but I was also pleased to see that Defra is thinking this far ahead for their mandate. Other keynote lectures included the 'Future of vaccine research', 'Molecular and modelling tools for the attribution of risk pathways for food-borne diseases', 'Avian Flu' and 'The impact of systematic reviews and quality criteria on publications regarding food safety and food-borne zoonoses'.



A flag-waver in action.

I don't think anyone who attended the Med-Vet-Net conference will forget the Tuscan cultural display, 'Gil Sbandieratori'. Although I'm not sure of the translation, death by flag may have been more appropriate. We were treated to a local Tuscan flag dance in which men and women dressed as what I can only describe as 'court jesters' and performed intricate and skilful dance displays which involved throwing very large flags to each other across the courtyard..

I would like to thank the conference organizer Diane Newell for a fantastic conference and for such a beautiful venue, as well as Trudy, Jennie and Teresa for all their hard work helping Diane. All I can say is roll on the 4th Med Vet Net Annual Conference in St Malo, France (11-14 June 2008).

James Collins, PhD student, VLA



VLA delegates at the Tuscan themed dinner: L-R Muriel Mafura, James Collins, Nadia Inglese, Malcolm Banks and Muna Anjum.

Net institutions or projects. The four-day conference was divided into six sessions with a final day of discussion groups.

The conference started with a talk from the network director Prof Diane Newell and a welcome from the Vice-Mayor of Lucca. There were some very topical, and in some cases, controversial keynote lectures. Sir Prof Howard Dalton (Department for Environment, Food and Rural Affairs (Defra), UK) was the first keynote speaker with an extremely thought provoking account of the 'Effects of climate change on infectious disease'. This lecture linked the vastly differing topics of carbon footprints, the rise in sea levels and finally the effect of climate change on the spread and survival of vectors, and agents of infectious disease. Already the effects of changes to the distribution of vectors due to climate change are evident with

been using murine host arrays to study the response of the host to infection with either *Salmonella* or *Campylobacter*. Also Bill Cooley's talk 'Host-Pathogen interactions as studied by Confocal Microscopy' was an excellent example of how confocal microscopy plays a key role as a research tool.

The three poster sessions covered a multitude of topics ranging from host-microbe interactions to New and Emerging Zoonoses. I had the opportunity to present a poster on the work entitled "Quantification of organic acids produced by porcine microflora and their effect on *S. Typhimurium* invasion and viability *in vitro*". The poster sessions, quiz and American-themed bar, provided an ideal opportunity to discuss work and possible collaborations with researchers from similar disciplines from all over Europe.



Ilaria Capua giving her keynote speech on avian influenza.

Training opportunities

Med-Vet-Net training course on molecular detection and characterization of multi-drug resistance in *Enterobacteriaceae*

Dates and venue

26–30 November 2007, Health Protection Agency Colindale, Centre for Infections, London UK.

General and scientific qualification of participants

Workpackage 21 members are invited to attend this training course. Because the maximum number of participants is 16, one participant only per partner institute in WP21 can attend this course. **The three extra places are open for participants from other Med-Vet-Net institutes.**

Microbiologists or molecular biologists with expertise in molecular biology laboratory methods on *Salmonella/E. coli*. Research assistants/technicians with expertise in molecular biology laboratory methods on *Salmonella/E. coli*.

Objectives

It is the specific intention of this training programme to disseminate and share the knowledge obtained on phenotypic and molecular detection and molecular characterization methods of strains harbouring SGI-1 with WP21 partners. Because the public health risk of epidemic clones, next to their virulence, is related to the potential acquisition of additional resistance determinants of relevance (ESBLs, plasmid mediated quinolone resistance, integrons, plasmids), detection and characterization methods are included in the course. Moreover a nano-array developed for the rapid detection of resistance genes will be demonstrated.

Programme

The training course will be a mixture of lectures of highly qualified internationally well known researchers and practical training of methods used for analysis of MDR *Enterobacteriaceae*.

The training does not focus solely on SGI-1, but on all aspects of relevance when working with MDR *Enterobacteriaceae*. Therefore the topics will be: SGI-1, ESBLs, Plasmids, QNR, Integrons. On each topic top lecturers will be invited: SGI-1 Axel Cloeckert (INRA), ESBLs Neil Woodford (HPA), Plasmids Alessandra Carattoli (ISS),

QNR Laurent Poirel (Hospital de Bicetre, Paris), Integrons John Threlfall (HPA).

Practical training topics will include: classic PCR, Taqman and or Lightcycler RT-PCR, Sequencing, Array techniques, pyrosequencing.

Scientific Training Course Committee

John Threlfall, HPA Colindale, UK

Bela Nagy, VMRI, Budapest, Hungary

Dik Mevius, CIDC, Netherlands

More information

Please contact the Communications Unit for more information and applications for this training course (communications@medvetnet.org). All applicants are requested to send a curriculum vitae to the communications unit before **1 October 2007**. Candidates will be selected by the Scientific Committee.

Science Communication Internship

Module 1 – Science Communication – Why and How? will start again in November.

This module includes training on:

- Presentation Skills
- Why science stories make the News
- Writing effectively
- Communication and Networking skills
- Public relations for science.

Learning objectives:

At the conclusion of the module interns will be able to:

- explain why it is important for scientists to communicate;
- identify different audiences for communicating science with;
- describe some of the issues surrounding communicating science with the public;
- compare and contrast different modes of communicating science;
- write confidently for different audiences;
- give effective public presentations;
- understand the importance of networking;
- appreciate the consequence of good public relations and corporate image;



Scientists and PhD students from all Med-Vet-Net partner institutes are eligible to apply. In addition a limited number of external participants will be considered. Please contact the Communications Unit for more information and application details.

Application deadline is 1 October.

Module 4 – Virtual Communications

This 2-week module begins on 1 October.

Topics include:

- Web design, accessibility, and usability
- Web project management
- Writing for the Web
- Web 2.0 (wikis, blogs, forums etc.)
- Mobile technologies for communicating science
- Digital photography
- Podcasting
- Manipulating images for the Web using Adobe Photoshop
- ‘Electronic’ public relations.

Participants in this module must also complete Module 1 within 12 months of taking the course.

Application deadline is 7 September.

Email: Communications@medvetnet.org

Journal of Visualized Experiments

JoVE (www.jove.com) is an online research journal employing visualization to increase reproducibility and transparency in biological sciences.

Rather than a traditional text-based journal, visitors to the JoVE website can view online videos with commentary on topics including:

- Microbiology
- Molecular Biology
- Developmental Biology
- Cellular Biology

Video-articles are in the form of an original research article or a

visualization of experimental methods and techniques. Video-interviews feature leading researchers in their field who provide a more global view of their respective area of research. Video-interviews are done on an invitation-only basis.

Med-Vet-Net researchers keen to submit videos to this journal are welcome to contact the Communications Unit for help with production if required.

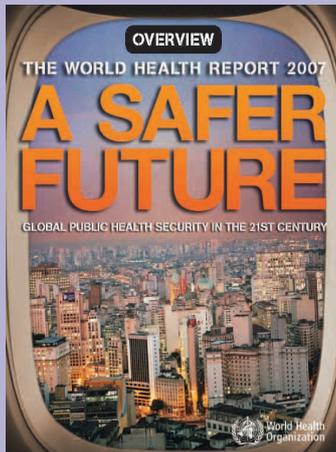
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The World Health Report 2007

A safer future: global public health security in the 21st century

This World Health Organization annual report, published on 23 August, reveals that the world is at increasing risk of disease outbreaks and epidemics, with new diseases emerging at the 'historically unprecedented' rate of one per year.



The report includes food-borne diseases: "The food chain has undergone considerable and rapid changes over the last 50 years, becoming highly sophisticated and international. Although the safety of food has dramatically improved overall, progress is uneven and foodborne outbreaks from

microbial contamination, chemicals and toxins are common in many countries. The trading of contaminated food between countries increases the potential that outbreaks will spread. In addition, the emergence of new foodborne diseases creates considerable concern".

The WHO recommends increased efforts to combat disease outbreaks, and sharing of virus and other lab samples to help protect public health.

The full report is available from: <http://www.who.int/whr/2007/en/>

Creative thinking

For years scientists have protested that the most creative period for collaboration at any meeting is after the oral presentations and during discussions in the bar over a pint of beer or glass of wine. The evidence for this is always rather tenuous and personal experience convinces me that the most creative ideas tend to fade with the alcoholic haze and headache the next morning! Nevertheless, researchers from the Med-Vet-Net Host-Pathogen Special Interest Group and WP31 (ZooVirNet), while testing this hypothesis at our Annual Scientific Meeting in Lucca, have come up with confirmatory proof of principle.

Their chance discussions on the best way of encouraging difficult porcine viruses to grow in culture led to a novel idea using specialist tissue culture techniques developed for virulence testing of bacterial pathogens. The idea was quickly, and successfully, converted into action by a Med-Vet-Net funded PhD student from Italy currently working in the UK.

This story, though not uncommon, has an interesting twist – the key scientists in the bar-room discussion both work at the VLA and in laboratories no more than 20 metres apart – yet they had to travel 1200 kilometres to develop a research collaboration of mutual benefit!

This just goes to prove that Med-Vet-Net is succeeding in its aim to integrate multidisciplinary research on zoonotic agents – and also that men don't talk exclusively about football and girls while in the bar at scientific meetings!

Diane Newell

[Similar stories of successful integration are welcomed.]



14th International Workshop on *Campylobacter*, *Helicobacter* and Related Organisms, 2–5 September 2007, Beurs World Trade Center Rotterdam The Netherlands

For more information see <http://www.chro2007.nl/>

Society for General Microbiology 161st Meeting, 3–6 September 2007, University of Edinburgh, UK

For more information see: <http://www.sgm.ac.uk/meetings/MTGPAGES/Edinburgh07.cfm>

Epidemiology & Control of Infectious Diseases, 3–14 September 2007, Imperial College, London, UK

Epidemiology & control of infectious diseases - Introduction to mathematical models of global and emerging infections. A ten-day short course. Contact Ulrika Wernmark on +44 (0)20 7594 6886; email: cpd@imperial.ac.uk; website www.imperial.ac.uk/cpd/epidemiology

World Rabies Day, 8 September 2007

World Rabies Day has several campaigns all with one objective – to end people dying from rabies.

For more information see: www.worldrabiesday.org/

13th International Bioinformatics Workshop on Virus Evolution and Molecular Epidemiology, 9–14 September 2007, Lisbon, Portugal

For more information see: www.kuleuven.ac.be/aidslab/veme.htm

XXX International Congress on Microbial Ecology and Disease (SOMED) - 4th Probiotics, Prebiotics and New Foods International Congress, 16–18 September 2007, Rome, Italy

For more information see: www.probiotics-prebiotics-newfood.org/meeting.htm

XXI Congress of the Spanish Society of Microbiology, 17–20 September 2007: Seville, Spain

For more information see: <http://www.congreso.us.es/microSEM2007/>

Prion 2007, 26–28 September 2007: Edinburgh International Conference Centre, UK

For more information see: www.prion2007.com

4th Congress of the European Society for Emerging Infections, 30 September to 3 October, Lisbon, Portugal

Information regarding registration and abstract submission can be obtained from www.esei2007.com

Advancements in Food Safety, Rome, Italy, 18–19 October 2007

International Association for Food Protection, Third European Symposium on Food Safety.

For more information see: www.foodprotection.org

Surviving as a woman in science, EuroSciCon meeting, 2 November 2007, BioPark Hertfordshire, Welwyn Garden City, Hertfordshire, UK

Confirmed talks include:

- Creating Cultures of Success for women in science
- What does it take to get women back into SET work after a career break?
- Fellowship opportunities for women in science
- Scientific Publishing: A female dominated field

For more information see: www.euroscicon.com; or email enquiries@euroscicon.com

Zoonoses: From Science to Policy International Conference, Thistle Hotel, Glasgow, 5th – 7th November 2007

The deadline for abstract submission for oral presentation has now past. To submit an abstract to be considered as a Poster only, the deadline is 31st August.

For more information see: www.zoonoses.co.uk

Health Safety Agencies Between Technocracy and Democracy, 15–16 November 2007, University of Liege, Belgium

The conference will gather social scientists as well as practitioners to

investigate the role of independent agencies in the management of health risks.

Over the past decade, the creation of safety agencies on health products and foodstuffs has become a common and general feature of most European countries and EU polities. These institutions are expected to renew traditional policy-making on issues related to health, by providing sound scientific advice for policy-makers. Health crises, along with controversies, have spurred further interest in risk assessment and risk management procedures handled by these agencies. This two-day conference will be organized around four issues: the creation of agencies; agencies as strategic actors; the Europeanization of agencies; agencies and democratisation. It will bring together academics, actors and stakeholders interested in health safety agencies.

SfAM Winter Meeting 9th January 2008, Royal Society, Carlton House Terrace, London, UK

Session A Quality assurance and accreditation issues in microbiology

Session B. The Microbiology of alcoholic beverages



Contact us

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Contributions and suggestions are welcome. Deadline for publication is 1st of each month.

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