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SACEMA NEWSLETTER

No 21: June 2012



NEWS:

SACEMA holds training course on estimating HIV cases

On request of the World Health Organisation (WHO), SACEMA recently hosted a three-day training course on how to estimate the incidences of HIV cases.

It was held at the Stellenbosch Institute for Advanced Study (STIAS) in Stellenbosch from 9th to 11th May. The course, titled “Estimating HIV Incidence from Cross-Sectional Data on Recent Infection” taught the participants the theory of how to do cross-sectional data incidence estimation, and provided them with datasets and analysis tools for hands-on training.

The diverse group of participants came from Botswana, Cameroon, Kenya, Malawi, South Africa, Vietnam, Zimbabwe, Switzerland, the USA and the United Kingdom. They were primarily epidemiologists and programme officers from the national Departments of Health and the Centres of Disease of Control and Prevention (CDC) of their respective countries.

“Despite years of interest in the concept of estimating incidence cross sectionally, using such tests as detuned ELISA, BED assay, and a recent proliferation of new ideas, and despite substantial theoretical refinements in the analysis methodology that this approach relies on, there is still little

dissemination, amongst epidemiologists, of good tools, and the right training to use them effectively,” said Dr Alex Welte, Director of SACEMA and lead facilitator for the training course.

He says that major funders and programmer managers worry a great deal about how to estimate incidence, or at least trends in incidence. With the considerable challenges this faces, there is increasing pressure on developers of potential tests for recent infection to come up with suitable technology, and pressure on the analysts to be clear on how to work with data of this kind.

“The correct approaches, theoretical concepts, and ways of optimising assays and analysis plans are complex, nuanced, and relatively new, so a lot of potential implementers of studies of this kind are operating outside their comfort zones,” Dr Welte explains. “We at SACEMA have a sustained interest in the underlying theory, and have tried to develop appropriate and user friendly tools for practitioners,” he says.

SACEMA regularly hosts workshops and courses as part of its endeavour to train researchers and academics on how to quantitatively model spread and impacts of diseases and epidemics such as HIV, tuberculosis and malaria.

“Researchers in developing countries have become too dependent on quantitative technical support from collaborators and consultants in the global north,” Dr Welte believes. “However, this is beginning to change, and we are very excited to see, and be part of, initiatives in which workers in developing countries produce the latest methodological innovation, and also take responsibility for training and supporting workers throughout the region.”



Participants and facilitators: Training on 'Estimating HIV Incidence from Cross-Sectional Data on Recent Infection' at SACEMA, May 2012

Synthesis report for the City of Windhoek

From March through June of 2012, SACEMA partnered with PharmAccess Foundation Namibia to provide a synthesis report for the City of Windhoek, Namibia's Know Your Epidemic/Know Your Response process, a UNAIDS-supported effort to 1) assess the HIV/AIDS epidemic and the response to it in Windhoek, 2) identify gaps in the response and our understanding of the epidemic, and 3) recommend actions in the fields of policy, programming, and research and analysis to fill these gaps. This process, and the associated report, will form a cornerstone of the City of Windhoek's strategic planning process for its response to HIV/AIDS through 2015.

This project represents the second adaptation of the KYE/KYR process to the city level. Promoted by UNAIDS at the country level for several years, KYE/KYR is now a mainstay of evidence-based national HIV programming and resource allocation. However, given the rapid pace of urbanisation and population growth in cities across sub-Saharan Africa, and the need to address urban-specific issues such as rapid in-migration, the growth of informal settlements, and HIV risk within these contexts, city-level planning is becoming increasingly important: as the population of sub-Saharan Africa grows more urbanized, so will the HIV epidemic.

Study findings do indeed suggest an elevated prevalence in informal settlements, limited data on incidence, and a general lack of data on behavioural and structural "key drivers" of the epidemic, including intergenerational and age-disparate sex, concurrency, and the size of and HIV prevalence among "key populations" such as men who have sex with men (MSM) and commercial sex workers (CSW).

The UNAIDS Investment Framework helped guide evaluation of the city's response and the generation of key recommendations. Programmatic recommendations included improved coordination of the response and a focus on high-impact interventions, i.e. the UNAIDS Investment Framework's basic programme activities. Policy recommendations included leadership and advocacy by the City of Windhoek in addressing "critical enablers" of the basic programme activities, including legal and policy barriers to care, treatment and stigma; and working to improve access to private-sector ART provision data to better characterize this aspect of the response to the epidemic. Recommendations for further research included spatial and multilevel analyses of existing data to assess neighbourhood effects, further efforts at incidence estimation, and a closer examination of characteristics attending antenatal care clinics (ANC) to assess potential selection bias in recruitment into ANC surveys, which constitute the backbone of national HIV surveillance efforts.

Overall, the project marked an exciting opportunity for SACEMA to bring applied epidemiological expertise to bear in a policy-relevant context with a range of stakeholders, from local government to international organizations.

2012 Graduations

We are pleased to announce that the following SACEMA-supported students graduated this year:



Simon Johnstone-Robertson graduated *cum laude* with an MSc from the University of Stellenbosch under the supervision of Dr Alex Welte. The title of his thesis is “Calculating the Risk of Infection of Mycobacterium tuberculosis in Endemic Settings”.



Rebecca Burne graduated *cum laude* with an MSc from the University of Kwazulu Natal under the supervision of Prof Henry Mwambi. Her thesis is titled “Statistical Analysis of Incidence and Mortality of African Horse Sickness in South Africa”.

Susan Bryan also graduated *cum laude* with an MSc from the University of Kwazulu Natal under the supervision of Prof Henry Mwambi. Her thesis is titled “Modelling Longitudinally Measured Outcome HIV Biomarkers with Immuno Genetic Parameters”.



Juliet Nakakawa obtained an MSc from the University of Stellenbosch under the supervision of Dr Rachid Ouifki. The title of her thesis is “Modelling Malaria and the sickle cell gene”.



Siyabonga Ngcobo obtained an MSc in Statistics from the University of Kwazulu Natal under the supervision of Prof Henry Mwambi. The title of his thesis is “Modelling Longitudinal Binary Disease Outcome Data including the effect of covariates and extra variability”.



Ronel Sewpaul obtained an MSc from the University of Kwazulu Natal under the supervision of Prof Henry Mwambi. The title of her thesis is “Estimation and Analysis of Measures of Disease for HIV Infection in Child Bearing Women Using Serial Sero-prevalence Data”.

We are very proud of our graduates and wish them all the best with their future careers!

VISITORS:



In February we welcomed Daniel Keebler to the Wine Cellar. Daniel is a PhD student in the Department of Epidemiology at the University of California, Los Angeles (UCLA) and a visiting fellow at SACEMA.

SCIENTIFIC MEETINGS:

Treatment as Prevention (TasP) Workshop

In April this year Dr Alex Welte, SACEMA director, and Bewketu Bekele, a PhD student at SACEMA, attended an international HIV Treatment as Prevention (TasP) workshop. SACEMA research fellow Brian Williams spoke at the workshop entitled “Who should we Test and Who should we treat?”. The workshop was the second of its kind, held in Vancouver, Canada, from 22-25 April 2012 and brought together academics, experts from policy and industry, and community representatives. It highlighted new data and research outputs of many current antiretroviral therapy (ART) programs. It was noted that, for the programs to be successful, the 4-fold strategy of seek, test, treat and retain (STTR) would be very important. The ART scale-up program perspectives presented by representatives from some countries and regions show the improved commitments each government is making towards ART. Bewketu presented a poster outlining the impact of early HIV treatment and cost-effectiveness analysis of different ART initiation scenarios based on CD4 cell count

3rd International Tuberculosis Conference

Bewketu Bekele also recently attended the 3rd International Tuberculosis Conference held in Durban, South Africa, from 12-15 June. Content-wise, research from basic science, clinical, epidemiological and operational research and community and advocacy perspectives were discussed. The role of an HIV/TB integrated program was discussed as the main strategy to fight TB. Bewketu contributed a talk entitled “Modelling the impact of shifting the current ART initiation threshold on the HIV and TB epidemics”.

Research Visit to Uganda

Also in April, Dr Rachid Ouifki and his PhD student Doreen Mbabazi were invited to participate in a workshop on cost-effectiveness models for the Integrated Infectious Diseases Capacity -Building Evaluation at the Infectious Diseases Institute in Kampala, Uganda. The workshop lasted from 1 to 6 April and aimed at building a cost model to evaluate the effectiveness and cost- effectiveness of training health care professionals on health outcomes of HIV, TB, Malaria and Pneumonia in 36 sites in Uganda.

The visit was quite successful as it resulted in the finalization of a model that will be soon submitted for publication.

EVENTS:

Introduction to Epidemiology and Research Methodology, Feb – March 2012

This course, presented at SACEMA by Dr Jo Barnes of the Dept. of Community Health, University of Stellenbosch, has become an annual feature of the training of SACEMA's locally-based MSc students, and we were particularly pleased that it could be mounted early this year, with biweekly sessions over February and March. Again the course was opened without charge to external students, whose presence enriched the overall class experience. Dr Barnes' infectious enthusiasm, vast experience and fund of relevant and riveting anecdotes were in full flow at SACEMA on Tuesday and Thursday afternoons. From student evaluations: "Overall I learnt a huge amount of things (epidemiological and otherwise – like how to think about research, presenting, etc.) that I would never have obtained anywhere else." "I especially appreciated the classes on writing up and presenting scientific publications." "I really feel that I gained a great deal from it and will be able to fulfil my professional responsibilities better as a result."

SACEMA Research Days, April 12 –13



Students, supervisors and staff at SACEMA Research Days, Stellenbosch, April 2012

Over two days, in the attractive venue of Molenvliet Guesthouse in Stellenbosch, SACEMA's current bursary holders came together from many institutions around the country to present their work to date and their plans for future work. Although a few students were unable to attend, five MSc students and nine PhD students gave presentations, and talks were also given by five researchers and one postdoctoral student. An unusually high number of external supervisors took the trouble to attend, and made valuable contributions to the discussion following each presentations. As usual, students will be receiving some written feedback on their presentations, collated from a number of mentors, with ideas for sharpening questions and improving model validity.

This year, as an exercise, SACEMA's local MSc students, who are currently concentrating on coursework and training, were commissioned to report on four presentations of their choice from an epidemiological point of view. Their conclusions were written up and then discussed with Dr Jo Barnes, who gave them high commendation. As usual, much profitable informal networking and discussion of common interests was achieved during the social times, with a reception at SACEMA on Wednesday evening, a dinner at Decameron Restaurant on Thursday evening and a spit-braai back at Molenvliet on Friday evening.

Using Spectrum to investigate cost and impact of HIV interventions, 22 – 24 May

This two-day workshop was presented at SACEMA by Dr Carel Pretorius, once a SACEMA doctoral (and then post-doctoral) student, now at Futures Institute, USA. About 17 people attended all or part of the workshop, the aims of which were to familiarize users with the methods and train them in the use of *Spectrum AIM* and *Goals* for strategic applications. Participants were shown how to set up a baseline Spectrum projection, apply the Goals model to assess the cost and impact of scaling-up different HIV prevention strategies, and use interacting Spectrum modules for strategic decision making.

Spectrum is a suite of easy to use policy models that support analysis, planning and advocacy for health programs. It is used to project future needs and examine the effects of policy options. Spectrum contains the following components: demographical, family planning, AIDS impact, child survival, safe motherhood, Goals, TB and others.

Some comments by participants: "Carel is a great presenter and the material is easy to use and get working. It was a valuable course for me." "I would say that I gained a good overview of what is involved in localizing a big model for a specific country and what challenges to expect." "I have a broader understanding of the types of models that are used and will therefore be able to make more knowledgeable comparisons of the methods /models I may use to the more refined and widely used methods / models introduced in this workshop." "A huge thanks to Carel for taking time to provide this useful workshop that was enjoyed!"

Clinic on the meaningful modelling of epidemiological data, 27 May – 8 June

SACEMA was proud to join with the usual excellent team of North American colleagues in mounting this annual two-week modelling clinic in Muizenberg, in collaboration with the African Institute for Mathematical Sciences (AIMS). The clinic brought together 53 graduate students, post-doctoral students, and researchers from the United States, Canada, and Africa, with the goal of engaging the participants, from varied backgrounds, in multi-disciplinary epidemiological modelling projects that use real data to grapple with practical questions in a meaningful way. A total of 40 students and researchers took part in the clinic, 5 from N America, 19 South Africans (including 5 SACEMA students and 5 AIMS/SU Biomathematics Hons students), and 16 from other African countries: Zimbabwe, Kenyan, Cameroon, Nigeria, Tanzania, Togo, Niger, and Rwanda. In addition there were 5 American mentors, 5 SACEMA mentors, and 3 Junior Mentors.

The inter-disciplinary nature of this clinic makes it a challenging but richly rewarding experience for participants; and the close working relationship between SACEMA, AIMS and the American team is something of unique value that we hope will be sustained and indeed expanded over the next few years. A participant comments: “It doesn't take a brilliant individual but a team for something to work, so keep up the teamwork!”



MMED 2012 participants and faculty, Muizenberg Cape Town, June 2012

SACEMA Seminars

The following seminars and were presented from January to June:

24 January, Wim Delva, *Literature searches: using PubMed, etc.*

25 January, John Hargrove, *Migration, mines and mores*

26 January, Wim Delva, *Introduction to HIV, Part 1*

27 January, Wim Delva, *Introduction to HIV, Part 2*

Feb-Mar, Alex Welte, *Short Course: Introduction to dynamical modelling*

March-, Rachid Ouifki, *Short Course: Differential equations for modellers*

14 March, Martin Nieuwoudt, *Towards a formal Visual diagrammatic methodology for modelling Bio-systems*

2 April, Justine Davies (an executive editor of The Lancet), *Research: From Idea to Publication*

14 June 2012, Leigh Johnson, *Antiretroviral treatment in South Africa: estimates of access, life expectancy and impact on HIV incidence*

14 June 2012, Leigh Johnson, Training talk: *Uses of HIV/AIDS modelling*

UPCOMING EVENTS:

Introduction to Statistics and its Applications in Biology, 9 – 20 July

This two-week course is designed to assist post-graduate students and health professionals develop the biostatistical capacity requisite for their work. It is organised by SACEMA, UKZN and Ghent University, and will take place this year in Stellenbosch, with two levels running concurrently. Level 1: Basic Concepts and Methods, is designed and taught by Francesca Little and Katya Mauff from the Dept. of Statistics, University of Cape Town, while Level 2: Biostatistics, will be taught by Delia North and Temesgen Zewotir of the School of Statistics and Actuarial Science, University of KwaZulu-Natal. About 35 students have been selected, and a team of SACEMA students/researchers will provide tutor support for practical sessions. A varied programme of social events is planned to encourage participants to get to know each other, and to provide relaxation in between the intensive learning experiences.

Advanced Epidemiological Methods, 20 – 24 August, 2012

This popular seminar will be presented in Stellenbosch for the 3rd year running by Prof Matthew Fox of the University of Boston, and has already attracted applicants from many different institutions in South Africa, and also from other countries. The aim is to deepen understanding of basic epidemiological concepts such as measures of effect, confounding, misclassification and selection bias, and to question the implications of various sources of bias. Says Matthew Fox: "Throughout the course we will focus on the core concepts of validity and precision and will further develop our understanding of these central ideas. We will emphasize the development of skills that every doctoral level epidemiologist should have, skills that are both practical and marketable."

The course is intensive and advanced, and a fairly solid background in statistics and epidemiology is a pre-requisite to get the most out of it. For more information and online application, go to www.sacema.com. The deadline is 30 July, 2012.