SACEMA invites you to two insightful seminars:

Social contacts during the pandemic in Germany and development of an agent-based framework: Rafael Mikolajczyk

Modelling of the silent pandemic – spread of resistant pathogens in health care networks: André Karch

Monday, 19 September 2024

11:00-12:00 SAST

SACEMA Seminar Room and Online

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Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT

CERI Centre for Epidemic Response and Innovation

SACEMA South African Centre for Epidemiological Modelling and Analysis

Social contacts during the pandemic in Germany and development of an agent-based framework

Rafael Mikolajczyk, Professor for Epidemiology and Biometrics, Director of the Institute for Medical Epidemiology, Biometrics, and Informatics at the Medical School of the Martin Luther University Halle-Wittenberg. He has a long-term experience in mathematical modelling, including modelling of vaccination programs, spread of multiresistant pathogens, and respiratory infections. He is coordinator of the consortium OptimAgent (Optimal control of the epidemic under heterogeneity conditions - decision making perspective on agent based modelling), which is funded by the German Ministry for Research and Education as part of the program to strengthen capacity in mathematical modelling of infectious diseases in Germany and co-speaker of the steering committee for all funded consortia in the MONID-Network (German Modelling Network for Severe Infectious Diseases).

Rafael Mikolajczyk

Understanding social contact networks and how they change over time is critical for providing transmission models which reflect the effect of individual behaviour on population-level infectious disease spread. The COVID pandemic has given us for the first time the opportunity to study contact behaviour in real-time during different phases of epidemic spread and a variety of mitigation measures. In this talk results of the analysis of contact behaviour during the pandemic will be presented. It will be discussed how these results can be used when parametrising a large-scale agent-based model. This model, the German Epidemic Micro-Simulation System (GEMS), representing the entire population of Germany, offers a novel approach how to set up a large-scale ABM in an efficient way. Given the complex network architecture implied by the underlying population, various issues need to be solved when adding contact network information to the modelling framework.

Modelling of the silent pandemic – spread of resistant pathogens in health care networks

André Karch, Chair of Clinical Epidemiology at the University of Münster and Deputy Director of the Institute of Epidemiology and Social Medicine, is one of the founding members of the Interdisciplinary Center for Mathematical Modeling of Infectious Disease Dynamics at the University of Münster. His research focuses on the development and application of innovative epidemiological methods for research questions in the fields of infectious disease epidemiology and clinical epidemiology. This includes specifically dynamic mathematical transmission models as well as modern causal inference approaches. He is the coordinator and PI of several consortia in the field of infectious disease epidemiology, a steering committee member of MONID, the German Modelling Network for Severe Infectious Diseases, and the incoming president of the German Society of Epidemiology.

André Karch

Multiresistant pathogens causing difficult to treat nosocomial infections are a serious source of concern in health care systems world-wide. Given their characteristics, multiresistant pathogens are mostly transmitted in hospitals, but patients can become colonized and reintroduce the pathogen to the same or a different hospital. Therefore, patients` streams between hospitals establish a network over which the nodes (hospitals) can become infected. Organization of the health care system and precaution measures distributed in crucial nodes can help to reduce spread. In the framework of the JPIAMR project EMerGE-Net, we studied the effect of the hospital network on the spread of pathogens in Germany. Findings from this project will be presented and discussed.