Minisymposium proposal:

Quantification of the epidemiological magnitude of infectious disease epidemics

Session organizer:

Hiroshi Nishiura (Hokkaido University) and Gerardo Chowell (Georgia State University)

Abstract:

In mathematical modelling of infectious diseases, validating quantitative techniques to statistically estimate the burden and key quantities of transmission during the course of an epidemic is receiving substantial attention. For instance, a number of pitfalls relating to the validity and reliability of estimating the basic and effective reproduction number in real time have remained unresolved. Moreover, the epidemiological burden (e.g. excess mortality or severe fraction of infection) of infectious diseases has yet to be estimated in real time. Surveillance and seroepidemiological survey data could be unified for explicitly estimating the actual number of infected individuals, and it is fruitful to put such technical tool to be devised and integrated with the existing surveillance system. This session focuses on the evaluation of abovementioned epidemiological measures, helping us summarize the state-of-art of modelling techniques and existing gaps between surveillance and quantitative modelling studies.

Speakers:

Alexandra Smirnova (Georgia State University): On Regularized Derivative-free Optimization Algorithms for Stable Quantification and Forecasting of Infectious Disease Magnitudes

Masaya Saitoh (The Institute of Statistical Mathematics): estimation of the burden of influenza using surveillance and epidemiological data

Gerardo Chowell (Georgia State University): assessing the excess mortality of influenza

Ryo Kinoshita (Hokkaido University and Japan Society for the Promotion of Science): Real time estimation of the incidence of congenital rubella syndrome in Japan

Hiroshi Nishiura (Hokkaido University): quantifying the next generation matrix of rubella in real time

Kimberlyn Roosa (Georgia State University): Assessing parameter identifiability in compartmental dynamic models of disease transmission and control

Hyojung Lee (Hokkaido University): Ascertaining the end of Ebola outbreak

Sungmok Jung (Hokkaido University): Estimating the causal impact of pneumococcal vaccination on pneumonia mortality among elderly