THURSDAY 23 MAY

Modelling STI and HIV transmission using pair formation models

In pair formation models the duration of contacts between pairs of individuals is explicitly taken into account. It is assumed that possibly many contacts take place between the same pair of individuals with the consequence that many of those may be lost for disease transmission. Also, within monogamous pairs of susceptible individuals transmission cannot take place at all. These models are useful for studying sexually transmitted infections, where the duration of infectiousness is long, possibly in the order of the lifetime of individuals, and where partnership duration is also long. Pair formation models have been used to model the transmission of HIV in various populations. For HIV an important question is what proportion of cases are produced during the highly infectious acute infection. This depends on the partner change rates and thus interacts with partnership duration. For curable STIs long term partnerships may be a source of reinfection for an individual who has previously cleared the infection or has been treated. We discuss how the possibility of reinfection within partnerships may impact on disease dynamics. This question is relevant in the context of screening for chlamydia infections, where a large proportion of infections are asymptomatic. Effectiveness of screening may be reduced by reinfection within partnerships, thus emphasizing the importance of partner notification and treatment. Finally, we present some first steps in extending the pair formation approach to a situation where concurrent partnerships are possible.

The Speaker: Mirjam Kretzschmar studied Mathematics at the Universities of Mainz and Tübingen, Germany, followed by a doctorate in Mathematics in 1987. Subsequent to gaining her doctorate, she carried out post-doctoral work in the United States (Cornell University), Scotland (Strathclyde University, Glasgow), and the Netherlands (Centre for Mathematics and Informatics, Amsterdam). Since 2008, she has a joint position at the Centre for Infectious Disease Control, RIVM, Bilthoven, and as an associate professor at the Julius Centre for Health Sciences and Primary Care, University Medical Centre Utrecht, both in the Netherlands. In 2012 she was appointed Chief Science Officer for mathematical disease modeling at the RIVM. Dr Kretzschmar has published in the area of statistical and mathematical analysis of spread and control infectious diseases, and health economic evaluation of infectious disease control. Her main research areas are sexually transmitted diseases and HIV/AIDS, sexual and contact networks, and vaccine-preventable diseases.

Mirjam Kretzschmar

Chief Science Officer, RVIM and Professor, Julius Centre for Health Sciences and Primary Care, University Medical Centre Utrecht

9:00 – 10:00 am, Room BA 1200 Bahen Centre

The Fields Institute (222 College St., Toronto)

FIELDS

MITACS

CDM CMM
Centre for Disease Modelling | Centre de la modélisation des maladies

YORK U
UNIVERSITÉ UNIVERSITY