

Survival mixture modelling of recurrent infections

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School of Physical and Mathematical Sciences

Recurrent infections data are commonly encountered in biomedical applications, where the recurrent events are characterised by an acute phase followed by a stable phase after the index episode. Two-component survival mixture models, in both proportional hazards and accelerated failure time settings, are presented as a flexible method of analysing such data. To account for the inherent clustering and dependency of the recurrent observations, random effects are incorporated within the conditional hazard function. Assuming a Weibull or log-logistic baseline hazard in both mixture components of the survival mixture model, an EM algorithm is developed for the residual maximum quasi-likelihood estimation of fixed effect and variance components parameters. Application to model recurrent urinary tract infections for elderly women is illustrated, where significant individual variations are evident at both acute and stable phases. The survival mixture methodology developed enable practitioners to identify pertinent risk factors affecting the recurrent times and to draw valid conclusions inferred from these clustered and heterogeneous survival data.

Speaker Biography

Professor Andy H. Lee received a BMath degree in 1982 from the University of Waterloo, Canada, a MMath degree in 1983 from the same university, and a PhD in 1988 from the Australian National University. He is currently Chair Professor of Biostatistics at the School of Public Health, Curtin University of Technology, Perth, Australia. His multidisciplinary research includes statistical computing, nutritional epidemiology and chronic disease modelling.

Host: Prof. Xiang Liming, Division of Mathematical Sciences, School of Physical and Mathematical Sciences

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