ABSTRACTS

Following is an abstract of an invited address to the 14th Annual Meeting of the IMS held at the University of Limerick, 3–5 September 2001 which was submitted to the Bulletin.

Genetics and insurance: actuarial models

Howard Waters, Heriot-Watt University

The talk was an overview of on-going work by the speaker and two colleagues, Angus Macdonald and Chessman Wekwete, the latter funded by Swiss Reinsurance.

There has been much discussion recently in the UK and in many other countries about whether genetic information should be made available to insurers. The background to this discussion was described. There was then a brief summary of work by the group on the modelling of Breast and Ovarian Cancers in the presence of mutations to the BRCA 1 or BRCA 2 genes. The main part of the talk described a model to assess premiums for Critical Illness Insurance taking particular account of the development of Coronary Heart Disease or Stroke and able to assess the financial impact of genetic information relating to these conditions.

In mathematical terms, the model is a time(age)-inhomogeneous continuous-time Markov Chain with 24 transient and four absorbing states. Difficulties with the parameterisation of the model were discussed. A system of simultaneous differential equations for the moments of the present values of the cash flows associated with the model was described. This system had been developed by Norberg in 1995. Illustrative premium rates for Critical Illness Innsurance calculated using these equations were presented.