THE CAMBRIDGE STATISTICS DISCUSSION GROUP

Tuesday 19th March 2019 7:15 for 7:45

The Large Seminar Room, Institute of Public Health,
University Forvie Site, Robinson Way, Cambridge, CB2 0SR

A Bayesian model-free approach to combination therapy phase I trials using censored time-to-toxicity data

Graham Wheeler
Cancer Research UK and UCL Cancer Trials Centre @ University College London

Abstract: Many treatment regimens for cancers use several different drugs or treatment types. For combinations of one or more novel treatments, finding a dose/therapy combination that has a controlled and acceptable risk of severe toxicity presents several challenges. In particular, for trials involving radiotherapy, late-onset treatment-related toxicities are a possibility. This means patients need to be observed for a longer-than-usual period to assess for severe toxicities that could lead to one or more treatments being de-escalated. When a current trial patient is being observed for severe toxicity and one or more new patients are recruited to trial, waiting until the current patient has completed their follow-up could lead to an unreasonably long trial duration and excessive costs. Also, this would delay the start of treatment for the patients-in-waiting.

In this talk, I present an adaptation of the Product of Independent beta Probabilities Escalation (PIPE) design, an approach for dual-agent phase I trials that has already been implemented in practice since its publication in 2015. The adaptation uses censored time-to-toxicity outcomes for patients still in follow-up to aid dose escalation decisions for future trial patients. I will compare the original PIPE approach to this time-to-toxicity adaptation, and briefly discuss possible extensions to these methods to deal with more complex clinical trials.

Speaker: Graham Wheeler is a senior statistician at the Cancer Research UK and UCL Cancer Trials Centre. He holds a PhD in Biostatistics from the University of Cambridge and has previously worked at the MRC Biostatistics Unit and Columbia University in New York. Graham's work focusses on adaptive clinical trial design and the implementation of novel designs in practice, particularly for phase I dose-escalation trials. He is a member of both the Early Phase Clinical Trials section of the NIHR Statistics Group and the Adaptive Designs Working Group of the MRC's Network of Hubs for Trials Methodology Research, and a Statistical Ambassador for the Royal Statistical Society.

Directions: (From Central Cambridge) Turn right off Hills Road into the Addenbrooke's site then turn left at the hospital roundabout onto Robinson Way. Follow Robinson Way until you see an access road on the left signed 'Forvie Site' (but note that the sign is on your right). Turn into the access road and follow signs - first to the Institute and then to the Large Seminar Room. There is ample car parking. The front doors will be locked at 7:45. Arrivals after 7:45pm can gain admittance by contacting the secretary on 07761769436.

Provisional Next Meetings:
30th April – Matthew Bland (Institute of Criminology). 9th October – Imre Leader (Department of Pure Mathematics) on 'Clueless Voting'. 26th November – Nick Goldman (European Bioinformatics Institute).
23rd April 2020 – Peter Treasure (National Cancer Registration and Analysis Service).
7th May – Allègre Hadida (Judge Business School).
Supper: Some members eat regularly in the University Centre before each meeting **at 5-45pm**. All welcome !
Subscriptions: of 1 pound are now due for attending the 2018-2019 session.
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Slides and .mp3 files of old talks: http://www.mrc-cbu.cam.ac.uk/people/peter.watson/csdg.html