

Kathrine Grell

Danish Cancer Society Research Center and Section of Biostatistics, Institute of Public Health,
University of Copenhagen, will defend her PhD thesis titled

Spatial distribution of gliomas and its relationship to energy absorption from radio frequency fields emitted from mobile phones

Monday, 24 November 2014 at 14.00 in room 15.3.01, CSS, University of Copenhagen,
Øster Farimagsgade 5, Copenhagen

Academic supervisors:

Per Kragh Andersen, Section of Biostatistics, University of Copenhagen
Kirsten Frederiksen, Danish Cancer Society Research Center, Copenhagen
Joachim Schüz, International Agency for Research on Cancer, Lyon, France

Opponents:

Torben Martinussen, Section of Biostatistics, University of Copenhagen
Rasmus Waagepetersen, Department of Mathematical Sciences, Aalborg University
Mireille Toledano, Department of Epidemiology and Biostatistics, Imperial College London, UK

The Section of Biostatistics would like to invite you to a reception afterwards in room 5.2.46,
CSS, University of Copenhagen, Øster Farimagsgade 5, Copenhagen.

Abstract:

Mobile phone use has increased considerably over the last couple of decades and is now an integrated part of the everyday life of persons of all ages in a large part of the world. The radio frequency electromagnetic fields (RF-EMF) emitted from a mobile phone belongs to the spectrum of non-ionising radiation, which implies that RF fields are not directly carcinogenic. However, along with the expansion in use, the concern for an increased risk of brain tumours caused by mobile phones grew. Several studies have addressed this concern and organisations such as WHO have reviewed the literature within this area to assess the potential adverse health effects from mobile phone use. Overall, the evidence remains inconclusive, which necessitates more data and new methods to reach a conclusion.

The purpose of this thesis is to identify statistical methods to investigate the relationship between the spatial distribution of brain tumours and the energy absorption from RF fields emitted from mobile phones. Focus is on the brain tumours gliomas. The energy absorption from mobile phones is highly localised with most of the energy being absorbed close to the ear where the phone is held during the call. Consequently, the spatial distribution and thus the localisation of the tumour in relation to the ear used for phone calls is important to include when analysing the relationship between mobile phone use and tumour risk. The methods described in this thesis concern a three-dimensional point source model and Markov random field models. They are applied to data from the multinational interview-based study "Interphone". The Interphone Study was coordinated by the International Agency for Research on Cancer (IARC) and is the largest investigation of the relationship between brain tumours and mobile phone use.