The Art, Science, and Joy of Healthcare Modelling: being an important part of the effort to combat the world's third biggest killer

Leonid Churilov [a, b]

[a] *The University of Melbourne, VIC 2010, Australia*
[b] *RMIT University, 124 La Trobe Street, Melbourne VIC 3000, Australia*

Email: leonidc@unimelb.edu.au

Abstract: Decision sciences have made major contributions in improving systems and services in many fields of human activity. Healthcare – with the need to evaluate treatments and screening programmes, to allocate resources, to support individual clinical decisions, to redesign care processes and to improve quality of life - is a uniquely rich and stimulating field for the modelling profession to use our knowledge and skills.

In this plenary talk I will present a broad perspective on past, present, and potential future of healthcare modelling acquired from both ends of the "academic divide" over the last twenty-plus years. Special focus will be on the modelling work performed while contributing to the effort of combatting the world's third biggest killer: stroke. From the first ever model to evaluate long-term benefits of earlier access to thrombolytic treatment to working with paediatricians to create a new "brain attack" clinical pathways for children; from using the elegance and power of analytics to understand benefits and risks of early stroke rehabilitation to supporting the decision-making of an international roundtable of stroke clinicians in setting out major priorities in the area – modelling of stroke care systems not only requires the rigor of science and, often, the elegance of art, but also is capable of bringing an immense sense of joy and satisfaction from the ability to apply analytic modelling expertise to improve human life.

Keywords: Healthcare systems, decision modelling, process modelling, analytics, model use