Integrating methods and practice across health, social and community services

Sally McClean

School of Computing and Information Engineering, University of Ulster, Coleraine, Northern Ireland, BT52 1SA, UK

si.mcclean@ulster.ac.uk

Chronic diseases, such as stroke, place a heavy burden on society, incurring long periods of hospital, social and community care. Models and simulation therefore need to span diverse services, with potentially different management structures and funding streams. Also many diseases are highly complex with heterogeneous outcomes and multiple strategies for treatment, therapy and care. It is therefore essential that modelers work closely with clinicians and other health and social services professionals to ensure that the ensuing models are realistic and there is a clear dissemination and deployment strategy from theory to practice. Furthermore, a key component of successful healthcare modeling and simulation is a strong underpinning with up-to-date and relevant patient data. Often the acquisition of such data depends critically on strong commitment from the health and social services professionals and relies on their willingness to work alongside the modelers to ensure that important aspects of the healthcare problem are incorporated into a model which is underpinned by high quality data.

An analytical approach, which may be more accurate, more easily implemented, more portable and have less computational cost is often limited in terms of restricted accessibility to users who have consequently less ownership of, and commitment to, the model, It is thus important to combine analytic and simulation approaches to achieve mathematical innovation, expressiveness and tractability in the former case together with clinical realism and user-friendliness in the latter. The service professionals can then more easily leverage this approach in order to adequately communicate knowledge of the system to the model developer and participate more fully in model development, dissemination and deployment.

These ideas are illustrated using concepts, models and simulations from geriatric care, stroke disease, orthopedics and connected health. Several relevant projects and collaborations are also discussed, namely the RIGHT and MATCH projects and the Cumberland group.