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<u>Research Group:</u>	Section for Science of Complex Systems
<u>Department:</u>	Center for Medical Statistics, Informatics and Intelligent Systems
<u>Current academic degree:</u>	MSc
<u>Previous University:</u>	University of Montenegro
<u>PhD Thesis:</u>	Modelling dynamical comorbidity networks from longitudinal health-care data
<u>Project title:</u>	Optimal gender-specific treatment paths on healthcare multiplex networks

Project description:

Non-communicable diseases (NCDs), like cardiovascular diseases or cancers, are the major public health problems worldwide. Well-described differences between men and women exist in NCDs in life expectancy and health-related quality of life. However, knowledge on gender differences in healthcare-seeking behavior is dispersed, sometimes incomplete and seldom incorporated into clinical practice. Women appear to have less access to specialized healthcare providers (HCPs), innovative drugs and high-end medicine. In this project we conceptualize healthcare systems as networks of HCPs that are connected by different types of patient flows. Treatments are random walks on such multiplex networks. A formal and data-driven understanding of healthcare-seeking behavior requires substantial advances in the mathematics of diffusion on such generalized networks. The optimization of gender-specific treatment paths necessitates new developments in methods akin to spectral optimization for multiplex networks and for targeted diffusion as history-dependent random walks. Gender differences manifest themselves in different diffusive properties of networks given by flows of male and female patients. We intend to contribute to more stringent considerations of gender differences in the treatments of NCDs and thus to better targeted, more patient oriented and more efficient therapeutic approaches which contribute to cost reductions and better allocation of resources.