Guidelines for Credible Practice of Modeling and Simulation in Healthcare


All listed authors are members of the Committee on Credible Practice of Modeling & Simulation in Healthcare

The role of computational modeling and simulation (M&S) in healthcare research and practice continues to expand [1-2]. However, the full potential of M&S for facilitating scientific discovery and clinical care can only be realized when M&S workflows and end-products are credible. Nevertheless, there is a lack of broadly accepted standards and guidelines to promote credible practice of M&S among academia, industry, clinics and regulatory bodies [3-5]. To help fill this critical gap, the Committee on Credible Practice of Modeling & Simulation in Healthcare (the Committee) was established under the Interagency Modeling and Analysis Group (IMAG) and the Multiscale Modeling (MSM) Consortium [6]. Specifically, the Committee is charged with (1) developing and adapting guidelines and procedures for credible practice of M&S in healthcare, (2) cultivating consistent terminology, (3) demonstrating workflows for credible practice, and (4) promoting credible practice. This informational poster focuses primarily on the Committee’s work to develop and adopt Guidelines for Credible Practice of Modeling and Simulation in Healthcare, accompanied by practical pointers for the MSM research community on implementing this guidance to establish M&S credibility.

Since its establishment in 2013, the Committee has drafted its perspectives regarding the essential elements of credible practice of M&S in healthcare; formally known as “The Ten Simple Rules of Credible Practice of M&S in Healthcare” (Table 1) [7]. After reaching a consensus within the Committee, we surveyed the broader research community to ensure our approach for establishing Guidelines for Credible Practice of Modeling and Simulation in Healthcare took into account a balanced representation of the interests and perspectives of global stakeholders in simulation-based medicine. Although preliminary results suggest noticeable differences between the perspectives of the Committee and the global research community, both groups agree that the four rules highlighted in Table 1 are necessary for credible practice of M&S in healthcare [8-9]. Finally, the Committee’s work has had an early impact in the field by informing the IMAG U01 funding program [10]. Looking to the future, it is likely that guidance provided by the Committee will evolve with the further penetration of M&S into healthcare. In doing so, the Committee is dedicated to work with the IMAG/MSM community to develop consistent terminology, illustrative workflows, and resources for promoting credible practice of modeling and simulation in healthcare.

References:

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