



12/16/2018

Dear IMAG Multiscale Modeling (MSM) U01 Principal Investigator

On Behalf of the IMAG/MSM Committee on Credible Practice for Modeling and Simulation in Healthcare ([CPMS](#)), we thank you for participating in the 2018 mid-term review of credibility plan status of the current studies funded through the U01 mechanism.

As described in the e-mail kicking off the activity, this was very much an experimental exercise that was aimed at establishing a more definitive approach in reporting the state of model credibility for the IMAG/MSM modeling community and the CPMS. The reviewers, consisting of the members of the CPMS Executive Committee, focused on the **documentation and communication of each PI's credibility efforts (see scoring rubric described below)**, not on the assessment of the implemented credible practice given the evolving nature of the projects. Why the focus on the documentation and communication aspects? In this inaugural activity, the CPMS members sought insight on how PIs may view the importance of communicating credibility, as well as how PIs interpret establishing evidence for credibility within the scope of CPMS Tens simple Rules (TSR, See Table 1). This is in part due to our recognition that many investigators accomplish more toward credibility than what they document, which is usually restricted to scholarly publications and presentations. To that end, reviewers provided feedback on documentation and communication adequacy, and, only in few rare cases, on the credible practice itself.

Due to your contribution of the 35 participating PIs, we have developed a number of insights and recommendations for the IMAG/MSM community that will improve the reporting and review process in the coming years. CPMS presented these findings to the IMAG/MSM Steering Committee on (November 20, 2018). Including feedback from this presentation, CPMS created the summary findings report posted to the [IMAG Wiki](#). In this report, we provide more details as to the review process and general findings and recommendations. CPMS also generated specific feedback for each PI submission, all of which are posted on the IMAG WIKI for public review. The feedback specific to your submission follows this letter.

In closing, CPMS considers this as a very rewarding activity that has elucidated many important aspects of credibility and we hope you feel the same as well. As we continue to develop improvements to this credibility plan feedback process, we welcome feedback from the community on the process and the findings from this review and evaluation. Please e-mail CPMS or post comments the [IMAG Wiki](#).

Best Regards,

Dr. Jerry Myers and Dr. Andrew Drach, CPMS Co-Chairs

Table 1. The CPMS Ten Simple Rules for Credibility in Models and Simulations in Health Care

#	Ten Simple Rules	Definition
1	Define context clearly	Develop and document the subject, application, purpose, and intended use(s) of the model or simulation
2	Use appropriate data	Employ relevant and traceable information in the development or operation of a model or simulation
3	Evaluate within context	Verification, validation, uncertainty quantification, and sensitivity analysis of the model or simulation are accomplished with respect to the reality of interest and intended use(s) of the model or simulation
4	List limitations explicitly	Restrictions, constraints, or qualifications for, or on the use of the model or simulation are available for consideration by the users or customers of a model or simulation
5	Use version control	Implement a system to trace the time history of M&S activities including delineation of contributors' efforts
6	Document adequately	Maintain up-to-date informative records of all M&S activities, including simulation code, model markup, scope and intended use of M&S activities, as well as users' and developers' guides
7	Disseminate broadly	Disseminate appropriate components of M&S activities, including simulation software, models, simulation scenarios and results.
8	Get independent reviews	Have the M&S activity reviewed by nonpartisan third-party users and developers
9	Test competing implementations	Use contrasting M&S execution strategies to check the conclusions of the different execution strategies against each other
10	Conform to standards	Adopt and promote generally applicable and discipline specific operating procedures, guidelines, and regulations accepted as best practices

CPMS utilized the following review scoring rubric relating the communication of content in each TSR factor:

- **Sufficiently Described** - Path toward evidence of this factor/rule appears to be sufficient
- **Insufficiently Described** - Path toward evidence of this factor/rule appears to be insufficient
- **Not Available** - No path toward evidence is described or an argument is made that the credibility factor did not apply to this model