Does the SORG Hip Fracture Delirium Algorithm Perform Well on an Independent Intercontinental Cohort of Hip Fracture Patients Aged 60 Years or Above?

Jacobien Oosterhoff, MD; *Tarandeep Kaur Oberai, PT*; *Aditya Vishwas Karhade, MD*;
Job N. Doornberg, MD; *Ruurd Jaarsma, FRACS*; *Joseph Hasbrouck Schwab, MD*;
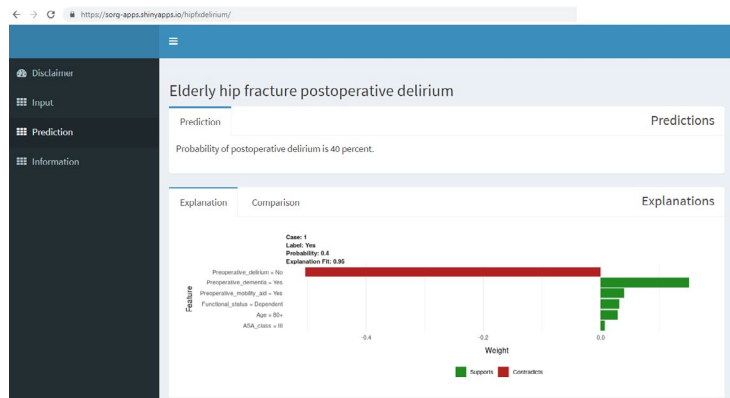*Marilyn Heng, MD*
Massachusetts General Hospital, Boston, Massachusetts, UNITED STATES

Purpose: Postoperative delirium in elderly hip fracture patients adversely affects clinical and functional outcomes and may herald death. A previously developed clinical prediction model (SORG [Skeletal Oncology Research Group] hip fracture delirium algorithm) is highly accurate in identifying patients at risk and can facilitate optimal use of preventive interventions. External validation is required to assess the transportability. Therefore we questioned, does the SORG hip fracture delirium algorithm perform well on an independent intercontinental cohort of hip fracture patients aged 60 years or above?

Methods: Overall, 6270 elderly patients underwent hip fracture surgery and the majority of patients were aged 80 years or above, with 4292 (68.4%) of all patients being female. In total, 39.2% (n = 2467) developed a postoperative delirium. The validation cohort originated from the Australian and New Zealand Hip Fracture Registry. Variables included in the original model were; age, American Society of Anesthesiologists (ASA) class, functional status (independent, partially or totally dependent for any activities of daily living), preoperative dementia, preoperative delirium, and preoperative need for mobility aid. Transportability of the SORG hip fracture delirium algorithm was assessed using model performance metrics; discrimination, calibration plot, Brier score, and decision curve analysis.

Results: The SORG hip fracture algorithm performed well to the validation cohort on discrimination (area under the receiver operating characteristic curve = 0.74), calibration plot (high accuracy in the lower predicted probabilities), Brier score, and decision curve analysis.

Conclusion: We have externally validated the SORG hip fracture delirium algorithm, suggesting transferability to an independent intercontinental population. We demonstrated the clinical utility for using the model, being highly accurate in ruling out patients from developing a postoperative delirium, and can avoid unnecessary delirium preventive interventions. Further studies are needed to incorporate this algorithm in a prospective setting and evaluate the feasibility and efficacy in practice.

POSTER ABSTRACTS