

External Validation of a Prediction Model for 6-Months Mortality Risk (MR) in Patients on Hemodialysis

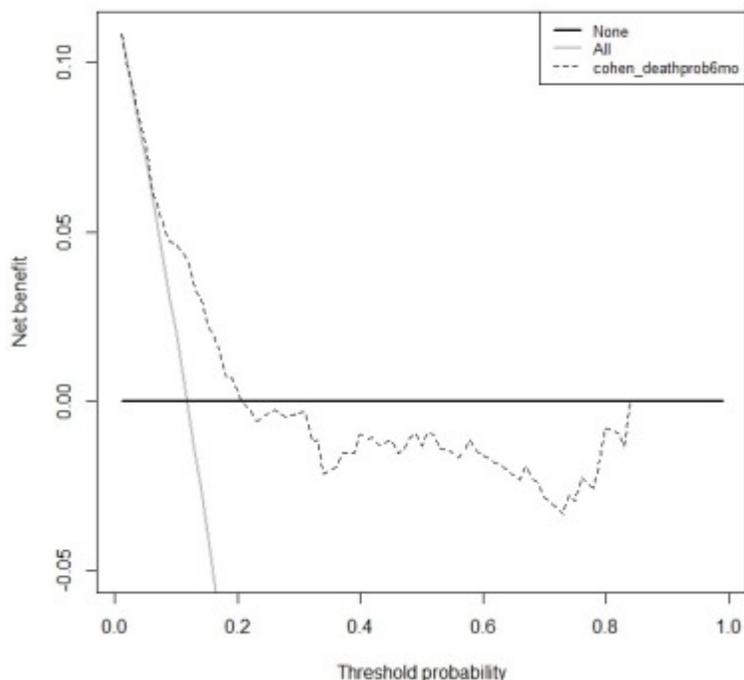
Adeera Levin¹, MD, Brian Forzley¹, MD, Helen Chiu², Lee Er², Ognjenka Djurdjev², Mohamud A. Karim², MD, Rachel C. Carson³, MD, Gaylene M. Hargrove³, MD, Dan J. Martinusen³, PharmD

¹Department of Medicine, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada, ²BC Provincial Renal Agency, Vancouver, BC, Canada, ³Vancouver Island Health Authority, BC, Canada

BACKGROUND: End-Stage Renal Disease (ESRD) is associated with poor prognosis. Clinicians must be prepared to address end-of-life issues; hence, identifying patients at higher MR is recommended. We aimed to validate a 6-month MR prediction model for prevalent hemodialysis patients derived by Cohen et al. (2010) in a Canadian cohort and assess its clinical utility.

METHODS: 375 prevalent dialysis patients in two regions of BC, Canada, were followed for 6 months. Data including serum albumin (ALB), age, peripheral vascular disease and dementia captured when the surprise question (SQ) was asked were used to validate the 6-month MR model. Model performance was evaluated through discrimination, calibration and decision-curve analysis.

RESULTS: The observed mortality was 13.3% at 6-months. The model had reasonable discrimination (c-stat=0.70) but poor calibration (slope=0.46 [95% CI: 0.24, 0.69]) in our data. Decision curve showed added value of the model for threshold probabilities of 8%-20% (= 12-42% fewer false-positive death), but no more beneficial to “treat-all” for probability <8% and “treat-none” for probability >20%.



Exploratory analysis showed that only SQ (OR=2.3, 95% CI 1.05, 4.97) and ALB (OR=0.22, 95% CI 0.10, 0.46) were associated with 6-month MR. Simpler models appeared to perform equally well.

CONCLUSIONS: The existing prediction model by Cohen et al. has reasonable discrimination but over-estimated the number of deaths and may require recalibration of model coefficients. The model may guide advance care planning conversations, but caution is required when applying this model in clinical decisions. A simpler model may enhance feasibility for use. Further research is needed prior to utilizing the model to predict death.