

## Journal Watch

### Survival prediction of patients with advanced cancer: the predictive accuracy of the model based on biological markers

Nobutaka K, Ohmori K, Kuriyama S, et al. Journal of Pain and Symptom Management 2007;34:600-606.

Prepared by: Yoko Tarumi, M.D.

Received during: The Monthly Journal Club (December 11, 2007) the Cross Cancer Institute

#### Abstract:

To determine whether the addition of biological markers to performance status (PS) and physical symptoms would improve survival prediction among patients with advanced cancer, we developed two prediction models with a scoring system based on 294 consecutive patients with advanced cancer (training set), and then tested its validity on another 93 patients (testing set). We assessed the predictive accuracy of the models using receiver-operating characteristic analysis. Albumin (ALB), lactate dehydrogenase (LDH), and lymphocyte percentage (Lyp%) were significantly and independently associated with survival length. For prediction of 60-day survival, the predictive accuracy of Model 2, based on the above biological markers in addition to PS and symptoms, was significantly better than that of Model 1, based on PS and symptoms alone (area under the curve [AUC] for Model 2,  $0.80 \pm 0.03$ ; AUC for Model 1,  $0.69 \pm 0.04$ ;  $P < 0.001$ ). Addition of ALB, LDH, and Lyp% to PS and physical symptoms improved prediction accuracy, especially for longer survival.

#### Comments:

##### Strength/uniqueness:

This is a single institution cohort study of patients' survival. The investigators developed a model for survival prediction based on various factors, including biological markers and subjective and objective symptoms, which correlate with shorter survival. As compared to previous models (Palliative Prognostic Index: Morita T. et al 1997; Palliative Prognostic Factor: Pirovano M. et al. 1999), this model is aiming at a longer term survival prediction of the range of 30 days and 60 days.

The authors emphasized the usefulness of a survival prediction model that is not dependent on the clinicians' experience or subjective assessment.

### **Weakness:**

As the authors pointed out, the most challenging issue in developing a prognostication model would be the generalizability of the results when the model was created based on a highly selected population.

The authors also pointed out the strikingly low incidence of delirium when considering that the population required hospitalization/institutionalization with a median survival of 42 (training set) and 48 (testing set) days.

Utilizing physical symptoms as indicators for prognostication may also be challenging, unless they are clearly defined.

Furthermore, it is unclear at what point in their illness the patients were enrolled into the study.

Finally, the significant predictors for the length of survival from Model 1 and 2 are somewhat difficult to apply in actual prediction. It would have been helpful to show survival curves of these patient groups based on their total scores.

### **Relevance to Palliative Care:**

Improving prognostication of survival is a highly needed skill when providing care for patients at the end of life.