Table 13: Chiang 2009

Reference	Chiang 2009 [95] and Kao 2009 [251]
Study type and analysis	Prospective cohort (derivation and validation of a prognostic tool)
Number of participants and characteristics	n=729 (first 374 were derivation group for prognostic tool, latter 374 patients were the validation group). Inclusion criteria: People with terminal cancer admitted to the palliative care unit referred from other wards of the same hospital, from other hospital or home. Exclusion criteria: Admission during bank holidays/weekends. People referred to other hospitals, as their complete records could not be accessed. Setting: Hospice ward, general hospital Country: Taiwan, China Age, years. Median (range) = derivation 67 (54, 75) validation 67 (58, 75) Male:Female: derivation 228: 146 validation 205: 148 Informed consent of unconscious people was obtained by proxy from relatives. Unconscious people n = 6 (derivation = 3 and validation group = 3). Eighteen signs and symptoms assessed: pain, dyspnoea, tiredness, heart rhythm, poor appetite, medication for insomnia, nausea, vomiting, constipation, edema, ascites, jaundice, cognitive status, performance status score according to Eastern Cooperative Oncology Group scale (ECOG), fever, pressure sores, mean muscle power, naso-gastric tube, intervention tube placement. An additional 12 laboratory items were also examined including blood count and biochemistry examination. Eighteen symptoms and signs were assessed, including pain, dyspnoea, tiredness, heart rhythm (irregular versus regular), poor appetite (<500 cc of

	milk or <2 bowls of porridge by mouth or tube feeding within 24 hours of admission), medication for insomnia, nausea, vomiting, constipation, edema (scored as 0 = no; 1 = less than 1/2 finger breadth; 2 = 1/2 - 1 finger breadth; and 3 = >1 finger breadth), ascites (scored as 0 = no; 1 = only by ultrasound; 2 = shifting dullness by physical examination; 3 = umbilical protrusion), jaundice (scored as 0 = no; 1 = slightly yellowish; 2 = remarkably yellow; and 3 = deeply yellow or greenish), cognitive status (scored as 0 = clear; 1 = lethargy; 2 = confusion; 3 = comatose), performance status score according to the ECOG (range: 1-4), fever (core temperature ≥ 37.5°C), pressure sores, mean muscle power (sum of muscle power of each extremity divided by 4, muscle powers graded using the Medical Research Council (MRC) scale of 0-5: 5 = normal power, 4 = moderate movement against resistance, 3 = movement against gravity but not against resistance, 2 = movement with gravity eliminated, 1 = flicker of movement, 0 = no movement), naso-gastric tube, and intervention tube placement (for example, percutaneous nephrostomy (PCN), percutaneous transhepatic cholangio drainage (PTCD), pig tail for pleural effusion or ascites drainage, jejunostomy tube and percutaneous endoscopic gastrostomy tube). An additional 12 laboratory items were examined: complete blood count (for example, white blood cell (WBC) count (normal range: male: 3.8-9.8*103/microlitres, female: 3.6-9.6*103/microlitres) and differential percentages, haemoglobin (normal range: male: 13-18 g/dL, female: 12-16 g/dL), and platelet (normal range: 120-320*103/microlitres); and biochemistry examination: blood urea nitrogen (BUN) (normal range: ≤20 mg/dL), creatinine (normal range: ≤1.2 mg/dL), serum glutamic oxaloacetic transaminase (SGOT) (normal range: ≤38 IU/litre), serum glutamic pyruvate transaminase (SGPT) (normal range: ≤41 IU/litre), total bilirubin (normal range: ≤1.0 mg/dL), albumin (normal range: 3.4-4.8 g/dL), corrected calcium (normal range: 2.1-2.55 mmol/litre), and blood sugar (normal range:70-110 mg/dL). Duration of survival days, which was defined as the period (in days) from the date of a hospice ward admitted to the date of death, or the end of follow-up, were also recorded. Extraction of independent prognostic factors from the training model to establish a predictor model to consider factors associated with the person's expectation of dying within 7 days. Univariate logistic regression analysis was performed to analyse the odds ratio of significant factors associated with people who expired within 7 days. Variables having a p value <0.05 in univariate analysis were selected and evaluated by multivariate logistic regression models. Kao et al 2009, reports a subgroup of these patients aged 65 and over (n = 459), of which 112 people died within 1 week. Mean age = 74.25 (±6.12 years)
Prognostic variable(s)	Multivariate analysis indicated that the following factors were significantly associated with the likelihood of people dying within 7 days: Cognitive status, edema, ECOG score, blood urea nitrogen and respiratory rate.
Confounders OR stratification strategy	Multivariate logistic regression model used following variables: Cognitive status, edema, ECOG score, blood urea nitrogen (BUN) and respiratory rate. Predictive model: Log[probability of dying within 7 days/(1 - probability of dying within 7 days)[-5.37 + 0.864*cognitive status (1 if cognitive = 0, 0 if otherwise) + 0.782*edema (1 if edema = 0, 0 otherwise) + 1.208* ECOG (1 if ECOG = 1 and 2, 0 if otherwise) + 0.022* BUN + 0.104* respiratory rate]
Outcomes and effect sizes	ROC curve given for predictor model, based on 5 predictors shown below (multivariate analysis) Area under curve = 0.81 (p <0.001, 95% CI 0.76 to 0.86 **Derivation**

	Sensitivity 80.9% Specificity 65.9% PPV 42.6% NPV 91.7% **Validation** Sensitivity 71.0% Specificity 57.7% PPV 26.8% NPV 90.1% **Multivariate analysis of clinical signs (OR, 95% CI) - in training set n = 374:** Cognitive (1 to 3 vs. 0) 2.29 (1.18, 4.43) Edema (1 to 3 vs. 0) 1.94 (1.04, 3.62) Jaundice (1 to 3 vs. 0) 1 (0.47, 2.15) ECOG score (3, 4 vs. 1, 2) 3.45 (1.65, 7.19) Ascites (1 to 3 vs. 0) 1.01 (0.49, 2.11) Additional laboratory parameters used within prognostic tool: BUN (mg/dl) 1.02 (1.00, 1.03) Respiratory rate 1.12 (1.04, 1.20) **Multivariate analysis of clinical signs (OR, 95% CI) - in subgroup 65 and over n = 459** Systolic blood pressure (per mm Hg) = 0.985 (0.974 - 0.997) Heart rate (per 1 beat/min) = 1.017 (0.001 - 1.032) Haemoglobin (per 1 mg/dL) = 1.216 (1.067 - 1.385) BUN (per 1mg/dL) = 1.028 (1.017 - 1.038) ECOG (per 1 score) = 2.018 (1.397 - 2.9150) Muscle power (per 1 score) = 0.722 (0.542 - 0.961)
Comments	Project supported by grants from Buddhist Dalin Tzu Chi General Hospital.