

**Table 15: Hui 2014<sup>228</sup>**

Reference	Hui 2014 <sup>228</sup>
Study type and analysis	Prospective longitudinal observational cohort.
Number of participants and characteristics	<p>n=357 (151 USA, 206 Brazil)</p> <p>Inclusion criteria: Consecutive patients with a diagnosis of advanced cancer who were <math>\geq 18</math> years. Exclusion criteria: None reported</p> <p>Setting: Acute palliative care setting Country: USA and Brazil Age, years. Mean (range): 58 (18 - 88) Female, n (%): 195 (55)</p> <p>Baseline demographics were collected at admission. Every 12 hours from admission to discharge or death standardised data forms were completed capturing the 10 variables detailed below.</p>
Diagnostic indicators	<p><b>Clinical signs associated with impending death and description (criteria for positive sign):</b></p> <p>Apnea periods - prolonged pauses between each breath (&lt;30 seconds; 30-60 seconds; &gt;60 seconds) Cheyne-Stokes breathing - alternating periods of apnoea and hyperpnoea with a crescendo-decrescendo pattern (present)</p>

	<p>Death rattle - Gurgling sounds produced on inspiration and/or expiration related to airway secretions (audible if very close; audible at the end of bed; audible &gt;6 meters from door of room)</p> <p>Dysphagia of liquids - difficulty with fluid intake (present)</p> <p>Decreased level of consciousness - Richmond Agitation Scale (-2 to -5 [sedation])</p> <p>Decreased performance status - Palliative Performance Scale, validated for assessing function [0% - 100%] (<math>\leq</math>20% [bed bound, completely dependent])</p> <p>Peripheral cyanosis - Bluish discoloration of extremities (toes; feet; up to knees)</p> <p>Pulselessness of radial artery - Inability to palpate radial pulse (left; right; both)</p> <p>Respiration with mandibular movement - Depression of jaw with inspiration (present)</p> <p>Urine output - Measured volume of urine over a 12-hour period (<math>\leq</math>100mL)</p>						
Outcomes and effect sizes	Mortality - 52/151 - USA, 151/206 Brazil						
	Diagnostic performance of clinical signs						
		<b>Missing data, n (%)</b>	<b>Sensitivity (95% CI)</b>	<b>Specificity (95% CI)</b>	<b>Negative LR (95% CI)</b>	<b>Positive LR (95% CI)</b>	<b>Frequency of signs in last 3 days of life</b>
	<b>PPS<math>\leq</math>20%</b>	120 (2.1)	64 (63.4 - 64.7)	81.3 (80.9 - 81.7)	0.44 (0.43 - 0.45)	3.5 (3.4 - 3.6)	169 (93)
	<b>RASS - 2 or lower</b>	90 (1.6)	50.5 (49.9 - 51.1)	89.3 (88.9 - 89.7)	0.6 (0.5 - 0.6)	4.9 (4.7 - 5)	159 (90)
	<b>Dysphagia of liquids</b>	652 (11.7)	40.9 (40.1 - 41.7)	78.8 (78.3 - 79.2)	0.75 (0.74 - 0.76)	1.9 (1.9 - 2)	100 (90)
	<b>Urine output over last 12 hours &lt;100mL</b>	3262 (58)	24.2 (23.2 - 25.1)	98.2 (98 - 98.5)	0.77 (0.76 - 0.78)	15.2 (13.4 - 17.1)	48 (72)
	<b>Death rattle</b>	101 (1.8)	22.4 (21.8 - 22.9)	97.1 (96.9 - 97.3)	0.8 (0.79 - 0.81)	9 (8.1 - 9.8)	110 (66)
	<b>Apnea periods</b>	85 (1.5)	17.6 (17.1 - 18)	95.3 (95.1 - 95.6)	0.86 (0.86 - 0.87)	4.5 (3.7 - 5.2)	71 (46)
	<b>Respiration with mandibular movement</b>	86 (1.5)	22 (21.5 - 22.4)	97.5 (97.3 - 97.6)	0.8 (0.8 - 0.81)	10 (9.1 - 10.9)	92 (56)
	<b>Peripheral cyanosis</b>	90 (1.6)	26.7 (26.1 - 27.3)	94.9 (94.7 - 95.2)	0.77 (0.77 - 0.78)	5.7 (5.4 - 6.1)	99 (59)
	<b>Cheyne-Stokes breathing</b>	83 (1.5)	14.1 (13.6 - 14.5)	98.5 (98.4 - 98.7)	0.9 (0.9 - 0.9)	12.4 (10.8 - 13.9)	61 (41)
<b>Pulselessness of radial artery</b>	94 (1.7)	11.3 (10.9 - 11.8)	99.3 (99.2 - 99.5)	0.89 (0.89 - 0.9)	15.6 (13.7 - 17.4)	57 (38)	

Comments	<p>Note the high rate of missing data - urine output was not routinely collected at the Brazilian centre (58% missing data). In addition there is 11.7% missing data for dysphagia of liquids, no comment given in text.</p> <p>This research is supported in part by a University of Texas MD Anderson Cancer Center support grant (CA 016672), which provided the funds for data collection at both study sites. E.B. is supported in part by National Institutes of Health Grants R01NR010162-01A1, R01CA122292-01, and R01CA124481-01.</p>
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