

THE NEECHAM CONFUSION SCALE*

The NEECHAM scale was developed as an instrument for rapid and non-intrusive assessment of normal information processing, early changes in information processing, and for documentation of confusional behavior, including delirium. It can be scored by the nurse "at the bedside" in a manner similar to other vital function measurements during routine or required nursing assessments. It makes maximum use of already collected data. Because the NEECHAM places a minimal response burden on the patient, NEECHAM ratings can be repeated at frequent intervals to monitor changes in the patient's status and the response to treatment.

Summary of Psychometric Data:

The validity and reliability of the NEECHAM Scale has been evaluated in elderly patients hospitalized for acute medical illness¹⁻². Inter-rater and retest reliability were also tested in a sample of stable elderly nursing home residents³.

Inter-rater (Pearson $r=.96$) and test-retest reliability (Pearson $r=.98$) in stable elderly subjects were strong. Internal consistency for the total score was high (Cronbach's $\alpha=.91$ Study 1; $.90$ Study II). There were high correlations with MMSE ($r = .87$, Study 1) and with the sum of DSM-III-R positive items (Pearson $r = -.91$). Correlation was good with the DSM-III-R criteria positive score ($r = -.70$). All items except vital function and oxygen stability showed a good corrected item-total correlation, loading on one factor explaining 60% of the variance.

The NEECHAM total score range runs from 0 (minimal responsiveness) to 30 (normal function). The NEECHAM has nine scaled items divided into three domains (subscales) of assessment: Cognitive Processing, Behavior, and Physiological Control. Subscale One measures key cognitive functions and is given the greatest weight (0-14). Subscale Two (0-10) measures behavioral manifestations. Subscale Three (0-6) is given the least weight because hospitalized patients in general are likely to have abnormal values on one or more of these items. A NEECHAM score below 25 predicts confusion as measure by 2 of 3 other clinical indicators (DSM-III criteria, MMSE, report of mental status change) with a sensitivity of .95 and specificity of .78.

References:

1. Neelon VJ, Champagne MT, McConnell E, Carlson J, Funk SG (1992). Use of the NEECHAM Confusion Scale to assess acute confusional states of hospitalized older patients. In Funk, SG et al. *Key Aspects of Elder Care: Managing Falls, Incontinence and Cognitive Impairment*. pp278-89.
2. Neelon VJ, Champagne MT, Carlson JR, Funk SG (1996). The NEECHAM Confusion Scale: Construction, Validation and Clinical Testing. *Nurs Research*; 45:324-330.
3. Champagne MT, Neelon VJ, McConnell ES, and Funk S (1987). The NEECHAM Scale: Assessment of Acute Confusion in the Hospitalized Elderly. *The Gerontologist*, 27:(October Special), 4A.

*Neelon/Champagne/McConnell (c'85,87)

INSTRUCTIONS FOR SCORING THE NEECHAM CONFUSION SCALE

Points are assigned for the item level description that represents the patient's response or behavior during the rater's interaction. Accurate scoring of the NEECHAM requires sensitivity to cultural differences and awareness of physical disabilities (visual, hearing, motor, etc.) that may affect the subject's response. The patient need not exhibit every behavior in the item description level to score at that point level, but behavior(s) should be representative. Although some training is required, inter-rater reliability of professional nurses is good. Data needed to score the NEECHAM can be collected during 10 minutes of routine patient observations and vital sign assessment.

COGNITIVE-INFORMATION PROCESSING

Note patient's level of responsiveness on entering the room -- eye contact, recognition, etc.

Note whether patient can maintain attentiveness and understand both verbal and visual information. Does the patient require repeated contact to stay focused or aroused? Do verbal or facial cues suggest understanding of interaction, examp: patient anticipates required action by visual cues (opens mouth to visual thermometer cue).

Observe for complex or cued command responses. Is patient able to initiate-complete a telephone call or nurse "call" procedure? Depending on the type of system and after initial orientation to procedure, the subject's ability to "call" the nurse can be used as a measure of complex command processing. Observe how he/she would "find and activate call system" (a complex" system requires locating the "call instrument", picking it up from bedside table, activating nurse signal amongst several possible choices, and responding to call-back). Is the task completed with normal speed and with out prompting? Can the patient only respond to "cued" commands (visual or touch cues)?

Orientation and short-term memory can be tapped without typical "do you know what day/date this is". What part of the day, what meal he/she has eaten, what place this is -- are examples of information obtained in routine care interaction.

BEHAVIOR AND PERFORMANCE

Score patient's awareness and actions in managing appearance, posture, and position (do not rate routine nursing hygiene care, only patient function).

Are there "hyperactive" movements or purposeless movements?
Does the subject show abnormal hand/finger movements -- "picking" at sheets?

Differentiate between culturally grounded slow speech and difficulty in speaking, initiating speech, appropriate speech, etc.

PHYSIOLOGIC CONTROL

The vital signs are scored as defined in scale. Observe patient's response and awareness. Does he/she anticipate procedure and assist or require repeated prompting or cueing?

Oxygen stability is scored by a non-invasive measure of oxygen saturation (pulse oximetry). Note subject's position and whether oxygen is being administered (flow-rate). In place of oximeter measurements, scoring can be done by scoring one point loss for required oxygen therapy and one point loss for the presence of apnea (greater than 15 sec period during a one minute observation and more than one observation).

Scoring continence is confounded by clinical care factors as well as by interactive effects of deteriorating cognitive and physical function in those who develop acute confusion. Score as defined in item but note whether subject needs assistance to toilet, requested help, and whether help was delayed?

<u>SCORING :</u>		POINTS
Items 1-3	Processing-Attention	= 0-4
	Processing-Command	= 0-5
	Orientation-Memory	= 0-5
		<u>0-14</u>
Items 4-6	Behavior-Appearance	= 0-2
	Behavior-Motor	= 0-4
	Behavior-Verbal	= 0-4
		<u>0-10</u>
Items 7-9	Vital Function	= 0-2
	Oxygen Stability	= 0-2
	Continence	= 0-2
		<u>0-6</u>
Total		0-30

Scores of:

27-30 ----- "Not confused," or normal processing
 25-26 ----- "Not confused," but at risk for confusion
 20-24 ----- Mild or early developing confusional state
 0-19 ----- Moderate to severe confusion

Scores for subjects with severe chronic cognitive impairment may differ from the above ranges (with or without superimpose acute confusional state).

HELPFUL HINTS FOR SCORING THE NEECHAM CONFUSING SCALE

- *Score the NEECHAM at the completion of the interaction. Read all scoring options for each item before selecting item score.

- *In scoring a patient, it is not uncommon for a 1 or 2 point difference to occur between ratings -- a change of more than 2 points is considered clinically significant and warrants a more complete assessment.

- *Be creative, develop an approach that is comfortable and gets the necessary information. The key is to be consistent in assessment and scoring.

- *Cognitive ability may fluctuate even in a short 15 minute period. Should this occur, score the lowest level observed during the entire interaction.

- *Pay attention to the patient's awareness or reaction to surroundings as well as what occurs in your interaction.

- *Avoid asking yes and no questions as the basis for scoring.

- *Record only what you observe during the present interaction, not what was seen previously.

- *Score patient as observed regardless of possible cause (recent sedation or narcotic medication, etc.,). Make a note of circumstances that might affect scoring.

V. Neelon, PhD, RN
CB# 7460, Carrington Hall
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599
e-mail: vneelon@email.unc.edu
(revise 1/97) file:instru97.doc