

APPENDIX A. The Delirium Rating Scale-Revised-98**GENERAL INSTRUCTIONS FOR USE OF THE DRS-R-98**

The Delirium Rating Scale-Revised-98 (DRS-R-98) is a 16-item clinician-rated scale with two sections and a score sheet. The 13-item severity section can be scored separately from the 3-item diagnostic section; their sum constitutes the total scale score. The severity section functions as a separate scale for repeated measures at short intervals within an episode of delirium. The total scale can be scored initially to enhance differential diagnosis by capturing characteristic features of delirium, such as acute onset and fluctuation of symptom severity. Concomitant use of diagnostic criteria such as from the International Classification of Disease (ICD)-10 Research Manual or versions of the Diagnostic and Statistical Manual (DSM) will enhance its ability to measure delirium when demented patients are involved because the DRS-R-98 is mostly a severity scale.

All items are anchored by text descriptions as guides for rating along a continuum from normal to severely impaired. Severity items are rated from 0 to 3 points and diagnostic items from 0 to either 2 or 3 points. The scoresheet offers space to circle item ratings and to optionally note characteristics of symptoms (e.g., type of hallucination) or the condition of patients during the ratings (e.g., restrained).

Though designed to be rated by psychiatrists, other physicians, nurses, and psychologists can use it if they have had appropriate clinical training in evaluating psychiatric phenomenology in medically ill patients. It can be used in research or comprehensive clinical evaluations. It does require enough clinical expertise to distinguish, for example, language problems from thought process abnormalities or delusions from confabulation. Even with sufficient clinical expertise, at times it may be difficult to make certain distinctions and more than one item may need to be rated to reflect that presentation (e.g., Wernicke's aphasia and severe loose associations).

The DRS-R-98 can be used in conjunction with the Delirium Rating Scale (DRS) for certain research purposes because they differ substantially in descriptions of items. For example, the DRS may be more helpful for patients emerging from stupor.

The DRS-R-98 measures symptoms without regard to cause. Thus, preexisting conditions may add points, for example, dysphasia will affect the language item. However, longitudinal ratings will clarify effects of preexisting conditions after the delirium has cleared. The inclusion of mentally retarded and Cognitive Disorder Not Otherwise Specified subjects during the validation study suggests that delirium can still be reliably assessed in the presence of such confounds.

All sources of available information are used to rate the patient—family, visitors, hospital staff, doctors, medical chart, and so on. Even a hospital roommate can contribute information. During interviews for such collateral information, ensure that terms used are mutually understood before accepting others' interpretation of symptoms.

Any time frame can be chosen for the DRS-R-98. Time frames greater than 24 hours are probably not necessary as this coincides with circadian rhythms and their possible disruptions. Shorter periods (e.g., 4 to 12 hours) may be helpful for intervention assessment—either for clinical or research purposes—though the fluctuating nature of symptom severity may need to be considered when interpreting the scores. Choosing periods less than 2 hours risks not adequately capturing some items (e.g., hallucinations, sleep-wake cycle disturbance) that occur intermittently. In such circumstances, a researcher may wish to use a smaller subset of items to monitor the patient, though such a subscale has not been validated.

Some items are rated based on examination and history, while others incorporate formal testing (e.g., cognitive and language items). It may be useful for a given clinician to standardize the questions used routinely in his/her practice, for example, asking months of the year backwards for attention, clockface or puzzle pieces for visuospatial ability, and particular items for confrontational naming. Adjunctive use of the Cognitive Test for Delirium (CTD) or some of its items offers the advantage of not needing the patient to write or speak. Evaluation of general information included in the long-term memory item should be geared appropriately to the educational and cultural background of the patient.

When both interview behavior and formally elicited responses are used, the relative contribution of each needs to be weighed by the clinician and a scoring judgment needs to be made. For example, on the attention item a patient has difficulty with reciting months of the year backwards but attends fairly well during the interview, or on long-term memory a patient recalls personal remote information accurately, but cannot recall well on formal testing of three words after 15 minutes.

Despite text descriptions for each item rating, the rater may need to exercise judgment in scoring. At times an intermediate rating with a 0.5 point interval may be needed (e.g., 2.5 points) if the rater cannot decide between two choices. Also, the time frame chosen may affect how to weigh the presence of certain symptoms. For example, a patient who has periods of intense hyperactivity and hypoactivity in a 24-hour period would be rated as "3" on both items #7 and 8. If this same patient is rated for a shorter interval that only involved hyperactivity, then item #7 would be rated as "3" and item #8 would be "0".

In cases where an item cannot be rated at all, the rater should make a notation on the score sheet and decide later how to handle that item's scoring. If used for research, a statistical consultant may have to advise. If used clinically, altering the denominator of the maximum possible score may be acceptable.

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DELIRIUM RATING SCALE-R-98 (DRS-R-98)

This is a revision of the Delirium Rating Scale (Trzepacz *et al.* 1988). It is used for initial assessment and repeated measurements of delirium symptom severity. The sum of the 13 item scores provides a severity score. All available sources of information are used to rate the items (nurses, family, chart) in addition to examination of the patient. For serial repeated ratings of delirium severity, reasonable time frames should be chosen between ratings to document meaningful changes because delirium symptom severity can fluctuate without interventions.

DRS-R-98 SEVERITY SCALE**1. Sleep-wake cycle disturbance**

Rate sleep-wake pattern using all sources of information, including from family, caregivers, nurses' reports, and patient. Try to distinguish sleep from resting with eyes closed.

0. Not present
1. Mild sleep continuity disturbance at night or occasional drowsiness during the day
2. Moderate disorganization of sleep-wake cycle (e.g., falling asleep during conversations, napping during the day or several brief awakenings during the night with confusion/behavioral changes or very little nighttime sleep)
3. Severe disruption of sleep-wake cycle (e.g., day-night reversal of sleep-wake cycle or severe circadian fragmentation with multiple periods of sleep and wakefulness or severe sleeplessness.)

2. Perceptual disturbances and hallucinations

Illusions and hallucinations can be of any sensory modality. Misperceptions are "simple" if they are uncomplicated, such as a sound, noise, color, spot, or flashes and "complex" if they are multidimensional, such as voices, music, people, animals, or scenes. Rate if reported by patient or caregiver, or inferred by observation.

0. Not present
1. Mild perceptual disturbances (e.g., feelings of derealization or depersonalization; or patient may not be able to discriminate dreams from reality)
2. Illusions present
3. Hallucinations present

3. Delusions

Delusions can be of any type, but are most often persecutory. Rate if reported by patient, family or caregiver. Rate as delusional if ideas are unlikely to be true yet are believed by the patient who cannot be dissuaded by logic. Delusional ideas cannot be explained otherwise by the patient's usual cultural or religious background.

0. Not present
1. Mildly suspicious, hypervigilant, or preoccupied
2. Unusual or overvalued ideation that does not reach delusional proportions or could be plausible
3. Delusional

4. Lability of affect

Rate the patient's affect as the outward presentation of emotions and not as a description of what the patient feels.

0. Not present
1. Affect somewhat altered or incongruent to situation; changes over the course of hours; emotions are mostly under self-control
2. Affect is often inappropriate to the situation and intermittently changes over the course of minutes; emotions are not consistently under self-control, though they respond to redirection by others
3. Severe and consistent disinhibition of emotions; affect changes rapidly, is inappropriate to context, and does not respond to redirection by others

5. Language

Rate abnormalities of spoken, written or sign language that cannot be otherwise attributed to dialect or stuttering. Assess fluency, grammar, comprehension, semantic content and naming. Test comprehension and naming nonverbally if necessary by having patient follow commands or point.

0. Normal language
1. Mild impairment including word-finding difficulty or problems with naming or fluency
2. Moderate impairment including comprehension difficulties or deficits in meaningful communication (semantic content)
3. Severe impairment including nonsensical semantic content, word salad, muteness, or severely reduced comprehension

6. Thought process abnormalities

Rate abnormalities of thinking processes based on verbal or written output. If a patient does not speak or write, do not rate this item.

- 0. Normal thought processes
- 1. Tangential or circumstantial
- 2. Associations loosely connected occasionally, but largely comprehensible
- 3. Associations loosely connected most of the time

7. Motor agitation

Rate by observation, including from other sources of observation such as by visitors, family and clinical staff. Do not include dyskinesia, tics, or chorea.

- 0. No restlessness or agitation
- 1. Mild restlessness of gross motor movements or mild fidgetiness
- 2. Moderate motor agitation including dramatic movements of the extremities, pacing, fidgeting, removing intravenous lines, etc.
- 3. Severe motor agitation, such as combativeness or a need for restraints or seclusion

8. Motor retardation

Rate movements by direct observation or from other sources of observation such as family, visitors, or clinical staff. Do not rate components of retardation that are caused by parkinsonian symptoms. Do not rate drowsiness or sleep.

- 0. No slowness of voluntary movements
- 1. Mildly reduced frequency, spontaneity or speed of motor movements, to the degree that may interfere somewhat with the assessment.
- 2. Moderately reduced frequency, spontaneity or speed of motor movements to the degree that it interferes with participation in activities or self-care
- 3. Severe motor retardation with few spontaneous movements.

9. Orientation

Patients who cannot speak can be given a visual or auditory presentation of multiple choice answers. Allow patient to be wrong by up to 7 days instead of 2 days for patients hospitalized more than 3 weeks. Disorientation to person means not recognizing familiar persons and may be intact even if the person has naming difficulty but recognizes the person. Disorientation to person is most severe when one doesn't know one's own identity and is rare. Disorientation to person usually occurs after disorientation to time and/or place.

- 0. Oriented to person, place and time
- 1. Disoriented to time (e.g., by more than 2 days or wrong month or wrong year) or to place (e.g., name of building, city, state), but not both
- 2. Disoriented to time and place
- 3. Disoriented to person

10. Attention

Patients with sensory deficits or who are intubated or whose hand movements are constrained should be tested using an alternate modality besides writing. Attention can be assessed during the interview (e.g., verbal perseverations, distractibility, and difficulty with set shifting) and/or through use of specific tests, e.g., digit span.

- 0. Alert and attentive
- 1. Mildly distractible or mild difficulty sustaining attention, but able to refocus with cueing. On formal testing makes only minor errors and is not significantly slow in responses
- 2. Moderate inattention with difficulty focusing and sustaining attention. On formal testing, makes numerous errors and either requires prodding to focus or finish the task
- 3. Severe difficulty focusing and/or sustaining attention, with many incorrect or incomplete responses or inability to follow instructions. Distractible by other noises or events in the environment

11. Short-term memory

Defined as recall of information (e.g., 3 items presented either verbally or visually) after a delay of about 2 to 3 minutes. When formally tested, information must be registered adequately before recall is tested. The number of trials to register as well as effect of cueing can be noted on scoresheet. Patient should not be allowed to rehearse during the delay period and should be distracted during that time. Patient may speak or nonverbally communicate to the examiner the identity of the correct items. Short-term deficits noticed during the course of the interview can be used also.

- 0. Short-term memory intact
- 1. Recalls 2/3 items; may be able to recall third item after category cueing
- 2. Recalls 1/3 items; may be able to recall other items after category cueing
- 3. Recalls 0/3 items

12. Long-term memory

Can be assessed formally or through interviewing for recall of past personal (e.g., past medical history or information or experiences that can be corroborated from another source) or general information that is culturally relevant. When formally tested, use a verbal and/or visual modality for 3 items that are adequately registered and recalled after at least 5 minutes. The patient should not be allowed to rehearse during the delay period during formal testing. Make allowances for patients with less than 8 years of education or who are mentally retarded regarding general information questions. Rating of the severity of deficits may involve a judgment about all the ways long-term memory is assessed, including recent and/or remote long-term memory ability informally tested during the interview as well as any formal testing of recent long-term memory using 3 items.

0. No significant long-term memory deficits
1. Recalls 2/3 items and/or has minor difficulty recalling details of other long-term information
2. Recalls 1/3 items and/or has moderate difficulty recalling other long-term information
3. Recalls 0/3 items and/or has severe difficulty recalling other long-term information

13. Visuospatial ability

Assess informally and formally. Consider patient's difficulty navigating one's way around living areas or environment (e.g., getting lost). Test formally by drawing or copying a design, by arranging puzzle pieces, or by drawing a map and identifying major cities, etc. Take into account any visual impairments that may affect performance.

0. No impairment
1. Mild impairment such that overall design and most details or pieces are correct; and/or little difficulty navigating in his/her surroundings
2. Moderate impairment with distorted appreciation of overall design and/or several errors of details or pieces; and/or needing repeated redirection to keep from getting lost in a newer environment despite, trouble locating familiar objects in immediate environment
3. Severe impairment on formal testing; and/or repeated wandering or getting lost in environment

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DRS-R-98 OPTIONAL DIAGNOSTIC ITEMS

These three items can be used to assist in the differentiation of delirium from other disorders for diagnostic and research purposes. They are added to the severity score for the total scale score, but are NOT included in the severity score.

14. Temporal onset of symptoms

Rate the acuteness of onset of the initial symptoms of the disorder or episode being currently assessed, not their total duration. Distinguish the onset of symptoms attributable to delirium when it occurs concurrently with a different preexisting psychiatric disorder. For example, if a patient with major depression is rated during a delirium episode due to an overdose, then rate the onset of the delirium symptoms.

0. No significant change from usual or longstanding baseline behavior
1. Gradual onset of symptoms, occurring over a period of several weeks to a month
2. Acute change in behavior or personality occurring over days to a week
3. Abrupt change in behavior occurring over a period of several hours to a day

15. Fluctuation of symptom severity

Rate the waxing and waning of an individual or cluster of symptom(s) over the time frame being rated. Usually applies to cognition, affect, intensity of hallucinations, thought disorder, language disturbance. Take into consideration that perceptual disturbances usually occur intermittently, but might cluster in period of greater intensity when other symptoms fluctuate in severity.

0. No symptom fluctuation
1. Symptom intensity fluctuates in severity over hours
2. Symptom intensity fluctuates in severity over minutes

16. Physical disorder

Rate the degree to which a physiological, medical or pharmacological problem can be specifically attributed to have caused the symptoms being assessed. Many patients have such problems but they may or may not have causal relationship to the symptoms being rated.

0. None present or active
1. Presence of any physical disorder that might affect mental state
2. Drug, infection, metabolic disorder, CNS lesion or other medical problem that specifically can be implicated in causing the altered behavior or mental state

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DRS-R-98 SCORESHEET			
Name of patient: _____	Date: ____ / ____ / ____	Time: _____	
Name of Rater: _____			
SEVERITY SCORE:		TOTAL SCORE:	

Severity Item	Item Score				Optional Information
Sleep-wake cycle	0	1	2	3	Naps Nocturnal disturbance only Day-night reversal
Perceptual disturbances	0	1	2	3	Sensory type of illusion or hallucination: auditory visual olfactory tactile Format of illusion or hallucination: simple complex
Delusions	0	1	2	3	Type of delusion: persecutory Nature: poorly formed systematized
Lability of affect	0	1	2	3	Type: angry anxious dysphoric elated irritable
Language	0	1	2	3	Check here if intubated, mute, etc.
Thought process	0	1	2	3	Check here if intubated, mute, etc.
Motor agitation	0	1	2	3	Check here if restrained <i>Type of restraints:</i>
Motor retardation	0	1	2	3	Check here if restrained <i>Type of restraints:</i>
Orientation	0	1	2	3	Date: Place: Person:
Attention	0	1	2	3	
Short-term memory	0	1	2	3	Record # of trials for registration of items: Check here if category cueing helped
Long-term memory	0	1	2	3	Check here if category cueing helped
Visuospatial ability	0	1	2	3	Check here if unable to use hands
Diagnostic Item	Item Score				Optional Information
Temporal onset of symptoms	0	1	2	3	Check here if symptoms appeared on a background of other psychopathology
Fluctuation of symptom severity	0	1	2		Check here if symptoms only appear during the night