

Assignment of CDR rating

Use all information available and make the best judgment. Score each category (M, O, JPS, CA,HH, PC) as independently as possible. Mark in only one box, for each category, rating impairment as decline from the person's usual level due to cognitive loss alone, not impairment due to other factors, such as physical handicap or depression.

Occasionally the evidence is ambiguous and the clinician's best judgment is that a category could be rated in either one of two adjacent boxes, such as mild (1) or moderate (2) impairment. In that situation the standard procedure is to check the box of greater impairment.

Aphasia is taken into account by assessing both language and non-language function in each cognitive category. If aphasia is present to a greater degree than the general dementia, the subject is rated according to the general dementia. Supply evidence of non-language cognitive function.

The global CDR is derived from the scores in each of the six categories ("box scores") as follows. Memory (M) is considered the primary category and all others are secondary. CDR = M if at least three secondary categories are given the same score as memory. Whenever three or more secondary categories are given a score greater or less than the memory score, CDR = score of majority of secondary categories on whichever side of M has the greater number of secondary categories. When three secondary categories are scored on one side of M and two secondary categories are scored on the other side of M, CDR=M. When M = 0.5, CDR = 1 if at least three of the other categories are scored one or greater. If M = 0.5, CDR cannot be 0; it can only be 0.5 or 1. If M = 0, CDR = 0 unless there is impairment (0.5 or greater) in two or more secondary categories, in which case CDR = 0.5

Although applicable to most Alzheimer's disease situations, these rules do not cover all possible scoring combinations. **Unusual circumstances** occur occasionally in Alzheimer's disease and may be expected in non-Alzheimer dementia as well are scored as follows:

- (1) With ties in the secondary categories on one side of M, choose the tied scores closest to M for CDR (e.g., M and another secondary category = 3, two secondary categories = 2, and two secondary categories = 1; CDR = 2).
- (2) When only one or two secondary categories are given the same score as M, CDR = M as long as no more than two secondary categories are on either side of M.
- (3) When M = 1 or greater, CDR cannot be 0; in this circumstance, CDR = 0.5 when the majority of secondary categories are 0.

Morris, J.C. (1993). The clinical dementia rating (CDR): Current version and scoring rules. *Neurology*, 43(11), 2412-2414.

Clinical Dementia Rating (CDR) Scale

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Transcript from CDR Overview Videotape # 0

Before reading this transcript, please see the explanatory note on the final page. The Clinical Dementia Rating or CDR was developed at the Memory and Aging Project at Washington University School of Medicine in 1979 for the evaluation of staging severity of dementia. It was developed primarily for use in persons with dementia of the Alzheimer type (the equivalent of probable Alzheimer's Disease) and it can also be used to stage dementia in other illnesses as well. The Clinical Dementia Rating is a five-point scale in which CDR-0 connotes no cognitive impairment, and then the remaining four points are for various stages of dementia:

- CDR-0.5 = very mild dementia
- CDR-1 = mild
- CDR-2 = moderate
- CDR-3 = severe

The information from which the CDR score is derived consists of a standard set of information collected in a clinical instrument that uses other well-known scales for some of its foundation. For example, the collateral source or informant interview incorporates much of the Dementia scale of BLESSED and colleagues published in 1968.

In assigning a Global CDR, the six domains that are used to construct the overall CDR table are each scored individually. The six domains are: Memory, Orientation, Judgment and Problem solving, Community Affairs, Home and Hobbies, and Personal Care. In rating each of these domains, the assessment should be on the patient's cognitive ability to function in these areas. If they are limited in performing activities at home because of physical frailty, this should not affect their scoring on the CDR that again should be rated on their cognitive ability alone.

The CDR structured interview collects information in a standard way from both the collateral source and from the subject relative to memory, orientation and so forth. After the information is collected, say for memory, and that individual box score can be rated and from the individual box scores for each of the six domains, the Global CDR score is derived in accordance with published scoring rules. It is not typically the case that all of the six domains are in the same severity range, that is, for an individual who is a CDR-1 or mildly demented individual.

One need not have all six cognitive domains rated in the one category. This is because dementing illnesses, such as dementia of the Alzheimer type, do not always progress uniformly in all domains at the same time. Hence the scoring rules were developed to address the various combinations of box scores.

To aid in rating the severity in each of the domains, the CDR table, which shows the six cognitive domains the various severity levels, also provides descriptors for each

severity at each box score. These descriptors are meant to be used as guides, not to be taken literally.

Cases will arise where individual domain fulfills some of the severity requirements for one box score, and yet the remainder of the person's performance and abilities seem to fit with another box score, at least in part as well. In this situation, the standard rule is to apply a clinical judgment if one, and to rate the overall box score for that domain in accordance with the clinician's best determination of the severity level. So it may partly overlap. The clinician should attempt to distinguish which is the best representation of severity for that particular domain. In situations where the clinician cannot decide between one and two severity levels, the standard rule is to rate a higher severity level. An example would be if memory is between a mild and a moderate severity rating, between a 1 and a 2 box score, and the clinician cannot determine where the best representation is, the rule would be that memory is rated as a 2.

To best determine distinctions between various severity levels, the information collected during the data collection becomes important. Although a standard method of collection for the data is followed, often the clinician will need to probe either the collateral source or the patient in order to get the information that will be necessary to make these discriminations between different severity levels. The teaching set of the videotaped assessments will help illustrate how those probes can be used to get the most useful information. At times, information from the collateral source or the informant will seem to conflict with information from the subject. For example, there may be disagreement about an event that happened recently, and the clinician will need to make determination as to which information appears most accurate. Again, probing during the collection of the information will help to avoid some of these apparently conflicting situations.

At Washington University, with our experienced physicians and nurse clinicians, we find that two or more raters seeing the same subject or videotape of the same subject's assessment will reach agreement on the Global CDR rating approximately four times out of five. That is approximately an 80% agreement level. Additionally, we find that in the 20% in which there may be a discrepancy in the overall CDR ratings between two of our experienced clinicians, that there will be no more than one severity level difference between the two. That is, if one rater were to rate a patient as CDR-1, and another rater were to disagree, they would disagree by only CDR-2 or possibly on the other side by CDR-0.5, but no more than one severity level in Global CDR disagreements. When disagreements occur at our institution, our practice is to discuss the particular situation between the two raters and see if they both based their judgments on the same information. Sometimes that's useful in resolving disagreements, and sometimes, one individual will be, upon reflection, moved to change his Global CDR rating in concert with the other rater. But in some instances, this does not occur and we just note the disagreement.

We have found the CDR to be reliable for both physicians and for non-clinicians. There are several publications that are available by request that document the original formulation of the CDR so various refinements over the years as well as reliability information for both physicians and for non-physicians. The CDR is

assigned without reference to psychometric test performance. That is, it is based upon the information obtained about the patient's everyday performance in the six domains. That information is gleaned both from the informant collateral source, and from the subject. The CDR assignment with the box scores makes use of all available information from the informant interview as well as the subject interview. To the degree that the informant is observant and articulate, and themselves accurate, the CDR information is optimal.

Whenever the informant is less than accurate, then the CDR is correspondingly can be somewhat compromised. This is particularly true because three of the six domains of the CDR table Community Affairs, Home and Hobbies, and Personal Care are almost entirely dependent upon the collateral source or the informant interview.

When assessing the patient, both in the informant portion and the patient portion, we tried to emphasize change in cognitive ability from prior levels of functioning, and we probed for everyday examples of what the informant may be recounting. Once again, whenever possible, detail is obtained to buttress the informant's rating of the patient's change in level of performance to help us discriminate between different severity levels between the various box scores. The patient examination then is used to help collect additional information for Memory, Orientation, and Judgment and Problem-solving performance to help document the informant's assessment of the patient's performance. After assigning the individual box scores, again using both the informant and the subject information whenever possible, and using the descriptors not as literal guides, but more as helps in trying to find the appropriate severity level, the overall rating is determined by the clinical scoring rules.

Some examples of difficult distinctions that may occur are for the distinction in memory between CDR-2 and CDR-3. CDR-2 says essentially only highly learned material is recalled and new material is rapidly forgotten from memory, and CDR-3, the memory states that fragments only of memory remain. This is a difficult distinction. We generally try to assign a CDR-2 level to an individual that appears to have a fairly good recall and some essential past personal and historical items and may recall some portions of recent events although clearly they are largely incorrect in their ability to remember the entire event. But this would be an example if someone with a CDR-2 level of memory where someone who has fragments only or CDR-3 level may recall only minor relatively few items from the past such as where they were born and whether or not they were married. For CDR-0 in the 3 rating, the descriptor says oriented to person only. By this we mean they are oriented only to their self, they recognize their self only, not that they recognize persons known well to them.

Personal Care is unique among the six domains in that it does not have a CDR-0.5 box score. At the point where the patient requires some help, if only prompting to change clothes, to shave or to groom their hair, that becomes CDR-1 box score for Personal Care. Otherwise, if the patient requires no help, is fully independent, then there's only a CDR box score of 0 for Personal Care. There is no CDR-0.5 rating for Personal Care. There are other scoring algorithms that had been developed beyond those of the clinical scoring rules that may be useful for some in determining the Global CDR Rating from the individual box scores. In all of these algorithms, we

have designated Memory as the primary category with the other five categories, Orientation, Judgment, and Problem-solving, Community Affairs, Home and Hobbies, and Personal Care secondary categories.

We have found the clinical scoring rules as currently in use applied for the vast majority of persons with dementia of the Alzheimer type. Their utility in large populations of subjects with dementia of other demented diseases has not yet been widely evaluated, but we believe that should apply perhaps not equally, but should apply well to them also.

Although we do not use psychometric test scores or ranges to assign a CDR stage, we have accumulated experience with some frequently used brief bedside cognitive tests and find that there is a good separation between test score performance in concert with separation on the CDR table. For example, you can see that over 1100 normal subjects as tested on the Mini Mental State, of these 1100 CDR subjects, they scored at the very high end, approximately 29 on the Mini Mental State out of a possible 30. The questionably demented people scored on average of about 400 examinations at 24, and another 400 examinations of CDR-1 patients, their Mini Mental State score is 20 on average. On the CDR-2 are moderately impaired before it begins to appear, they scored 11 on the average, and there are only a few test score responses on the Mini Mental State score of CDR-3 are severely impaired persons, they scored an average of 5. So there is a good correspondence between cognitive test performance and CDR stages and separation stages; however, one can notice as well that there is a great deal of overlap between the ranges of performance rather than the distinction we see between the mean performance levels. And this is because the test performance can be influenced by a number of factors including educational and aided intelligence so that the Global Rating Scale represented by the CDR may represent a more accurate reflection of the person's level of impairment than test performance.

This is a near verbatim transcript from the CDR Overview Tape #0 narrated by John C. Morris, M.D., Friedman Professor of Neurology and Co-Director of the Alzheimer's Disease Research Center at Washington University in St. Louis. The wording is more typical of a conversation than a typical written document. Viewing Tape 0 may provide additional information not captured by the transcript.

For more information on the CDR, please see our website (<http://www.adrc.wustl.edu/adrc/>) or contact:

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