TRY THIS

General Assessment Series

Best Practices in Nursing Care to Older Adults

Brief Evaluation of Executive Dysfunction: An Essential Refinement in the Assessment of Cognitive Impairment

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WHY: In the familiar environment and daily routine of the older adult's home life, slowly progressive subtle cognitive changes may not be apparent. Such changes, however, often become obvious in the disorienting setting of the hospital, provoking family members to report "my mother was never like this at home." Acute illness and infections including COVID hospitalization have been associated with subsequent neurologic and cognitive sequelae, including difficulties with executive functioning. Even when delirium has cleared with resolution of the acute event cognitive impairment can jeopardize safe return to the community.

This *Try This*:® recommends assessing executive function for older patients without known dementia prior to hospitalization, but where the patient, family or staff feel the patient has not returned to baseline cognitive status at the time of discharge. Particularly when the older patient is alert, verbal and **without obviously impaired memory**, screening for executive dysfunction can be critical to a safe, realistic treatment and discharge plan. Patients who exhibit executive dysfunction should be referred to their primary care provider, or to a provider with expertise in dementia assessment. Data suggests that if memory and learning are intact, executive dysfunction can be ameliorated by training the person to anticipate and compensate for the deficits.

Executive dysfunction defined: Executive function (cognitive control) is an interrelated set of abilities that includes cognitive flexibility, concept formation, problem solving, abstraction, and self-monitoring. Assessing executive function can help determine a patient's capacity to execute health care decisions and discharge plans. With impaired executive dysfunction, instrumental activities of daily living (accounting, shopping, medication management, driving) may be beyond the person's capacity even though memory is preserved. The person's capacity to exercise command of the environment and self-control, and to direct others to provide care, becomes diminished. Executive dysfunction is one of the neurocognitive domains in the DSM-5 criteria for the diagnosis of dementia and occurs in all dementing diseases. Progressive, disabling executive function even in the absence of memory impairment may be sufficient for the diagnosis.

NOTE: Patients with impaired executive function need not have impaired memory.

BEST PRACTICES: Few practitioners are familiar with testing for executive function, yet there are brief, valid, and reliable instruments. The instruments listed below can be completed in person or remotely, via phone or video technology, have good internal consistency, inter-rater reliability and are strongly correlated with robust neuropsychological assessments of executive function:

- Controlled Oral Word Association Test (COWAT)
- Verbal Fluency Switching Task
- Trail Making Test Part B, oral version
- Telephone Executive Assessment (TEXAS)

TARGET POPULATION: Older patients:

- Not thought to have dementia prior to hospitalization or COVID infection but where the patient, family, or staff feel the patient has not returned to baseline cognitive status at the time of discharge.
- For whom other screening instruments (e.g., *Try This*:® MoCA, Mini-Cog, CAM) reveal minimal or no cognitive impairment.
- For whom cognitive impairment, observed as alterations in memory, use of language and abstract thinking, and manipulation of objects in space persist even when delirium has been identified and treated or ruled out.

VALIDITY AND RELIABILITY: Studies of executive dysfunction suggest that its presence predicts level of care among community residents making the transition to less independent living. And among older adults without dementia who have recovered from a major depressive episode, the presence of executive dysfunction is associated with excess, persistent disability, and poorer response to antidepressant medication.

STRENGTHS AND LIMITATIONS: The accurate characterization of executive dysfunction is confounded by language, education, and time of assessment. If the patient and examiner do not share a common mother tongue or if the patient is not evaluated in their primary language, the test becomes too difficult. Persons who are educationally disadvantaged may also perform in the impaired range but not be genuinely dysfunctional. Over the course of hospitalization, executive dysfunction often improves but may persist at reduced but disabling levels. When executive dysfunction occurs in depression, problem solving psychotherapy may lessen the disability.

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An Essential Refinement in the Assessment of Cognitive Impairment

MORE ON THE TOPIC:

Best practice information on care of older adults: https://consultgeri.org.

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Screening Tests of Executive Function

The following brief screening tests of executive function can be administered in the hospital, an ambulatory setting, and during a remote assessment. Introduce the testing with "Being sick can interfere with a person's thinking and decision making. Can I give you a brief test to measure your thinking?" During the testing, reward the patient for effort whether the response is correct or not to maintain rapport and cooperation. Afterwards ask the patient to self-assess performance and then share your results.

- **The Controlled Oral Word Association Test (COWAT, Spreen and Benton, 1977):** Individuals are asked to produce as many words (omitting names of people and places) as they can that begin with a specific letter in 60 seconds. The COWAT is composed of 3 sequential letter trials: "F", "A" and "S". Persons free of executive dysfunction with at least a high school education will produce 10 words in each letter trial within one minute. Individuals with limited literacy, limited formal education and those evaluated in their non-native language will struggle on this task. Different stimuli letters are available for different languages. Correct responses for the letter "F" trial would include: "fun, forever, fish" etc. Typical errors in addition to struggling to think of appropriate words include repeating the same word several times (perseveration), reverting to a prior stimuli letter (loss of set) and becoming distracted by a self-imposed rule. These errors are regarded as evidence of disinhibition or a failure of self-monitoring. It is considered a "frontal" task as the organization of words by first letter is unfamiliar, and requires conscious, effortful, systematic organization, and the filtering of irrelevant information such as natural taxonomic categories.
- **The Verbal Fluency Category Switching Task (**Delis, DC, Kaplan, E, Kramer, JH.2011)**:** The category switching task is a set shifting and flexibility task that requires individuals to shift between two semantic concepts/categories. In the traditional presentation the individual is asked to provide words switching between two categories (fruits and furniture) in one minute. The task has significant language and education demands and has been modified (Narme et al, 2019) to be more useful in a low education and multilingual populations. The modified version asks individuals to name as many animals as they can in 1 minute, then to name as many fruits as they can in 1 minute and then for the final

minute to switch between naming animals and fruits. Points are given for each correct word given if the word has not been said before and follows the switching paradigm. Individuals who produce significantly fewer correct items on the switching task compared to the non-switching task have executive impairment. Healthy individuals could name eleven animals and fruits total during the alternation task. Persons with Alzheimer's disease could name only half that number. Perseverations and intrusions, e.g. "dog, apple, apple" or "dog, apple, pear" do not count. A flexibility score can be calculated by dividing the number of words produced on the switching trial by the combined number of words on the animal and fruit trials and then multiplying by 200. Although additional research is necessary, early findings suggest that healthy controls have a mean flexibility score of 88.8%.

- **The Trail Making Test Part B, Oral Version:** (Ricker & Axelrod, 1994) requires the subject to count from 1 to 25 and then recite the 26 letters of the alphabet. For testing the subject is asked to pair numbers with letters in sequence e.g. . The examiner starts with the examples "1-A, 2-B, 3-C, now you continue please" then asks the person to continue until the pair "13-M" is reached. The oral version does not have visual or motor demands, but requires individuals to keep the number and letter sequences in working memory so as not to lose place. More than 2 errors is considered impairment. Typical errors include difficulty with flexibility (saying two numbers or two letters in a row), loss of set (skipping a number or a letter) and forgetting the goal of the task. Most individuals need redirection after making a mistake to reorient them to the last correct number-letter pair.
- **The Telephone Executive Assessment (TEXAS):** The Telephone Executive Assessment (TEXAS) is a 5-item telephone version of the Executive Interview (EXIT25; Royall, Mahurin, & Gray, 1992;) a frontal assessment tool that identifies perseveration, disinhibition, and intrusions. The TEXAS is composed of the "Number-Letter Task," "Word Fluency," "Memory/Distraction Task," "Serial Order Reversal Task," and "Anomalous Sentence Repetition" items from the EXIT25 and is scored 0–10. A score above 3 is considered impaired.