

An Aid for Screening for Dementia in Primary Care

Froehlich TE, Robison JT, Inouye SK. Screening for dementia in the outpatient setting: the Time and Change test. *J Am Geriatr Soc* 1998;46:1506-11.

Study Overview

Objective. To ascertain the validity of the Time and Change (T&C) test [1], a standardized method for detecting dementia, in a diverse elderly outpatient population.

Design. Prospective cohort validation study.

Setting and participants. Potential participants were 138 consecutive outpatients aged 70 years or older seen at the outpatient general internal medicine clinic at the Yale-New Haven Hospital primary care center between 27 June 1995 and 21 August 1995. Of these patients, 23 declined to participate and 15 could not be tested due to severe aphasia, deafness, blindness or language barrier, resulting in a sample of 100 patients. The sample was ethnically diverse and spanned a broad range of education levels.

Intervention. The T&C test consists of 2 tasks. In the telling time task, the subject must respond within 60 seconds to a clockface set at 11:10; in the making change task, the subject must make a dollar in change within 120 seconds from 3 quarters, 7 dimes, and 7 nickels. Subjects are permitted 2 tries on each task. An incorrect response on either or both tasks is scored as a positive result, indicating dementia.

Main outcome measures. Ratings obtained by the T&C test were validated against a reference standard based on the modified Blessed Dementia Rating Scale [2] and the Mini-Mental State Examination [3]. Reliability, contribution to physician recognition of dementia, and ease of use also were assessed.

Main results. The T&C test had a sensitivity of 63%, a specificity of 96%, a negative predictive value of 93%, a positive predictive value of 77%, and test-retest and interobserver reliability rates of 95% and 100%, respectively. When T&C test results were added to the physician's documenta-

tion of dementia, the number of missed cases decreased from 44% to 19%, and the number of overreported cases decreased by 100%. When timed cut points were used (equal to the median number of seconds participants took to complete each task), sensitivity was increased to between 94% and 100% and specificity was reduced to between 37% and 46%. To obtain a negative score using cut points, patients were required to tell the correct time within 3 seconds in 1 try and to make the correct change within 10 seconds in 1 try.

Conclusion

The T&C test is an accurate and reliable performance-based tool that is quick and simple to use and can improve physician ability to recognize dementia in diverse outpatient populations.

Commentary

In 1982, Beck and colleagues identified dementia in the elderly as "the silent epidemic" [4]. Because patients with symptoms or their family members infrequently seek out medical care, the burden is often placed on the primary care physician to identify the dementia and initiate a management plan [5]. The T&C test's high specificity (96%) and negative predictive accuracy (93%) support its value in ruling out dementia. However, the low sensitivity (63%) and false-negative (36%) rates indicate that mild cases of dementia will be missed.

Applications for Clinical Practice

Routine cognitive screening of elderly persons in the outpatient setting has been recommended to increase the detection of dementia [6]. However, existing cognitive screening instruments have not gained widespread use in outpatient settings, at least in part because of their complexity and administration time [7]. The simple T&C test facilitates screening in primary care settings and should encourage and motivate such screening activity.

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