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# When Should An Older Adult Be Referred to Neuropsychology?

Neuropsychological assessments provide a systematic, evidence-based and comprehensive approach to assessing an individual's cognitive and emotional functioning, and can complement the results obtained from other investigations. Neuropsychological assessment is typically viewed as valuable by both consumers and referring agents, but is not appropriate for all older adults with either a known or suspected cognitive impairment.

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Changes affecting concentration, memory, communication, or even decision-making are not uncommon among older adults. Some of these cognitive changes are merely “slips,” to which we are all vulnerable, some reflect normal aging, while others may be a clinically significant symptom. For example, cognitive symptoms manifest with psychiatric difficulties such as depression and anxiety, medication misuse, substance abuse and a variety of medical conditions (*e.g.*, hypertension, diabetes, hypothyroidism); they are also a defining feature of delirium and dementias, such as Alzheimer's disease (AD). Given the prevalence and non-specific nature of cognitive symptoms, it can be challenging to

determine the significance of these symptoms in older adults. Yet this situation is often faced by healthcare professionals and will undoubtedly continue to occur with the rapid growth of this segment of our society.<sup>1,2</sup>

Neuropsychologists, as consultants to various health professionals, are in a position to provide valuable information to aid healthcare providers who work with older adults. The demand for neuropsychological assessments has grown over the years and this has been particularly noticeable in the field of geriatrics—where the contributions of neuropsychology have been recognized in the widely used research criteria for AD,<sup>3</sup> as well as in various published guidelines pertaining to geriatric assessment.<sup>4-7</sup>

The purpose of this article is to provide some background about neuropsychology and the role of geriatric neuropsychologists, describe the neuropsychological as-

essment process, and identify common questions that can be addressed by this type of evaluation. Suggestions are provided to help determine whether or not a neuropsychological referral may be appropriate, and what should be considered when referring to a neuropsychology service.

## What is Neuropsychology and What is a Neuropsychologist?

Neuropsychology is the scientific study of the relation between brain-functioning and how a person thinks, feels and acts. It is concerned with understanding cognition, emotions and behaviours not only in the context of normal central nervous system development across the lifespan, but also with respect to compromised functioning that results from disease, disorder and injury. Clinical neuropsychology refers to the applied practice of neuropsychology in which knowl-

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edge of brain-behaviour relations, assessment tools, and large databases of statistical information about normal and abnormal functioning are combined to assess an individual's mental abilities and emotional state, and/or to provide an intervention.

Neuropsychologists (or clinical neuropsychologists) are PhD-level clinical psychologists who have specialized training and experience in neuropsychology. Some neuropsychologists work in private practice and others work in hospital/clinic settings as part of multidisciplinary teams, or as consultants for primary healthcare providers. It is important to note that not all neuropsychologists are competent to practice with older adults, as their background may emphasize work with other demographics, such as children and adolescents.

### **What is a Neuropsychological Assessment?**

Neuropsychological assessment involves the use of specialized tests, but is more than testing, *per se*. It is an evaluation that involves the integration of multiple sources of information about a patient, including data collected from an interview, collateral information (e.g., informant reports, relevant medical data) and an individual's performance on standardized psychometric measures. A neuropsychologist

selects tests from a broad array of cognitive measures designed to assess intelligence and global cognitive skill, attention/concentration, memory and learning, receptive and expressive language, academic skills, executive functioning (*i.e.*, problem solving, conceptualization, planning, organization, sequencing, mental flexibility), praxis, visuospatial and constructional abili-

ties and perceptual and motor skills. Measures of mood state, behaviour and personality are also frequently included.

Not all geriatric neuropsychological assessments employ the exact same measures or assessment methods. The selection of tests is determined by the neuropsychologist and may be influenced by several factors, including the specific referral question and the characteristics of the individual. The age and education of the patient, his/her culture, language facility, sensory/motor limitations and ability to tolerate testing (e.g., due to pain, fatigue, comorbid medical conditions, and/or lack of motivation) may dictate the use of certain measures over others.

Given the demands and rigours of testing, brevity is an important consideration when working with older adults. The length of an evaluation varies depending on the individual and the referral question, though it is not uncommon for assessments to last from three to four hours. Persons who present with obvious and extensive cognitive impairment may complete relatively few tests,

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whereas those who are high-functioning will often complete more. Most assessments are completed during one visit, although a visit may be segmented in instances where fatigue is a factor. During testing, the patient works one-on-one with the neuropsychologist or a psychometrist (a specially-trained technician). Testing usually takes place in a room that is free from distractions and the individual completes most tests sitting at a table or, possibly, using a computer. In special circumstances, the tasks may be completed at bedside. An assessment typically involves having the examinee attempt to answer questions, solve problems and complete paper-and-pencil tests to the best of his/her ability.

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Once testing is complete, the results are interpreted by comparing the individual's performance to a normative standard that accounts for the influence of age, education and gender on test scores. When interpreting a cognitive profile, neuropsychologists document strengths as well as impairments, in addition to patterns across cognitive domains

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and pathognomonic signs of cerebral dysfunction. By comparing an individual's performance to an estimated premorbid level of functioning (or to previous test data, when available), judgments can be rendered about the probability that cognitive change has occurred.

### **What Purpose Might a Neuropsychological Assessment Serve?**

One should expect neuropsychological assessments to provide information about strengths and weaknesses in an individual's cognitive abilities and emotional state. This, in turn, may facilitate the diagnostic process, elucidate the impact of having a particular disease/injury, and/or facilitate

treatment planning.

In the context of working with older adults, the most common aim of the evaluation is almost always diagnostic in nature. One basic issue is determining whether or not cognitive impairment is present. The established sensitivity of neuropsychological measures to cognitive dysfunction can help distinguish normal aging and

benign cognitive change from pathological processes. An individual's cognitive profile, in addition to other information collected during the assessment, may be used to reliably determine whether he/she meets criteria for a dementia syndrome at the earliest possible stage,<sup>8</sup> or mild cognitive impairment<sup>9</sup> which, for at least some individuals, represents a prodromal dementia state. Neuropsychological assessment may also contribute to differential diagnosis, particularly distinguishing dementia from depression and other psychiatric causes of cognitive impairment. Cognitive profiles and assessment data may also help discriminate among various etiologies of dementias

and cognitive impairment (AD, vascular dementia, dementia with Lewy bodies, frontotemporal dementias, alcohol-related dementias). However, there may be considerable overlap in these profiles due to the same brain regions being affected and the frequency of comorbidity (e.g., AD and vascular changes). Baseline and follow-up neuropsychological evaluation increase the sensitivity to detecting progressive dementias,<sup>10</sup> often at early stages when the cognitive changes are subtle.

Neuropsychological assessments may be used to describe the impact of various conditions on an individual's behaviour, mood and thinking. Evaluations may be used to gauge strengths and weaknesses due to acquired brain injuries, cerebrovascular accidents, medical conditions, seizure disorders, chronic substance use and exposure to toxins. The information may be used to gauge the relative severity of a dementia as cognition deteriorates over time. Finally, it may also be useful to track changes in cognition following interventions such as coronary bypass surgery, pallidotomy, transplant surgeries, rehabilitation or the implementation of a medication regimen.

Based on the data from a neuropsychological evaluation, recommendations can be detailed to guide treatment and management decisions and to enhance the

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cognitive functioning of the older adult. For example, confirmation of a dementia or a depressive disorder can help clarify the most appropriate treatment avenue (e.g., medication, psychotherapy, behavioural management and/or referral to other professionals or support agencies). Strategies and techniques to optimize cognitive functioning and minimize the impact of cognitive dysfunction can be identified. Test findings may clarify whether a person would likely benefit from counselling or other therapies to adjust to his/her cognitive or emotional changes. When cognitive problems are found on examination, they may highlight the need to address safety issues at home (e.g., risk of forgetting stove burners on, difficulty remembering to take medications) or the need to increase support and structure (e.g., home care, hired assistance, support from family and friends). At times, neuropsychological assessment data may contribute to decisions about moving the patient to a more supportive living setting, if required.

Neuropsychological assessments may also contribute to planning for the future by addressing concerns such as driving and decision-making. To be clear, neuropsychological tests were not specifically designed to assess driving skill or competence. A neuropsychologist may

identify “red flags” based on a pattern of cognitive impairment that could compromise driving ability (e.g., problems with divided and sustained attention, impulsivity and judgment and visuospatial deficits). In practice, an on-road evaluation remains the most reasonable test of an older adult’s actual driving ability. Decision-

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making is an important and complex matter that frequently arises with older adults who have a known or suspected cognitive impairment. Guardianship and trusteeship are ultimately legal matters, but neuropsychologists may be asked to render opinions about an individual’s ability to make decisions about healthcare, accommodation and finances (including the need for guardianship or trusteeship, or the need to enact an advance directive or an enduring power of attorney). Neuropsychological assessment can provide a way to investigate a person’s comprehension and problem-solving skills, and insight into his/her difficulties.

## **Making a Referral for a Neuropsychological Evaluation**

Suspicion of cognitive dysfunction or decline prompts most referrals to a neuropsychology service. The index of suspicion should be based on observations, cognitive screening, symptoms reported by the individual and changes noticed

by family members and caregivers that might indicate a decline in cognition (e.g., problems with memory, problem solving or language) or the person’s ability to function independently at home (e.g., difficulty with self-care, dressing, preparing meals, driving, taking care of finances, managing medication).

Prior to making a referral for neuropsychological assessment, physicians usually rule out medical causes that might account for a patient’s cognitive symptoms. If medical conditions cannot be ruled out completely, the referrals should at least be delayed until the individual is medically stable (i.e., no infections, untreated con-

Table 1

### Examples of Geriatric Neuropsychology Referral Questions and Requests

- Does this person have cognitive impairment? Please assess the nature and extent of this individual's cognitive difficulties.
- Is there evidence of cognitive decline?
- Does he/she meet the criteria for a dementia?
- Can the patient's cognitive symptoms be explained by a condition or disease?
- Is the patient's presentation most consistent with a depression or a dementia?
- Is testing suggestive of a specific dementia (e.g., AD, vascular dementia, dementia with Lewy bodies)?
- The patient has a diagnosis of "X" [or, is undergoing surgery for "X"]; a baseline evaluation of cognitive and emotional functioning would be appreciated.
- Has this individual's cognition improved/declined since his/her previous assessment?
- What strategies or treatments can be recommended to assist the patient?
- Is he/she able to make reasonable decisions about specific concerns (e.g., medical treatment, living arrangements, finances)?
- Does the patient have the capacity to complete an enduring power of attorney? Personal directive, advance directive, or living will?
- Is guardianship or trusteeship required?
- Will he/she require increased support? Be able to live independently?
- Is a driving assessment recommended?
- Are there any cognitive, emotional or behavioural concerns that might affect the patient's ability to participate in treatment?

ditions, intoxication/withdrawal, delirium or recent medication changes) in order to provide a fair and accurate picture of the person's abilities. Individuals with severe pain, pronounced amotivation, or problems focusing and sustaining their attention are not appropriate for referral. Assessments for medicolegal purposes are usually directed to neuropsychologists in private practice rather than those in hospital settings. With the exception of brief cognitive screening, assessments are not conducted when the person is actively abusing alcohol or other substances, or in the acute recovery stage following an injury, stroke, or surgery.

Neuropsychological assess-

ments can play a valuable role in detecting dementia, but they are not necessary for all persons for whom this diagnosis is known or suspected. Physicians and specialists can render accurate diagnoses with procedures that are less demanding and time-consuming for the patient. Neuropsychological assessments tend to be most useful in patients with a strong educational background or above-average intelligence, persons with subtle deficits that may represent the early stage of a dementia, individuals with suspected cognitive impairment who have atypical presentations, and persons where traditional screening methods may be biased due to language barriers, culture or sensory/motor

limitations. With regard to the latter, these biases may also affect neuropsychological testing but some tests may be less affected by these confounds, thereby allowing a more accurate picture of the individual to emerge.

A key issue when making a referral to a neuropsychological service is to have a clear and specific question to be addressed by the assessment (Table 1). It is also important to include sufficient information about a patient in the referral for the neuropsychologist to initiate the assessment (Table 2).

Since most people who are referred for neuropsychological assessment have never completed testing of this nature, it may be useful to provide prospective



Table 2

### Information to Include When Referring to a Neuropsychologist

- Demographic data (e.g., age, gender, education level, and living situation)
- Information about an individual's language preference, and whether an interpreter might be required
- Problems with uncorrected vision or hearing, motor limitations, or pain/fatigue that might pose a challenge to the assessment process
- Relevant developmental, medical, and psychiatric history, including knowledge of any conditions or medications that might affect cognition, mood, or behaviour
- Documentation of recent relevant concerns
- A specific referral question

patients with background information about the nature and purpose of the assessment. The neuropsychologist to whom a referral is made may have a letter or pamphlet designed for clients that describes their service.

### Conclusions

Neuropsychological assessments can provide useful diagnostic and treatment information about an older adult that may not be

easily uncovered using other clinical or laboratory investigations. It provides a systematic, evidence-based and comprehensive approach to assessing an individual's cognitive and emotional functioning, and can complement the results obtained from other investigations such as computerised tomography (CT) and magnetic resonance imaging (MRI). Neuropsychological assessment is typically viewed as

valuable by both consumers and referring agents,<sup>11-13</sup> but it is not appropriate for all older adults with known or suspected cognitive impairment. Persons with subtle cognitive changes that may be difficult to detect with traditional screening tests and persons with atypical presentations are often best suited for this type of evaluation. The decision to refer to a neuropsychological service should take into consideration several factors, not the least of which are the patient's current state and his/her ability to tolerate testing. Formulating specific referral questions and providing some basic information about the assessment process to patients are two steps that healthcare providers can take to garner the most benefit from a neuropsychological assessment.

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