



Psychology Assessment Center
One Bowdoin Square, 7th Floor
Boston, Massachusetts 02114-2919
Tel: 617-643-3997
FAX: 617-724-3726
<http://www2.massgeneral.org/allpsych/pac/>

Janet Cohen Sherman, Ph.D.
Clinical Director
Assistant Professor, HMS
jsherman@partners.org

NEUROPSYCHOLOGICAL EVALUATION

CHASE, Frederick
MRN: 4990807
DOB: 10/2/38
DOE: 3/9/15

Reason for referral

Frederick Chase is a 76 year old right handed gentleman referred for this evaluation by Erica Camargo Faye, MD of the MGH Stroke Prevention Clinic. Mr. Chase's medical history is significant for HTN, mixed dyslipidemia, episodic visual changes since 2000, reminiscent of acephalgic migraines, psoriasis and mild cognitive impairment. He suffered an occipital cerebral hemorrhage in 5/2014 at which time he was admitted to Tufts-NEMC. He has had elevated blood pressure (160-170 range) for quite some time. Brain MRI with contrast and MRA of head and neck showed diffuse cortical microhemorrhages, most prominent in the occipital lobes, superficial siderosis and sulcal leptomenigeal enhancement. MRA of head and neck was reported to be relatively unremarkable and an EEG on 5/22/14 was also reported to be normal. Based on the findings, he was diagnosed with subarachnoid hemorrhage and cerebral amyloid angiopathy and admitted to Tufts for two days for BP control. He was started on daily Keppra ER 1000 mg and aspirin. A repeat MRI on 7/29/14 showed stability of his disease and a repeat EEG was unrevealing, and Keppra was discontinued. BP has since been well controlled and he is back to his normal activities of daily living. Within the context of his medical history, as well as Mr. Chase's complaints of progressive memory loss and mild executive functioning difficulties, he was referred for this evaluation. The current evaluation consisted of a review of the medical record, clinical interview with Mr. Chase, and administration of a battery of neuropsychological tests. Mr. Chase provided written informed consent indicating his understanding of the nature and purpose of the evaluation as well as limits of confidentiality.

History of presenting problem

Mr. Chase indicates that while it is hard to determine, he "imagines" that changes in his functioning go back as much as five years. He states that the most significant incident was in June when he had a stroke. At the time, he experienced visual changes walking to his dentist's office. He states that it is hard to describe the incident, indicating that on the way there, he had a "visual situation" in which he needed to ask someone to help him cross the street. He states that he was trying to use his phone to get directions to the dentist and the map of the city was "broken into fragments and was wiggling so that he couldn't see it. In spite of his problem, he went ahead and had a dental cleaning, stating that by that time, he was "pretty well over it". He didn't plan to do anything in terms of follow-up, but at his wife's advice, he had his eyes

checked, and work-up led to the findings described above. He has had prior visual episodes in which he sees “silvery things in all sectors of vision” that last for 10 -15 minutes.

Mr. Chase has gotten involved in research at the Kistler Stroke Center at MGH, including participation in cognitive studies and MRIs. His most recent MRI (7/29/15) showed the following: “1. Numerous (>100) microhemorrhages most pronounced in the posterior cerebrum and to a lesser degree involving the brainstem and cerebellum. This pattern is consistent with cerebral amyloid angiopathy (by Boston criteria), and is severe in degree. 2. Near complete resolution of subarachnoid hemorrhage in the high left frontal lobe, and other, unchanged, chronic subarachnoid hemorrhages overlying the cerebral hemispheres bilaterally. This is likely a sequela of cerebral amyloid angiopathy. 3. Unchanged, mild T2 hyperintensity in the cerebral hemispheres that is most pronounced in the regions of greatest microhemorrhage involvement. This is likely related to amyloid angiopathy; there are no other findings to suggest posterior reversible encephalopathy syndrome, although this cannot be definitively excluded.”

In terms of cognitive complaints, Mr. Chase reports that his short term memory has “noticeably deteriorated”. He forgets to do things and has needed to set up reminders and to “become more orderly” about taking his medications. He thinks his mind is “amazingly flexible” but he feels like it is “moving to mono-processing rather than multi-processing”. He finds it too distracting if there is too much information input (i.e., if looking at TV, he has a hard time looking at the scheduling guide and hearing the audio). He describes his thinking as less flexible, providing an example of having difficulty finding a track light on the internet that he needed, and being unwilling to switch to going to the lighting store to buy it. In terms of language, he thinks he may be less precise in expressing himself and stated that he was still thinking about how he expressed his interpretation of a proverb when he last saw Dr. Faye.

Flexible in the sense that after a microhemorrhage there is impairment (grogginess, confusion) of some sort which, after a few hours or days substantially 'clears up'.

Mr. Chase has pretty much stopped driving at his wife’s advice, though he thinks he is still able to drive. He indicated that his partner has noticed that he becomes more easily confused if there is a multi-way fork in the road. He also notices that he has doesn’t think as quickly as he used to.

Currently, Mr. Chase states that he still does a lot on the computer. He thought about returning to teaching, but states that it didn’t materialize. He reads a lot, and watches movies, where he has difficulty remembering characters’ names. He follows the news on-line and was aware of current events. He and his partner moved from Framingham to Boston in August 2010 and he relies on the ‘T’ quite a bit. In terms of ADLs, he pays bills on-line, noticing that he sometimes transcribes numbers incorrectly, and manages his own medications, using reminders.

Mr. Chase states that he “thinks [he] could be ‘rapidly collapsing’ right now.” He and his partner are planning a trip for April and he feels like it could be his last, stating that he is just wondering if “this [decline] isn’t beginning to accelerate.”

Neurobehavioral Review of Systems:

Mood: more things irritate him (describing himself as “a grumpy old man”). He worries about his 2 daughters and worries more now than in the past. He has a remote history of depression in college.

Exercise: not as much as he would like; tries to walk the 11 flights of stairs to his apartment, but does this somewhat infrequently.

Sleep: generally pretty good; no apneic episodes

Appetite/weight change: “too good”/no change

Caffeine/alcohol: drinks 4-5 cups of caffeinated coffee/day. He drinks very little alcohol and this was always the case. He smoked cigarettes in college

Motor/gait: no falls; slight problem with balance and is walking more slowly. He attributes this to planter fasciitis.

Headaches: infrequent, but when BP was high, he experienced visual events without headache
Vision: describes "visual peculiarities" (see above)

Hearing: thinks he may have a little hearing loss

Medications (including OTCs) (per medical chart)

Atenolol 100 MG (100 MG TABLET Take 1) PO QD x 90 days; No Change (Taking)

Atorvastatin 40 MG (40 MG TABLET Take 1) PO QHS; No Change (Taking)

Fenofibrate, Micro-coated (LOFIBRA Tabs) 160 MG (160 MG TABLET Take 1) PO QD, Take with food. x 30 days; No Change (Taking)

Lisinopril 15 MG (30 MG TABLET Take 0.5) PO QD x 90 days; No Change (Taking)

Tacrolimus Ointment 0.03% 1 APPLICATION (0.03 % OINT. (G)) TOP BID; No Change (Taking)

Developmental history

Born and raised in Indiana; normal birth history. He states that he was never a good student, and was better in math than English. He denies LD, ADHD. He states that he has always had lazy eye (bilaterally).
Learning Disabilities, Attention Deficit Disorder

Employment history

Mr. Chase is retired; he previously worked as a math and science high school teacher in the 60's and then in computer programming from 1970-2005. He retired because the work got less interesting and he wasn't as centrally involved.

Social History

He describes having had marital issues and was divorced around 2000; he has been with his current companion, Judy, for the past 15 years. He has 3 children, 1 from a first marriage, and 2 from a second marriage.

Family history

Mother died of bladder CA at age 81, and his father died in a boating accident in his 40s. He has 2 sisters and 1 brother; his young sister had some psychological issues (depression).

Current Evaluation

Behavioral observations

Mr. Chase presented alone and on-time for this evaluation. He was able to provide his history without difficulty, with some tendency to be overly focused on details. He expressed significant concern regarding his future, but did not appear overtly anxious or depressed. He was able to follow task instructions, but at times, read too much into tasks. His speech was fluent and sensible and affect and social comportment were appropriate to the situation. He was able to sustain attention and exert full effort; given this, test results are felt to provide a valid indication of current level of functioning.

Examination Results (please see attached score table)

Intellectual functioning

Premorbid = preceding the occurrence of symptoms of disease or disorder.
Based on his performance on a measure of single word oral reading, premorbid intellect is estimated to fall in the high average range. His performances on the WAIS-4, a measure of intellectual functioning, fell generally well above the average range with very superior verbal comprehension (>99th %ile) and superior perceptual reasoning (92nd %ile). Working memory was also in the superior range (91st %ile), while average range processing speed (37th %ile) was a relative weakness.

Cognitive Screen

Mr. Chase's performances on cognitive screening measures, including the ACE-R and the embedded MMSE fell well within normal range. On the MMSE, she achieved a score of 29/30, losing 1 point for not knowing the county. His total score on the ACE-R, a multi-domain cognitive screen (86/100) fell above impairment cutoff, as did his scores in the domains of

attention/orientation, memory and language. Scores on measures of **fluency** and **visuospatial functions** fell at cutoff indicating mild weaknesses in these domains.

Attention/Executive Functions

Mr. Chase's **verbal attention span** (6-8 digits forward; 84th %ile) and **working memory** (4-6 backward; 91st %ile; 5-6 correctly sequenced; 84th %ile) were well above average. **Processing speed** was average on a measure of rapid symbol transcoding (Coding: 37th %ile), and on a **visual tracking** test requiring him to rapidly connect randomly arrayed numbers on a page (Trails A: 30th %ile). He made 1 error due to lifting his pencil when completing the sequence and losing his place. On an alternate number-letter sequencing task (Trails B: 53rd %ile), response time was also average, with 1 error due to misrecognizing the number '8' as the letter 'B'.

Verbal fluency was low average when he was prompted with initial letter cues (21st %ile), and impaired to borderline when he was asked to generate words belonging to different semantic categories (8 animals, 1st %ile; 7 vegetables, 4th %ile, with 2 set-loss errors and 2 repetitions).

Reasoning abilities were superior on a verbal concept formation (Similarities) and high average on a pattern completion task (Matrix Reasoning). His ability to deduce and shift sorting categories based on limited corrective feedback was average, with all 6 categories deduced indicative of intact **cognitive flexibility** (WCST).

Language

Mr. Chase's speech was fluent and sensible and he performed well within the normal range on language screening measures. His performance on a confrontation naming measure was entirely accurate, with all 60 pictured objects correctly named. Narrative writing was intact, including grammar, spelling, handwriting and thematic organization.

Visuospatial abilities

Mr. Chase accurately copied intersecting pentagons and a wire cube. He failed to follow the instructions when copying a clock (drawing only the numbers for anchors) and drew the numbers outside of the clock circle. When prompted, he was able to write the remaining numbers and correctly drew the hands to show a specified time.

Memory

On a screening measure, he readily encoded a name and address and recalled 5 of 7 elements following a delay with the 2 remaining elements correctly recognized. On further memory measures within the verbal modality, **immediate recall of orally presented stories** was average with significant benefit from repetition of a story. Recall of the story information following a delay was high average and recognition of details (20/23 correct) was highly accurate. His ability to learn a 12 item word list was average (7, 7 and 9 words across 3 learning trials: 50th %ile) and following a delay, he recalled one additional word (10 words, 73rd %ile). Recognition was above average (12 hits, 1 false positive response). In the visual modality, immediate recall of a page of 6 designs that he studied across 3 trials fell in the average range (54th %ile), with benefit from repetition (96th %ile for learning). **Delayed recall** was also average (55th %ile), with nearly all that he learned retained, and with entirely accurate recognition of the designs.

Mood

Mr. Chase's responses on the **Geriatric Depression Scale** indicate that he is not depressed at this time (GDS: 7; within normal limits).

Clinical Impressions/Recommendations

Frederick Chase is a 76 year old right-handed gentleman referred for this evaluation in the context of his concerns regarding difficulties with memory and executive functioning that he has experienced for approximately the past 5 years. These concerns are seen in the context of a medical history that is significant for CAA, diagnosed in June of this year, with MRI showing stability of his disease and numerous (>100) microhemorrhages most pronounced in the

posterior cerebrum and to a lesser degree in the brainstem and cerebellum. Mr. Chase expressed concern regarding his decline, which he feels may be accelerating.

Results of this baseline evaluation describe Mr. Chase as a man of estimated superior premorbid intellect, with very strong verbal comprehension, perceptual reasoning and working memory on a measure of intellectual functioning. He performs well within normal limits on cognitive screening measures sensitive to dementia (i.e., ACE-R). Test findings are notable for weaknesses in the domain of executive functioning, including mildly weak, though average range processing speed, and a more significant weakness on measures of **verbal fluency**, with **category fluency** falling in the borderline to impaired range, and **phonemic fluency** in the low average range.

While average to above, his performances on memory measures provides evidence of a relative **weakness in encoding** of information, whether verbal or visual, and indicates that retention and retrieval of information is a strength, falling in the high average to superior range.

These results are highly reassuring in that they describe a normatively intact cognitive profile, with areas of mild, relative **weakness in aspects of executive functioning** (processing speed, fluency) and aspects of memory (encoding). There is evidence from test findings that **visuospatial abilities** are preserved, with high average to superior performances on tests of visual analysis and construction, as are language abilities, reasoning abilities, and memory retention. The test findings implicate involvement of frontosubcortical regions and are consistent with a diagnosis of Minor Neurocognitive Disorder, with mild weaknesses in executive functioning.

Given these findings, the following recommendations are provided:

1. Return to Dr. Faye for integration of these test results with other test findings and to guide care and treatment. I am also available and very happy to review test findings with Mr. Chase.
2. Given the areas of mild weakness observed, and Mr. Chase's complaints about difficulties with memory and with "multi-processing," he may benefit from using the following strategies:
 - a. Reduce distractions: when performing a task that requires concentration, Mr. Chase should work within a quiet setting and set aside enough time to start and complete a task. He should make sure to work on just one task at a time, seeing it through to completion before starting on another task.
 - b. To improve memory encoding within his daily life, he would benefit from utilizing active learning strategies to ensure that he has fully processed the information that he needs to remember. These can include repeating information, visualizing the information, structuring information meaningfully (i.e., breaking it down into meaningful clusters and units), and making associations to information he already knows. He is encouraged to continue to utilize external strategies as well, including a weekly medication pill box, calendar for keeping track of all appointments, and electronic reminders.
 - c. Mr. Chase is encouraged to engage in an active lifestyle, including physical exercise, cognitive engagement and social interactions. Studies have shown that remaining active and engaged, especially in physical exercise is helpful in preserving cognitive functioning.
3. Finally, given Mr. Chase's medical history and his concerns regarding declining cognitive functioning, the current test findings should be considered a **baseline** to help with

monitoring cognitive functioning. A re-evaluation is recommended in approximately 1 to 1.5 years.

Thank you for referring Mr. Chase for this evaluation. I hope that the information provided is helpful to him and to those involved in his ongoing care and treatment.

A handwritten signature in cursive script that reads "Janet Cohen Sherman, Ph.D." The signature is written in black ink and is positioned centrally on the page.

Janet Cohen Sherman, Ph.D.
Clinical Director

Name	F Chase
MRN	4990807
DOB	10/02/38
DOE	03/09/15
Age	76
Edu	18
Hand	Right
Sex	Male

NEUROPSYCHOLOGICAL EXAMINATION Raw z T SS % Classification

Intellectual Ability

Wechsler Adult Intelligence Scale - 4th ed. (WAIS-IV)

Verbal Comprehension (prorated)	50			141	>99	Very Superior
Perceptual Reasoning (prorated)	41			121	92	Superior

Verbal Comprehension

Similarities	29			14	91	Superior
Information	26			19	>99	Very Superior

Perceptual Reasoning

Block Design	47			15	95	Superior
Matrix Reasoning	14			12	75	High Average

Working Memory

Digit Span	31			14	91	Superior
------------	----	--	--	----	----	----------

Processing Speed

Coding	38			9	37	Average
--------	----	--	--	---	----	---------

Estimated Premorbid Intelligence

Test of Premorbid Functioning	60			118	88	High Average
-------------------------------	----	--	--	-----	----	--------------

Cognitive Screen

Mini Mental Status Exam	29	0.63	56	109	73	Average
ACE-R (Scored as Age 75)						
Total (/100)	86				2	Points Above Cutoff
Attention and Orientation (/18)	17				1	Points Above Cutoff
Memory (/26)	22				5	Points Above Cutoff
Fluency (/14)	9					At Cutoff
Language (/26)	24				2	Points Above Cutoff
Visuospatial (/16)	14					At Cutoff

Attention & Executive Functions

Wechsler Adult Intelligence Scale - 4th ed. (WAIS-IV)

Digit Span Forward	12		13	84	High Average
Digit Span Backward	10		14	91	Superior
Digit Span Sequencing	9		13	84	High Average
Longest Digit Span Forward	8				
Longest Digit Span Backward	6				
Longest Digit Span Sequence	6				

Delis-Kaplan Executive Function System (D-KEFS)

Verbal Fluency

Category Switching Total	7		4	2	Borderline
Category Switching Accuracy	6		5	5	Borderline

Controlled Oral Word Association

FAS	33	-0.74	43	89	21	Low Average
Animals	8	-2.43	26	64	1	Impaired
Vegetables	7	-1.68	33	75	4	Borderline
Total Set-Loss Errors	2					
Total Repetition Errors	2					

Trails

A	49	-0.47	45	93	30	Average
Errors	1					
B	97	0.08	51	101	53	Average
Errors	1					

Wisconsin Card Sorting Test (WCST-CV4)

Errors	30			106	66	Average
Perseverative Responses	20			103	58	Average
Categories	6				>16	
Trials to Complete 1st Category	18				>16	
Failure to Maintain Set	0				>16	

Language

Boston Naming Test	60	1.31		120	90	High Average
--------------------	----	------	--	-----	----	--------------

Narrative Writing						See Body of Report
-------------------	--	--	--	--	--	--------------------

Memory

Wechsler Memory Scale - 4th ed. (WMS-IV)

Auditory Memory (LM)	23		107	68	Average
Logical Memory I	38		13	84	High Average
Logical Memory II	17		10	50	Average
Recognition (/23)	20				

Hopkins Verbal Learning Test - Revised (HVLTR)

Total Recall	23	0.00	50	100	50	Average
Delayed Recall	10	0.60	56	109	73	Average
Retention (%)	111	1.10	61	117	86	High Average
Recognition Discrimination	11	0.40	54	106	66	Average

Brief Visuospatial Memory Test - Revised (BVMT-R)

Trial 1	3		42		21	Low Average
Trial 2	8		54		66	Average
Trial 3	10		57		76	High Average
Total Recall	21		51		54	Average
Learning	7		67		96	Superior
Delayed Recall	9		55		69	Average
Percent Retained	90				>16	
Recognition Hits	6				>16	
Recognition False Alarms	0				>16	
Recognition Discrimination Index	6				>16	
Recognition Response Bias	0.5				>16	

Emotional, Behavioral, & Adaptive Functioning

Geriatric Depression Scale	7					Within Normal Limits
----------------------------	---	--	--	--	--	----------------------

z-scores have a mean of 0 and a standard deviation of 1.

Standard Scores (SS) have a mean of 100 and a standard deviation of 15.

Scaled Scores have a mean of 10 and a standard deviation of 3.

T-scores have a mean of 50 and a standard deviation of 10