INVESTIGATIONS FOR MEMORY LOSS

AS PERFORMED AT THE PRINCE OF WALES HOSPITAL MEMORY CLINIC

GPCOG

Investigation	Routine	Recommended	If indicated	Rationale and comments
Routine haematology:				
- Full blood count (FBC)	✓			Exclude anaemia and infection
- Erythrocyte sedimentation rate or CRP	✓			Exclude inflammation, auto-immune disease, infection
Biochemistry tests:				Exclude reversible metabolic causes of dementia:
- Electrolytes	✓			Delirium
- Calcium	✓			Hyperparathyroidism, other causes of hypercalcaemia
- Glucose (fasting blood sugar levels)	✓			Hypoglycaemia, hyperglycaemia
- Renal function (urea and creatinine)	✓			Kidney failure
- Liver function (LFT)	✓			Hepatic disease
Thyroid function	✓			Exclude hypothyroidism or thyrotoxicosis
B12 & folate levels	✓			Exclude vitamin and folate deficiency
CT scan of brain without contrast	✓			Minimum neuroimaging to exclude presence of a tumour, intracranial space occupying lesion or haematoma. Structural imaging may not be needed in those presenting with moderate-to-severe dementia, if the diagnosis is already clear and other reversible causes have been excluded.
Fasting lipid study		✓	✓	Risk factor for cerebrovascular disease
Fasting homocysteine (HCy) levels			✓	High levels are linked to heart disease, stroke and Alzheimer's disease. HCy levels can be reduced by taking 1 mg of folic acid daily with additional oral vitamin B6 and B12.
Chest X-Ray (CXR)		✓	✓	Clinical presentation should determine whether CXR is needed to exclude lung disease or an occult tumour
ECG/EKG		✓	✓	An ECG should be considered if intending to prescribe acetylcholinesterase inhibitors
Mid-stream specimen of urine (MSU)		✓	✓	Exclude bacterial infection, a common comorbidity in older people
Serology for syphilis and HIV			✓	Only in those with histories suggesting they are at risk
EEG			✓	EEG should not be used as a routine investigation in people with dementia, but should be considered if a diagnosis of delirium or Creutzfeldt–Jakob disease is suspected, or in the assessment of associated seizure disorder in those with dementia.

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MRI Scan*	✓	Structural imaging or MRI can be used to exclude other cerebral pathologies and to help establish the dementia subtype diagnosis, unless clinical judgement indicates this is inappropriate or if it is contra-indicated (e.g. metal in body, claustrophobia). Structural imaging may not always be needed in those presenting with moderate-to-severe dementia if the diagnosis is already clear. HMPAO SPECT should not be used in people with mild cognitive impairment (MCI) either for the differentiation of dementia from MCI or for the differentiation of progressive from non-progressive MCI.
Cerebrospinal fluid (CSF) examination*	✓	Specialist referral is required for CSF examination. It may be indicated if Creutzfeldt-Jakob disease is suspected or in rapidly progressive dementia. CSF testing may also be indicated for infectious causes (e.g. neurosyphilis), for confirmation of Alzheimer's disease (increased levels of tau and phospho-tau and decreased levels of Aβ) or as part of a procedure to detect normal pressure hydrocephalus.
Positron emission tomography (PET)*	✓	PET-FDG, i.e. routine glucose PET, or PET for amyloid or tau imaging can be performed upon specialist referral to diagnose neuronal injury or for difficult to diagnose cases. Note that amyloid and tau imaging are not readily available.[2]
Genetic testing* - Familial dementia - Apolipoprotein E genotyping	✓	Genetic testing for familial dementia (e.g. autosomal dominant Alzheimer's disease) can be performed upon specialist referral for early onset cases with very strong family histories.
Neuropsychological assessment*	✓	Neuropsychological assessment extends beyond clinical cognitive testing[1] and requires specialist referral. Assessment is comprehensive, demanding and rigorous, usually requiring approx. 3 hours. It can be useful to diagnose the cause of dementia, especially to differentiate it from psychiatric conditions, to monitor progress and for medico-legal reasons.

Notes:

1 Clinical cognitive assessment in those with suspected dementia should include examination using an instrument with established reliability and validity (see www.dementia-assessment.com.au). Health and aged care professionals should take full account of other factors known to affect performance, including age, educational level, non-English speaking background, prior level of functioning, aphasia, hearing or visual impairments, psychiatric illness or physical/neurological problems when interpreting scores.

2 Many diagnostic technologies including biomarkers for β-amyloid or neuronal injury (e.g. 18F-fluorodeoxyglucose Positron Emission Tomography [FDG-PET] or CSF tau) are currently being evaluated and may prove to be useful in the assessment of dementia in the future. The routine use of these technologies in clinical practice is considered to be premature.

* Investigations usually require specialist referral.