Confusion in the aged is a frequently presenting symptom to the G.P. Its very nature lends itself to the problem-solving approach.

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Problem-solving is a process of making intelligent guesses or hypotheses about the nature of an illness on the basis of partial information. These hypotheses are put to the test by treatment or observation, which will either confirm (validate) or negate (invalidate) the hypothesis.

The usual example quoted, and taught to students, is the case of a patient presenting with a sore throat. An initial hypothesis of a catarrhal or coryza-like illness is made. When, after a few days of symptomatic treatment, there is no improvement, the initial hypothesis is negated, and a second hypothesis of a bacterial infection is made: penicillin is prescribed. After 48 hours there is still no improvement and a third hypothesis is made of infectious mononucleosis, which is ultimately confirmed by a blood count and serology.

The process of problem-solving is in contradistinction to the diagnostic process used in the wards, where a comprehensive history, an examination system by system, and a number of laboratory investigations will ultimately provide a diagnosis.

The problem-solving process is well suited to General Practice; it is rapid (decisions are made and action is taken) and it is cost effective. What gives total validity and scientific respectability to this method is the rigour, and the checking and counter checking which the doctor brings to bear on every hypothesis that he makes.

Confusion in the aged is discussed both in the context of dementia which is characterised by slowly progressive impairment of intellectual functioning, and delirium — the acute confusional state. The two may coincide, providing a variable picture.

What is important is that neither of these nor their combination are due to normal ageing processes, but are usually due to organic or psychiatric causes, many of which are reversible and curable.

Normal ageing does not include gross intellectual impairment, confusion, hallucinations or delusions. Symptoms of dementia include failing attention and memory, errors of judgement, poor orientation, irritability, while symptoms of delirium, or the acute confusional state, include abrupt onset of restlessness; confusion for place and time; day night reversal, hallucinations and delusions.

The most important causes — those significant to bedside diagnosis in General Practice — are drug intoxication, infections, certain metabolic diseases, and depression. The most important causes of irreversible dementia are cerebral atrophy or neuronal degeneration associated with cerebral hypoxaemia and Alzheimer's disease, or arteriosclerotic (multi-infarct) degeneration.
Confusion in the aged

Significant common causes

The acronym DIMTOP provides a useful mnemonic for the following causes: (i) Drug intoxication; (ii) Infections; (iii) Metabolic; (iv) trauma; (v) Oxygen deprivation; (vi) Psychiatric and perceptual.

(i) Drug intoxication

Most drugs can cause confusion in the aged: these include tranquillizers, antidepressants, belladonna extracts, codein analgesics, and so forth.

Two drugs deserve special comment - Digoxin, and drugs used in Parkinsons disease - because they are used commonly, and because some new attitudes prevail regarding their use in the aged.

An editorial in the British Medical Journal of 28 April 1979 states "studies have reported that digoxin can be withdrawn from the therapeutic regimen of up to 94% of patients in whom the initial indication for digitalisation was CCF.

Serum digoxin levels provide a useful monitor. The therapeutic range is very narrow (1.000 to 2.6 mmol/L), and there is a narrow gap between it and the toxic level (3.3 mmol/L).

Should the digoxin level be below the therapeutic range it can be withdrawn at any rate, and, should it reveal a toxic level it must also be withdrawn, and may be reintroduced, if necessary, at a lower dose. Should a patient receiving digoxin present with confusion, this drug should be withheld as an initial problem-solving procedure even in the absence of known digoxin levels. Digoxin toxicity is all the more significant in the presence of diminished renal function and where there is concurrent use of diuretics with possible attendant hypokalaemia. Therefore, when requesting a digoxin level, it is useful to have the level of urea, and electrolytes assessed. (Long-term use of diuretics can also elevate the serum urate and glucose in the aged.)

The serum urea should be viewed with circumspection in the aged, because it can also be elevated, for instance, in dehydration. Even the serum creatinine is not an accurate reflection of renal function in the aged, because the production of creatinine diminishes as age advances.

Drugs used in Parkinsonism can cause confusion. Late onset Parkin-sonism is often associated with degenerative arteriosclerotic disease, and drugs such as L-levadopa and those with anticholinergic action, eg Or-phenadrine, may cause hallucinations or confusion.

(ii) Infections

Urinary tract and respiratory infec-tions are the most common encountered which cause confusion. However, a minor infection, particularly in the presence of inadequate fluid intake, can do the same.

(iii) Metabolic

The significance of metabolic changes associated with diminished renal function has been referred to. The next most common metabolic problem which is encountered which cause confusion is diabetes, and the sudden onset of delirium in a diabetic should alert the doctor to hypoglycaemia. Extreme emotional lability, manic behaviour, or even a sudden catatonic state could be symptoms of hypoglycaemia. Thyroid disease should also be borne in mind, but onset of confusion is more insidious.

(iv) Trauma

A recent head injury must always be borne in mind; a subdural haematoma could present with fluctuating confusion or levels of consciousness.

(v) Oxygen deprivation

The ageing brain is already compromised by arterio sclerosis, and thus any condition which further diminishes cerebral perfusion may cause confusion, eg cardiac arrhythmias, myocardial infarction (a "silent" infarct in the elderly must be borne in mind), cardiac failure, cerebrovascular accidents, respiratory distress, (both micro- as well as macro-cytic anaemias must be considered).

Slow-onset, irreversible dementia is usually associated with either (a) Alzheimer's disease, or (b) arteriosclerotic (multi-infarct) disease. Alzheimer's disease is thought by some gerontologists to be due to neuronal degeneration associated with repeated episodes of cerebral hypoxia caused by various conditions, previously listed, which diminish cerebral perfusion. It is not purely of academic interest to differentiate the two.

The dementia which results from cerebral arteriosclerosis or small CVA's is usually step-like in onset: the confusion may, therefore, improve over a short period, only to recur at a later date. In a situation like this, relatives of the patient should be cautioned about too early institutionalisation, or even hospitalisation.

It is useful under this heading to also include space-occupying lesions. The question arises: is it feasible to scan all confusional states for suspected space-occupying lesions, where other causes have been excluded? This should be viewed with the utmost circumspection.

It is questionable whether a brain scan should be requested in an 80-year old patient who presents with confusion but who is a poor operative risk and has no history of head injury.

(vi) Psychiatric, psychological causes

The commonest treatable disease under this heading is depression. Depression in the aged can present with intellectual impairment and delusional states, and thus mimic dementia - the so-called "pseudo-dementia".

Having excluded other causes, it is at this stage of a problem-solving approach that depression, as a cause for confusion, should be considered. Depression can of course be present over and above other organic illnesses such as CVA or Parkinson's disease. An open mind should be kept about the possibility of depression, particularly in the recently bereaved, or the recently discharged from hospital after illness or surgery, in those living alone, or in
Confusion in the aged

those receiving rauwolfia, methyl dopa and beta blocker medication. Sudden onset of “nervousness” or “agitation” in an elderly (or even for that matter in a middle-aged person) should alert the doctor to the possibility of depression, and should not be interpreted as a need for tranquillizers: the introduction of an antidepressant may be a more appropriate problem-solving procedure at this stage. (It is often noted that anti-depressants do not have the desired effect in the aged: psychiatrists and psychiatric social workers are currently exploring the concept of dysphoria.

To all intents and purposes the patient appears depressed, and manifests apathy, withdrawal, psychosomatic symptoms, poor appetite, feelings of self-reproach, even suicidal ideation - all the traditional symptoms of depression. They, however, do not respond to the normal management of depression, and it is thought that these patients may have personality problems and poor adaptive mechanisms. It is suggested that psychotherapy or counselling suited to the patient’s needs could be more appropriate management.

Old patients who are depressed often appear anxious and hypochondriacal and make frequent demands on the doctor. Doctors tend to react to this behaviour - possibly unaware that the patient is depressed or ill - by becoming irritated and rejecting. This must be guarded against, as it is doctors who tend to reject the elderly.

Old people who remain ill are a threat to our defined role of caring. When, in addition, the patient becomes anxious, irritable and demanding, we tend to react defensively by rejecting him: he may have curable depressive illness. Perceptual causes - Diminished hearing or vision, eg when the eyes are covered after a cataract extraction may cause confusion. Miscellaneous causes - A few additional causes which are important and relevant to the bedside diagnosis are impacted faeces, and retention of urine. The significance of dehydration as a cause for confusion perse, and its significance in drug medication in the aged has been referred to.

The role of the psychogeriatric unit

Such units are attached to psychiatric or general hospitals, and offer facilities for assessing the difficult or refractory patient who presents with mental symptoms. Patients are fully assessed both from the psychiatric as well as the organic point of view. A multidisciplinary approach is offered by a team lead by a psychiatrist and including various team members, eg physicians, social workers, occupational therapists.

Problem-solving case histories

Case No 1
A white 82-year old female suffering from osteo-arthritis, renal failure, duodenal ulcer, and is on Paracetomol, Soloxene, Ulisanic, Lasix, Slow K and Mogadon develops an acute confusion. She is found to have a temperature of 38°C; a urinary infection is detected; Septran is prescribed. The initial hypothesis is therefore UTI. The confusion persists, and this hypothesis is negated. She is re-examined and there is a suggestion that she has homonymous hemianopia.

A second hypothesis is made of intracerebral mischief. Her urea, although elevated, is stable. She becomes difficult to manage and is admitted to hospital. Here she is scanned. The question arises whether this investigation was appropriate.

Would a confirmatory finding have led to any active surgical intervention in this particular individual? A wait-and-see approach would have been more realistic, and certainly more cost effective, as a problem-solving procedure. The patient did in fact prove over the next few days. A final diagnosis of a small CVA was made.

Case No 2
A white female of 74 sustains a fracture of the femur. She becomes mildly confused. A Moore’s prosthesis is inserted. The patient’s confusion increases. Relatives are distressed and initiate arrangements for institutionalisation.

The confusion is thought to be due to the initial trauma, and possible cerebral hypoxia during surgery. This is the first hypothesis: a wait-and-see approach is adopted. She is given Etomine for sedation. Confusion persists and the patient becomes progressively more restless. A second hypothesis of postoperative drug medication is made as a possible cause of confusion. Drugs are discontinued.

The patient is re-examined and found to be fibrillating, and this is offered as a third hypotheses. A physician is consulted. She is given medication, with reversion to sinus rhythm, and a complete reversal of her confusion.

Case No 3
A white male of 76 who is on Rhythmmodan has a prostatectomy and develops confusion postoperatively. He settles with sedation. No detectable organic cause is found and the confusion is attributed to cerebral hypoxia. He recovers, but some months later develops a slowly progressive withdrawal, sleep reversal and confusion for time and place.

In view of a past thyroidectomy, thyroid function is assessed. Serum chemistry and electrolytes are also assessed. No abnormality is detected and a hypothesis of dementia is
Confusion in the aged

made. He refuses to eat and sleep becomes disturbed.
Another hypothesis of depression over and above the dementia is
made. Antidepressants are introduced.

He is given Etofene iv and hospitalised.
He is ultimately admitted to a
psycho-geriatric assessment unit, and
diagnosed as a case of irreversible
dementia with poor prognosis. He
was permanently institutionalised.

Case No 4
A white female of 82 who is
diabetic and on Digoxin and
Moduretic, and has a significant
hearing loss, presents with attacks of syncope. An initial hypothesis of
hypoglycaemia is made, but she
does not respond to intravenous dex-
trose. The hypothesis is negated. A
physician is consulted but no cause
can be established. After three such
episodes, a second hypothesis of
hysterical acting-out is made, and
time is spent counselling the patient.
She reveals auditory hallucinations
(she hears songs from her childhood)
and also reveals certain paranoid
delusions, and admits to suicidal
ideation.

On this basis another hypothesis is
made of depression. Antidepressants
are introduced, but there is no
response. Another two interviews are
held, during which the patient ex-
presses anger at her isolation from
her family, and the apparent lack of
concern of the family for her.
Her son is alerted to these
dynamics and a family counselling
session is held where she is en-
couraged to express her feelings
openly. Her son now visits her more
regularly, and the family relationship
is restructured. Her symptoms have
not recurred, and a final diagnosis of
dysphoria is made.

Conclusion
There is a tendency amongst
health professionals to discard the
confused, the demented, or the "dif-
ficult" aged person. Many of these
people have treatable and reversible
illnesses. A problem-solving ap-
proach to managing these problems
is not only appropriate to general
practice but is also cost-effective.