Confusion (Altered Mental State):
Evidence Based Review

Context section

Confusion (acute confusional state) is a form of altered mental status. There is a disturbance of normal cognitive/ behavioural functions which may be due either to physical (organic) or psychiatric (functional) disorders. Chronic confusional states (evolving over months to years) are often referred to as dementia.

Acute confusional state is a common condition, occurring in 10-20% of all hospital admissions. It is more likely to occur in elderly patients, particularly in those patients who already have some impairment of cognitive ability.

Whilst acute confusion may be thought of as a relatively benign condition it should be remembered that some causes of acute confusional state (e.g., delirium tremens, severe hypoglycaemia, CNS infection, heat stroke, thyroid storm) may be fatal or result in severe morbidity if unrecognized and untreated. Certain withdrawal syndromes which manifest with acute confusion (e.g., alcohol, benzodiazepines, barbiturates) can also be deadly if untreated.

Anatomy/ physiological aspects

The final common pathway of all forms of altered mental state is an alteration in cortical brain function. This alteration in function is brought about by:

- An exogenous insult or an intrinsic process that affects cerebral neurochemical functioning
- Physical or structural damage to the cortex. Some of the aetiologies include trauma, mass lesions, hydrocephalus, strokes (i.e., multi-infarct dementia), atrophy, or dementing processes.

Clinical features

Confusion may present with impairment of some or all of the following: alertness, orientation, emotion, behaviour, memory, perception, language, praxis, problem solving, judgement, and psychomotor activity.

As part of history taking it is vital in the confused patient, where possible, to gain information from carers and the GP. It is also vital in the confused patient to establish a baseline of conscious level and baseline of degree of confusion.

There are two well established tools for this.
1. The Glasgow coma score is a measure of conscious level:

<table>
<thead>
<tr>
<th>Glasgow coma scale</th>
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<tr>
<td><strong>Eye component</strong></td>
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<tr>
<td>1. No eye opening</td>
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<td>2. Eye opening to pain</td>
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<td>3. Eye opening to verbal command</td>
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<td>5. Orientated</td>
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The Abbreviated Mental Test Score (AMTS) gives a rapid assessment of degree of confusion:

**EACH QUESTION SCORES ONE POINT**

1. What is your age?  
2. What is the time to the nearest hour?  
3. Give the patient an address, and ask him or her to repeat it at the end of the test  
4. What is the year?  
5. What is the name of the hospital or number of the residence where the patient is situated?  
6. Can the patient recognise two persons (the doctor, nurse, home help, etc.)?  
7. What is your date of birth?  
8. In which year did the First World War begin (adjust this for a world event the patient would have known during childhood)?  
9. What is the name of the present monarch (head of state, etc.)?  
10. Count backwards from 20 down to 1.

**Diagnostic strategies – key investigations**

These should be focused around your working differential diagnosis after your full clinical assessment.

- Oxygen saturation and, in some cases, arterial blood gases (ABG) with a carbon monoxide level are helpful.
- Full blood count, urea & electrolytes, blood glucose level should be checked.
- In older patients with chronic confusion, consider vitamin B₁₂ and folate levels and thyroid function tests (not in emergency department).
- Consider calcium level and liver function tests where clinical suspicion dictates.
- Urinalysis

- When alcohol, drugs, and/or toxins are suspected, consider the following:
  - Serum ethanol, salicylate, paracetamol, carbon monoxide, and other specific drug or toxin levels as indicated

- In a suspected endocrine emergency, the following are required:
  - A bedside blood glucose determination followed by serum glucose
  - Thyroid-stimulation hormone, possibly thyroid panel
  - Serum cortisol
  - Serum calcium, phosphorus, and parathyroid levels

- A CT scan of the head should be obtained if CNS infection, trauma, or a CVA is suspected.
Differential diagnosis

An aide-memoire for the common causes of delirium is HIDDENMAP:

- H – hypoxia
- I – infection – chest, urine, brain
- D – drugs (prescribed and recreational)
- D – dural haemorrhages
- E – endocrine, e.g. diabetes, thyroid
- N – neoplasms
- M – metabolic, e.g. hyper/ hypocalcaemia, hypo/ hypernatraemia, hypoglycaemia
- A – alcohol
- P – psychosis

Management

- Rapid assessment of ABCDs – ensuring glucose checked and oxygen administered
- Resuscitation – provide urgent therapy – oxygen, fluids, glucose, thiamine (when necessary)
- Detailed secondary assessment with full history taking and thorough examination
- Focused investigations
- Definitive treatment

General management

Environmental factors are particularly important in the treatment of acute confusional state and the following factors are helpful in shortening the period of confusion.

- Continuity of care personnel, i.e. the same nurse/ doctor whenever possible
- Clear concise communication
- Repeated verbal reminders of time, place and person
- Clock, calendar, TV, newspaper, radio readily accessible as a means of orientating in time
- Bedside lighting available and left on at night
- Simplify the environment, single room when available, reduce noise levels, remove unnecessary equipment
- Correct sensory impairment by ensuring the patient is wearing hearing aid/ glasses/ false teeth etc
- Allow maximum periods of uninterrupted sleep
- Allow the patient to become involved in self care regime, decide level of analgesia, etc
- Encourage mobilisation and increase activity levels

Drugs and other therapeutic measures

- Oxygen if cause uncertain or secondary to cardiac or respiratory problems
- 50 ml 50% glucose if hypoglycaemic
- Treat the underlying cause, e.g. infection, etc
- Drug treatment must only be used in conjunction with the environmental measures above, or otherwise may in some instances worsen the confusion. Early intervention with drugs when required is associated with lower overall drug use and better eventual outcome.
- Discontinue or change any drugs which may be contributing to the confusion as drugs are implicated in 10-20% of cases. All drugs are capable of producing the state, but some are much more likely to produce problems, e.g. narcotics, opiates, benzodiazepines and drugs with anticholinergic activity.
- Identify the reason for prescribing drugs, as benefits from decreased agitation may be associated with risks of longer periods of confusion or cognitive impairment.

Key “red flags” or pitfalls to be aware of

Always consider the following sinister causes of apparent “acute confusion”:

- Hypoxia
- Hypoglycaemia
- Head injury
- Intracerebral haemorrhage
- Occult infection (particularly meningo-encephalitis)
- Encephalopathic states (Wernicke’s encephalopathy, liver failure)