

Clinical Guideline

The Prevention, Recognition and Management of Delirium in Adult In-Patients

Delirium

- is a neuropsychiatric syndrome characterised by acute onset of fluctuating cognition and inattention linked to triggering factors
- is very commonly encountered in hospital medicine
 - Complicating at least 10% of all medical admissions
 - 20-30% prevalence on medical wards
 - 15-53% of patients postoperatively
 - 70-87% of those in intensive care
- is a medical emergency independently associated with serious adverse outcomes
 - Increased mortality in older people - 35-40% at one year
 - Increased risk of institutional placement
 - Increased risk of in-hospital complications
- is preventable
 - Up to 1/3 of cases
- is treatable if identified and managed appropriately and urgently

Delirium is everybody's business. We all need to know how to prevent delirium and make sure that someone with suspected delirium receives rapid assessment and appropriate management.

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Step by step prevention, diagnosis and management of delirium

Step 1. Assess all patients admitted for the presence of risk factors

Do AMTS/MMSE on all patients >65y

Risk factors for delirium

Age > 65	Severe illness
Cognitive impairment	Current hip fracture

Step 2. Follow do's and don'ts to prevent delirium in at risk patients and to shorten already established delirium (most important interventions listed, see table 5.1 for extensive list):

Do's - individualised multifaceted intervention package (NICE recommendation in bold)			Don'ts
Falls risk assessment - STRATIFY	Frequently reorientate and reassure patient	Encourage early supervised mobilisation	Do unnecessary procedures
Enable sleep in calming environment	Monitor bowels / treat constipation	Optimise sensory impairment e.g spectacles / hearing aid	Use restraints routinely
Rationalise medication	Look for / treat pain	Look for and treat infection	Catheterise
Hydrate (oral >s/c >i.v.)	Optimise O₂ sats / BP	Optimise nutrition	Argue/confront
Minimise restriction	Familiar nursing staff	Involve family / friends	Move ward/bay

Step 3. Assess for indicators of delirium on admission and daily thereafter

No indicators

Indicators present

Clinical Indicators - a new or change in:

Cognition/concentration	Appetite, sleep, mood
Physical function	Hallucinations
Social behaviour	Consider delirium in all falls

Step 4. If an indicator is present, then use CAM to diagnose delirium

Take collateral history to see if indicator is new or worse. Consider differentials (sec 4.4)

CAM negative

CAM positive

Confusion Assessment Method (CAM)

Acute onset and fluctuating course **and** Inattention (distractible, can't concentrate) **and either:**

Disorganised thinking (rambling / illogical ideas) **or** Altered level of consciousness (hyper alert / drowsy)

Step 5. Identify and treat all causes of delirium immediately (usually >1)

Document diagnosis of delirium in notes/eDL.
Actively seek **all** common causes (see table 3.2)
Continue to follow do's and don'ts

Common causes of delirium

Drugs (esp CNS acting)	Dehydration
Metabolic disorder	Constipation
Infection	Urine retention
Electrolyte disturbance	Pain
Respiratory failure	Surgery

Step 6. Drugs: If distressed or a risk to themselves or others, and verbal and non-verbal techniques above have failed, use sedation as per treatment algorithm (see section 6):

Indications for sedation

Carry out essential investigations
Prevent danger to self or others
Relieve patient distress

General principles

One drug, as little as possible, repeat if necessary
Tailor dose: age / body size / degree of agitation
If repeated doses required consider regular prescription
Review requirement daily, usually short term (<1 week)
Prefer oral to parenteral wherever possible

Haloperidol, 0.5mg p.o. 1-2 hourly prn, daily max 5mg in the elderly. ¹³

CAUTION: Patients with a QTc of >470ms, with Lewy Body dementia, Parkinson's disease or Parkinsonism and patients with seizures, recreational drug intoxication/withdrawal and alcohol withdrawal should be prescribed benzodiazepines as first line. See separate Trust guidelines for alcohol withdrawal. For details on drug choice, administration route and monitoring of sedated patients see section 6.

1. Delirium Prevalence and Hospital Incidence

Delirium is a common neuropsychiatric condition that is also known by various other names including organic brain syndrome, intensive care psychosis and acute confusional state.¹ Patients with delirium can be found in all specialties of the hospital with delirium occurring in 10-20% of medical patients on admission and a further 10 to 30% developing delirium as an inpatient.² Delirium occurs in 15 to 53% of surgical patients postoperatively and in 70 to 87% in intensive care.³

2. Outcome and Prognosis

Patients with delirium have an increased length of stay, increased mortality and increased risk of institutional placement.^{1,4} Hospital mortality rates of patients with delirium range from 6% to 18% and are twice that of matched controls.⁴ There is a higher risk of hospital acquired complications such as pressure sores and falls.⁵ The one-year mortality rate associated with cases of delirium is 35-40%.⁴ Up to 60% of individuals suffer persistent cognitive impairment following delirium and they are also three times more likely to develop dementia.^{1,4}

3. Predisposing and precipitating factors of delirium

3.1 At risk groups

A number of risk factors are associated with an increased probability of developing delirium, shown in Table 3.1. Those highlighted in bold have the greatest impact and when any of these risk factors is present, the person is at risk of delirium. When people first present to hospital, documented assessment should be carried out for:⁶

- Age 65 years or older
- Current hip fracture
- Cognitive impairment or dementia
- Severe illness (a condition deteriorating or at risk of deterioration)⁶

Table 3.1: Common risk factors: ^{1-4, 7}			
Co-existing medical conditions	Severe illness Current hip fracture Significant co-morbidity Chronic renal or hepatic impairment History of stroke Infection with HIV	Drugs	Polypharmacy (>3 drugs) Treatment with multiple psychoactive drugs Alcohol/recreational drug dependency
Cognitive status	Dementia Cognitive impairment History of delirium Depression	Functional status	Functional dependence Immobility Low level of activity History of falls Incontinence
Demographics	Age > 65 years old	Sensory Impairment	Visual and hearing
Decreased oral intake	Dehydration Malnutrition	Metabolic abnormalities	Hepatic failure Renal failure Thiamine deficiency

3.2 Precipitating factors

The cause of delirium is almost invariably multi-factorial and there are numerous potential precipitants. These include any condition that can induce disordered body chemistry; any illness that compromises the body's circulation and oxygenation; any medication that affects the central nervous system; any infection when the patient is in a high-risk group or is severe. A careful assessment must be made to exclude all common causes. Delirium may be the only manifestation of severe disease (eg myocardial infarction) in an older person.

Table 3.2 Common precipitating factors: ^{1-4, 7}			
Environmental factors	Change of environment Loss of spectacles or hearing aid Inappropriate noise and lighting Immobility Sleep deprivation Catheters and lines Change of staff and ward Falls Physical restraint	Drugs	Alcohol or sedative withdrawal Sedative hypnotics Opioids Anticholinergics Antiparkinsonian drugs Antidepressants Anticonvulsants Corticosteroids Acute recreational drug toxicity or withdrawal
Fluid and electrolyte abnormality	Hypo/hyponatraemia Hypercalcaemia Renal failure Dehydration	Infections	Chest Urine (do urinalysis) Skin / ulcers Abdominal CNS
Neurological illness	Stroke Seizures Subdural haematoma	Surgery	Orthopaedic Vascular/cardiac Gastro-intestinal
Pain	Acute pain Acute on chronic pain	Urinary and faecal retention	Specifically examine to exclude, history is unreliable
Respiratory/ Cardiovascular	Hypoxia e.g. Pulmonary embolus, pneumonia Hypercapnia Cardiac failure Myocardial infarction Organ/tissue ischemia	Endocrine/ metabolic	Thiamine deficiency Hypo/hyperthyroidism Hypo/hyperglycaemia Liver failure

3.3 Memory aid for delirium precipitants – think DELIRIUM

Drugs (withdrawal/toxicity, anticholinergics)/**D**ehydration
Electrolyte imbalance
Level of pain
Infection/**I**nflammation (post surgery)
Respiratory failure (hypoxia, hypercapnia)
Impaction of faeces
Urinary retention
Metabolic disorder (liver/renal failure, hypoglycaemia)/**M**yocardial infarction

4.0 Clinical Features and Diagnosis of Delirium

4.1 Clinical features of delirium

The clinical indicators of delirium are shown in table 4.1. At presentation, people at risk should be assessed for recent (within hours or days) changes or fluctuations in behaviour.⁶ These may be reported by the person at risk, or a carer or relative. Delirium is frequently missed by clinicians and therefore a high index of suspicion is required to detect cases.⁸

Table 4.1 Clinical Features of Delirium: ⁹	
Altered cognitive function	Typically global or multiple deficits in cognition, including disorientation, memory deficits and language impairment.
Inattention	Difficulty focusing, sustaining, and shifting attention. Difficulty maintaining conversation or following commands.
Disorganised thinking	Manifested by disorganised or incoherent speech. Rambling or irrelevant conversation or an unclear or illogical flow of ideas.
Altered Perception	Illusions or hallucinations in about 30% of patients.
Altered physical function	Hyperactive: marked by agitation, restlessness, vigilance. Hypoactive: marked by lethargy, decreased mobility, reduced movement, reduced appetite.
Altered social behaviour	Common. Manifested by intermittent and labile change in mood or attitude with symptoms of fear, paranoia, anxiety, depression, irritability, apathy, anger or euphoria.
Altered level of consciousness	Clouding of consciousness, with reduced clarity of awareness of the environment and slow responses.
Altered sleep-wake cycle	Characteristic sleep-cycle disturbances. Typically daytime drowsiness, night time insomnia, fragmented sleep or complete sleep cycle reversal.
Acute onset	Occurs abruptly usually over a period of hours or days. Important to try to establish that the symptoms are a new phenomenon.
Fluctuating course	Symptoms tend to come and go or increase and decrease in Severity over a 24 hour period. There is often a characteristic lucid interval.

4.2 Delirium sub-types

There are three clinical subtypes of delirium: hyperactive (characterised by heightened arousal, restlessness, agitation and aggression); hypoactive (characterised by sleepiness, lack of interest in daily activities, and being quiet and withdrawn) or mixed (in which patients move between the two subtypes). Delirium without agitation occurs in >50% of patients with delirium. Hypoactive and mixed delirium can be more difficult to recognise.¹⁰ If in doubt, ask for help from a healthcare professional experienced at managing delirium.

4.3 Diagnosis

In those patients with clinical indicators of delirium, diagnosis should be confirmed using the **Confusion Assessment Method (CAM)**. CAM should be used by a person competent in identifying delirium.

Requires point 1 **and** 2 **and either** 3 **or** 4

- 1) **Acute onset and fluctuating course** (use collateral history and consider serial AMTS/MMSE) *and*
- 2) **Inattention** (distractible, can't focus, can't follow a conversation, playing with bedclothes) *and either*
- 3) **Disorganised thinking** (rambling, illogical flow of ideas, switching of subjects)
- 4) **Altered level of consciousness** (vigilant, lethargic / drowsy, stupor, coma)

Memory aid mnemonic for CAM - think CA²MS:

Delirium diagnosis requires **CA²** *and either M or S*

Changeable course

Acute onset + **A**ttention poor

Muddled thinking

Shifting consciousness

4.4 Differential diagnosis

Common diagnoses that can be mistaken for delirium are dementia, depression, schizophrenia, dysphasia, hysteria/mania, non convulsive epilepsy. Your patient may have dementia, delirium or both. ***If uncertain treat for delirium first.***

4.5 History (usually including collateral history)

From carers, next of kin, relatives, nursing home staff, social worker, friends, GP. Establish that the confusion is a new phenomenon (Aids: usual function or Barthel score, usual mental/intellectual function, check old notes for previous AMTS/MMSE, previous history of confusion). Also check history of incontinence, full drug history, use of spectacles or hearing aids.

4.6 Physical examination

Check and document conscious level, temperature, signs of infection (lung, urine, skin, abdomen, CNS), neurological examination, rectal examination. Check for pressure sores and pain. AMTS or MMSE. A score of 7 or less on the AMT or a score of 24 or less on the MMSE is considered to be indicative of cognitive impairment requiring further investigation.

4.7 Helpful initial investigations

Pulse oximetry, urinalysis, FBC, CRP, renal profile, calcium, LFTs, glucose, blood cultures, arterial blood gas, ECG, CXR.

4.8 Documentation

Ensure that the diagnosis of delirium is documented in the patient's medical notes and document the treatment plan. Include the diagnosis in the patient's discharge letter/summary as well as the discharge AMTS/MMSE.

5. Delirium Prevention and Treatment

Management should be patient centred, giving patients the opportunity to make informed decisions about their health care and taking into account the

individuals needs and wishes. Often patients with delirium lack capacity for some decisions. If this is the case, the code of practice detailed in Mental Capacity Act should be followed (see www.publicguardian.gov.uk or trust link <http://gti/clinical/assurance/clinicalgovernance/mentalcapacityact/mentalcapacityact.aspx> for more information). Good communication between members of the team caring for the patient is vital. Written communication should be clear and appropriately detailed. Family and carers should have the opportunity to be involved in treatment strategies.

5.1 Delirium Prevention

Preventing delirium is the most effective strategy for reducing its frequency and complications.³ Up to one third of cases have been shown to be preventable.¹¹ Patients found to be at risk of delirium as detailed above should be assessed for clinical factors that may contribute to delirium within 24 hours of admission.⁶ Following the multi-component do's and don'ts intervention package listed in table 5.1 will provide a framework prevent delirium and interventions should be tailored suit individual's needs. Those highlighted in bold are specifically endorsed by NICE.

5.2 Delirium management

Delirium is a medical emergency and often associated with severe underlying illness. Rapid identification and treatment of underlying causes should be the first aim of management.⁷ Provide symptomatic and supportive care until recovery by continuing to follow the do's and don'ts. Non-confrontational and empathic de-escalation techniques may be required in a distressed and agitated patient. Pay particular attention to re-orientation and re-assurance, often with the aid of familiar family and friends. A suitable calming and stable care environment is important. Continue to look for new and missed causes.

Using pharmacological treatment to prevent delirium, for example giving haloperidol preoperatively, has not been shown to reduce the incidence of delirium.¹² However there is evidence of it having a positive effect on the duration and severity of established delirium.¹² Pharmacological management should be reserved for patients whose symptoms of delirium would threaten their own safety or the safety of other persons or would result in the interruption of essential therapy.³ **The common errors in managing delirium are to use antipsychotic medications in excessive doses, give them too late or overuse benzodiazepines.**² There is a role for regular low dose antipsychotics when as "prn" doses are required frequently. Specialist advice should be sought in this scenario.

5.1 The Do's and Don'ts in delirium care

ALL MEMBERS OF THE MDT	
DO's	DON'Ts
<p><u>Observe the patient:</u></p> <p>High risk of falls (do STRATIFY score). Patients at high falls risk should be observed at arm's length away from a nurse at all times. Consider using a bed close to the nursing station.</p> <p><u>Environment and Communication:</u></p> <p>Use calm speech and gentle manner.</p> <p>Be courteous and polite even if the patient isn't.</p> <p>Acknowledge their feelings and show concern.</p> <p>Orientate patient frequently: who and where they are and what your role is.</p> <p>Explain unfamiliar noises/equipment/personnel.</p> <p>Provide easily visible clocks and calendars, good lighting and signage.</p> <p>Facilitate visits from friends and family.</p> <p>Use familiar pictures/items around bed.</p> <p>Use cognitively stimulating activities such as reminiscence.</p> <p>Optimise any sensory deficit (remove wax, provide hearing aids/spectacles).</p> <p>Hydrate patients, offer drinks when visiting.</p> <p>Consider nutrition by providing dentures, performing a MUST score and involving dietetics if necessary.</p> <p>Encourage early mobility, under supervision if required. Encourage all people, including those unable to walk, to carry out active range-of-motion exercises.</p> <p>Use interventions that are least restrictive to the patient. Let patients wander within a safe environment.</p> <p><u>Documentation:</u></p> <p>Patient's capacity if absent and how you acted in the patient's best interest.</p>	<p><u>Environment and Communication:</u></p> <p>Don't insist on performing unnecessary tasks (washing/ dressing/ shaving etc).</p> <p>Don't argue and avoid commands: reasoning is usually impaired in delirium.</p> <p>Don't frequently change nurses, wards or bays.</p> <p>Don't use side rooms if possible.</p> <p>Don't expose patient to disturbances such as sudden noise or bright lights at night.</p> <p>Don't prevent sleep at night: reduce loud bleeps/noises and bright lights.</p> <p>Don't ignore Trust bedrail policy (intranet), avoid bedrails if patient is able and likely to climb over them.</p> <p>Don't physically restrain patients to the bed / chair. Wherever possible mobilise patient instead e.g. take for regular walks to toilet or for washing/shower.</p>

MEDICAL / NURSING STAFF	
DO's	DON'Ts
<p><u>Management</u></p> <p>Correct hypoxia (see oxygen prescription guidelines) and hypotension.</p> <p>Remain vigilant for infection (e.g. urinalysis, bloods, chest).</p> <p>Correct dehydration (may need SC/IV if oral intake poor).</p> <p>Monitor bowels and treat constipation.</p> <p>Identify (including non-verbal signs) and treat pain.</p> <p>If delirium develops, follow a step by step approach to identify and treat the causes (see table 3.2).</p> <p>Explain diagnosis of delirium to family.</p> <p>Ensure diagnosis is documented clearly in the notes and EDL.</p> <p>Consider urgent psychiatric review especially if hallucinations or delusions are present.</p> <p>Consider security involvement</p> <p>Consider arm length observations at all times including contacting SNPs for extra staffing.</p> <p><u>Prescribing</u></p> <p>Review appropriateness of all medications (anticholinergic medication ought to be stopped).</p> <p>Ascertain use of non-prescription/recreational drugs</p> <p>Consider medication for patients at risk to self/others or with distress or to enable essential investigations as per attached guidance, with maximum dose in 24 hours also clearly documented.</p> <p>Consider regular low dose haloperidol to treat delirium (usually 1/52 or less) if the patient requires frequent doses of haloperidol (consensus).</p>	<p><u>Management</u></p> <p>Don't delay attendance – delirium has a high mortality.</p> <p>Don't catheterise unnecessarily.</p> <p>Don't use IV lines unnecessarily and follow trust guidance in use of IV cannulas.</p> <p>Don't order unnecessary tests (CT, EEG or frequent bloods).</p> <p>Don't disturb patient's sleep with procedures and medication rounds if possible.</p> <p>Don't use antipsychotics unless other interventions have failed.</p> <p>Don't use large amounts of antipsychotics, particularly in the elderly. General rule is use less more often.</p> <p>Don't give antipsychotics to patients with a prolonged QTc, with parkinsonism or with Lewy body dementia - use lorazepam instead.</p>

6. Pharmacological Management of delirium

**Consider Medications only after behavioural approaches
(see do's and don'ts list)**

Treatment Principles:

- Prefer oral route, review all medications every 24 hours
- Judge starting dose by age, body size and degree of agitation
- Give smallest dose 1-2 hourly until desired sedation achieved up to max daily dose, prescribe on prn section of the drug chart.
- Consider psychiatric review if frequent doses/daily max doses are reached

Special
indications for
Benzodiazepines

Yes

No

Indications for first line Benzodiazepines:

Parkinson's disease/parkinsonism, Lewy Body dementia, seizures, elongated QTc (>470ms), alcohol withdrawal (see separate trust protocol), GHB/GBL withdrawal/intoxication and recreational drug intoxication (note often higher benzodiazepine doses required than suggested below in this case – consult clinical toxicology service). Prefer oral route.
Lorazepam 0.5 – 1 mg oral/IM 1-2 hourly, max 4mg daily

Patient takes
oral medication

Yes

No

Oral treatment (write as prn medication)

Haloperidol¹³:

>65yrs: 0.5-1mg hourly, max 5mg in 24hrs

Younger adults >18yrs only:

2mg-5mg 1-2 hourly, daily max 30mg

Peak effect 4-6 hrs

IM treatment (write as prn medication)

Haloperidol IM:

>65 yrs: 0.5-1mg 2 hourly, daily max 5mg

Younger adults >18yrs only:

1mg to 3mg 1-2 hourly, daily max 18mg

Peak effect 20-40mins

Notes:

Check ECG for elongated QTc (>470ms) before and after starting haloperidol. If it is impractical to perform an ECG (e.g. patient agitation) use lorazepam until an ECG is possible.

Monitor sedated patients with respiratory rate, pulse oximetry, BP, Pulse and Temperature. Follow trust observation policy and charts. Monitor especially for respiratory depression and call doctor if respiratory rate <10.

Refer to BNF for drug information; be aware of adverse events in patients with long QT interval taking Haloperidol.

Acute dystonic reactions: More common with IM haloperidol and in antipsychotic naive patients. Treatment: Procyclidine 5mg po/im.

Combined oral/IM dosing: If combination of Haloperidol IM and oral is used, transfer sum of oral doses into IM dose by multiplying with 0.6, add to it all IM doses and ensure max dose of 18mg is not exceeded in 24 hour period before calling for specialist advice.

Olanzapine 2.5 - 5 mg orally 2 hourly, daily max 20mg (10mg in elderly) can be used in patients with history of dystonia. Dispersible formulations available for enteral feeding tube use or those with dysphagia. Olanzapine may be better tolerated if antipsychotics are needed for longer time periods.

7. ECG Monitoring for Haloperidol

The summary of product characteristics for haloperidol recommended that all patients should have an ECG before and after initiation of haloperidol. Haloperidol causes corrected QT interval (QTc) prolongation which may lead to Torsade de Pointes and sudden death.

The risk of increased QTc elongation is thought to be higher with parental administration and higher doses. Around 4% of patients administered >35mg in 24 hours of IV haloperidol may experience Torsade de Pointes.¹⁴ All patients prescribed IV haloperidol should be on a cardiac monitor. Small doses, regularly, are preferable in delirium which should mean larger doses may be avoided.

The risk and benefit of prescribing haloperidol must be considered in patients who have risk factors for ventricular arrhythmias such as: cardiac disease, family history of sudden death and/or QT prolongation, uncorrected electrolyte disturbances, subarachnoid haemorrhage, starvation or alcohol abuse.

Concomitantly prescribing medicines that may also elongate the QTc should be avoided.

The normal QTc value for women is <470ms and <440ms in men. QTc's of over 500ms have a strong association with an increased risk of arrhythmias.

Any patient who has a QTc of over 500ms or has an increased QTc of 25% or greater than 20ms from base-line, should not be prescribed haloperidol.^{15, 16} Where QTc intervals are greater than 440ms in men or 470ms in women but less than 500ms, a repeat ECG should be performed, the risk/benefit of prescribing haloperidol and a switch to lorazepam must be considered.

8. Documentation

Minimum Standards

1. Identification of at risk patients
2. Recognition of clinical indicators (including falls) in at risk patients
3. MMSE/AMTS in all patients over 65
4. Use of CAM in diagnosis
5. Document diagnosis of delirium in medical notes
6. Active exclusion of common precipitants
7. Treatment plan
8. QTc prior to antipsychotics
9. Falls risk assessment and management strategy
10. Document delirium in EDL
11. Discharge MMSE/AMTS

9. Memory Aid Mnemonics

Memory aid mnemonic for CAM - think CA²MS

Delirium diagnosis requires **CA²** and either **M** or **S**

Changeable course

Acute onset + **A**ttention poor

Muddled thinking

Shifting consciousness

Memory aid for delirium precipitants – think DELIRIUM

Drugs (withdrawal/toxicity, anticholinergics)/**D**ehydration

Electrolyte imbalance

Level of pain

Infection/**I**nflammation (post surgery)

Respiratory failure (hypoxia, hypercapnia)

Impaction of faeces

Urine retention

Metabolic disorder (liver/renal failure, hypoglycaemia)/**M**yocardial infarction

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