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This Medicines Information Leaflet is produced locally to optimise the use of medicines by encouraging prescribing that is safe, clinically appropriate and cost-effective to the NHS.

Delirium: Detection, Prevention, and Treatment in Adults

Delirium (acute confusional state) is common in hospitalised patients and is a serious condition that is often under-recognised and poorly treated. The onset is acute, with fluctuating cognition and conscious level, and prominent attention deficit (Diagnositc and statistical Manual of Mental disorders-5, DSM-5)[1].

DSM-5 Criteria for delirium[1]

1. **Disturbance in attention** (i.e. reduced ability to focus, sustain, or shift attention) and awareness (reduced orientation to the environment).
2. **Development over a short period of time** (usually hours to days); the disturbance **tends to fluctuate** during the course of the day.
3. **Change in cognition** (e.g. memory deficit, disorientation, language, visuospatial ability or perception).
4. **Criteria 1-3** are not better accounted for by a pre-existing, established, or evolving neurocognitive disorder.
5. **Evidence from the history, physical examination or laboratory findings suggests the disturbance is caused by**:
   - ❖ The direct physiological consequences of a **general medical condition**
   - ❖ **Substance intoxication**
   - ❖ **Medication use** or **withdrawal**
   - ❖ Multiple aetiolgies

Nationally delirium rates are 20-30% on general medical wards. At OUHFT delirium incidence in medical patients is strongly correlated to age with less than 5% of those under 65 affected rising to 40% of those aged over 75. Around 11% of patients on surgical wards have delirium and 28-50% of hip fracture patients. Rates are also high in critical care areas[2,3].

Delirium can be further classified by motor subtype[2]:

- Hyperactive (agitated, combative, restless)
- Hypoactive (withdrawn, drowsy, quiet)
- Mixed (both hyperactive and hypoactive features)

Only about 20% of delirious patients display any form of hyperactive behaviour[5]. Many patients are most symptomatic in the evening and overnight.

Not all patients with agitation have delirium. Agitation is a symptom of many conditions, and the assumption that an agitated patient is a delirious patient can cause a delay in recognition of the true condition and / or inappropriate treatment.

Risk Factors and Causes

The biggest risk factor for delirium is pre-existing cognitive impairment (dementia or a previous episode of delirium) which may not have been recognised or diagnosed pre-admission[10]. However, there are many other associated factors including older age, serious illness, current hip fracture, co-morbidity especially cerebrovascular disease, polypharmacy, sensory deprivation, change in environment, pain, and poor hydration and nutrition[2]. In most patients the cause is multifactorial, with predisposing factors and precipitating factors.

The pathophysiology of delirium is poorly understood, but neurochemical changes in acetylcholine pathways (reduced activity) and dopaminergic pathways (increased activity) are thought to occur. Medications with either anticholinergic activity or dopaminergic agonist activity tend to exacerbate delirium.

Detection of Delirium

Key indicators to the diagnosis of delirium may be reported by the patient, carers, or relatives and include:

- ❖ The patient is “not their usual self”

- There is a past history of dementia or delirium

Indicators of delirium can easily be overlooked, particularly if the patient has hypoactive delirium. It can also be difficult to distinguish delirium from dementia, and many patients will have delirium superimposed on pre-existing cognitive impairment.

The key features of delirium are the speed of onset (hours to days), the presence of a prominent attention deficit, and symptom fluctuation. Collateral history from carers or relatives is often essential in confirming the diagnosis.

When delirium is suspected, a clinical assessment should be carried out to confirm the diagnosis against DSM-5 criteria or by using the Confusion Assessment Method or the 4 'A' Test (4AT) tool which can be found on EPR in the 'AdHoc; cognitive assesments' tasks section.

The 4AT scores each section between 0 and 4 with a overall score greater than 4 suggesting delirium and 1-3 suggesting cognitive impairment.

Over 70% of unplanned medical admissions have delirium present on their arrival to hospital[12]. OUHFT policy is therefore for routine cognitive screening to be done in all patients aged 70 years or over on (unplanned) admission and younger patients with altered behaviour or brain at-risk (e.g. from neurological disease, ETOH excess). On admission for patients aged 70 years or over an EPR powerform is generated in Tasks which requires documentation of delirium diagnosis made with the aid of the CAM in conjunction with the AMTS. The CAM+AMTS (Abbreviated Mental Test Score) powerform or the 4AT powerform can also be used adhoc to record incident delirium (arising during admission). The 4AT may be mandated in certain settings such as post hip fracture repair as part of the best practice tariff.

Delirium diagnosis recorded in the EPR powerform generates a warning notice in the EPR smartzone, and is displayed in the patients' observations, flowsheet, and patient summary. It is also automatically transmitted to the electronic discharge information (EIDD) and thereby visible to the GP.

Identification of new incident delirium may be facilitated by the use of the 'single question to identify delirium' (SQUID) administered at daily MDT board rounds.

Use the adapted form CAM-ICU in recovery rooms, critical care areas, or other areas where verbal communication by the patient is not possible.

Various risk models have been developed for identifying patients at high risk of delirium to aid diagnosis of prevalent delirium and prevention of future delirium. In the OUHFT, the delirium susceptibility score is automatically calculated using routinely acquired information and the risk is displayed in the EPR observations tab[13]. A score of 5-6 will highlight in red and trigger a 'smartzone' warning asking clinicians to consider delirium.

Good communication about the diagnosis is important; the diagnosis of delirium must be recorded in the care record, included in handover information and in the patient's discharge summary text to complement the automated transfer of cognitive screening results. An OUHFT delirium information leaflet is available for both the patients and staff. Further cognitive assessment using the Montreal Cognitive Assessment (MoCA) or Mini-Mental State Examination (MMSE, also available as EPR powerforms under AdHoc cognitive assesments) should be carried out as a baseline quantitative measure of cognitive function. Pre-admission cognitive function can be documented using the informant questionnaire for cognitive decline in the elderly (IQCODE-EPR powerform) .

Prevention of Delirium

As stated earlier, all OUHFT patients aged 70 years or over with unplanned admission should be routinely screened for prevalent delirium at admission. Since this group is at high risk also of new incident delirium, it could be argued that delirium prevention measures should be applied to all such patients. In other settings, all patients should be assessed at presentation for the presence of risk factors for delirium, particularly:

- Aged 65 years old or over
- Prior or current history of cognitive impairment and/or dementia including low on-admission AMTS
- Current hip fracture
- Severe illness (a deteriorating clinical condition or at risk of deterioration) or high NEWS2 score/sepsis

A high delirium susceptibility score can also be used to target prevention measures.

Multicomponent Interventions[2]	
Clinical Factor	**Preventive Intervention**
Cognitive impairment or disorientation	– Provide appropriate lighting / clear signage – A clock and calendar should also be easily visible to the person at risk – Reorient the person by explaining where they are, who they are, and what your role is – Introduce cognitively stimulating activities – Facilitate regular visits from family / friends
Dehydration, constipation or retention	– Encourage the person to drink. Use parenteral fluids if necessary – Monitor for urinary retention (bladder scan if concerned) – Keep up to date stool chart, precribe laxatives if bowels have not opened for 72 hours
Hypoxia	– Assess for hypoxia and optimise oxygen saturation
Immobility or limited mobility	– Encourage mobilisation soon after surgery – Encourage walking (provide aids if needed – these should be accessible at all times) – Encourage all people, including those unable to walk, to carry out active range-of-motion exercises
Infection	– Look for and treat infection – Avoid unnecessary catheterisation or cannulation – Implement infection control procedures (NICE CG 2)
Medications	– Identify polypharmacy (regular use of >5 medications) and carry out a medication review – If possible avoid drugs that can exacerbate delirium - opioids, benzodiazepines, anti-cholinergics (can calculate anticholinergic burden score to aid rationalisation of medications)
Pain	– Assess pain and non-verbal signs of pain – Provide appropriate pain management - prescribe regular paracetamol as PRN analgesia may not be requested
Poor nutrition	– Follow the advice given on nutrition in 'Nutrition support in adults' (NICE CG 32) – If the person has dentures, ensure they fit
Sensory impairment	– Resolve any reversible cause of the impairment (such as impacted ear wax) – Ensure working hearing and visual aids are available and used by those who need them
Sleep disturbance	– Avoid nursing or medical procedures during sleeping hours, if possible – Schedule medication rounds to avoid disturbing sleep – Reduce noise during sleep periods

Patients with these risk factors should receive a targeted multicomponent intervention programme, as advocated by NICE[2]. Such programmes have been shown to reduce the occurrence of new delirium.

Management

Delirium is usually a symptom / signal of a serious underlying medical problem, so prompt identification and treatment of the cause is required. Brain imaging is not indicated acutely in the absence of focal neurology and when there is an identified cause (e.g. infection) but should be considered in cases with focal neurological deficits, a history of falls or trauma, anticoagulation, or no other identifiable cause. Withdrawal delirium should be treated appropriately (Acute Alcohol Withdrawal MIL V2 No 8, and Nicotine Replacement Therapy MIL V10 No 9).

Clear communication is required to orientate the patient frequently; help can be sought from the patient's family, friends, and carers to achieve this. Additional interventions to reduce the severity and duration of delirium should be implemented and are broadly similar to those described above and used in preventing delirium.

Except for withdrawal deliria, the use of pharmacological therapy to clear delirium (e.g. antipsychotics) is ineffective and should only be used for symptom management when the delirious patient is believed to be distressed and at risk of harming themselves or others[2]. Note that distress is as common in hypoactive as in hyperactive patients, and is more marked in those with delusions, regardless of motor subtype[7]. Distress is a general term that is used to describe unpleasant feelings or emotions that impact upon normal level of functioning (e.g. anxiety, fear, sorrow).

Medication must be used for the shortest time possible and regularly reviewed. In those that lack capacity and are being given medication in their best interests a Mental Capacity Assessment should be documented (available as a Powerform in EPR ad-hoc recording). In Parkinson's disease/Lewy body disease, use antipsychotic drugs with extreme caution, and preferably not at all.

Benzodiazepines and other sedatives do not relieve delirium (except in alcohol withdrawal); indeed they may make delirium worse. However, they may be required to attain or maintain a safe care

environment when managing severely disturbed patients. Oral lorazepam, or intramuscular lorazepam or promethazine may help manage severe motor activity or aggressive behaviour

In the rare circumstance where usual management is insufficient to contain the patient's behaviour, please refer to the **Management of Acutely Disturbed Behaviour for Adults (including Rapid Tranquilisation) MIL and accompanying Trust policy**

LONGER TERM MANAGEMENT

A specific plan to review and stop medication for delirium must be documented in the medical notes.

Any prescription written should be routinely reviewed by the responsible clinician at each ward round, and multi-disciplinary meeting, with consideration of potential move from regular, to prn, to discontinuation when appropriate.

Delirium that does not respond to therapy should be re-evaluated for underlying causes, including follow up and assessment for possible dementia (dementia without delirium should not generally be treated with antipsychotic drugs[8]). Patients should be reassessed at intervals using the 4AT, CAM+AMTS, and/or MoCA to determine resolution of delirium and whether there is underlying cognitive impairment. Plans must be clearly communicated to receiving caregivers when the patient is discharged.

Delirium is an independent risk factor for cognitive decline and dementia although there is substantial heterogeneity in subsequent cognitive trajectory. In certain cases, it may be appropriate to refer directly to memory clinic but in the majority of patients, onward referral should be made where felt to be appropriate, by GPs[14,15]

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Always consider behavioural options before pharmacology

IMPORTANT Treatment Principles:

- Implement multicomponent interventions (panel, page 3)
- Medication should only be used when a patient is at risk of causing harm to themselves or others
- Review all medications every 24 hours
- Benzodiazepines may make delirium worse
- Antipsychotics do not clear delirium, though may mildly sedate patients
- Always use the smallest dose possible and titrate up slowly
- Judge starting dose by age, body size and degree of behavioural disturbance
- Consider psychiatric review if frequent doses required or maximum daily dose administered

Patients over age 65 or patients with frailty

Does the patient have a history **of Parkinson's disease/parkinsonism, Lewy body dementia, seizures, prolonged QTc** (more than 440ms in men or 470ms in women)?

Yes

In Parkinson's disease/LBD anti-psychotics should be used with extreme caution. DO NOT use haloperidol

Lorazepam 0.5-1mg PO, assess response at 2 hours (max 2mg/day)

If enteral route unavailable lorazepam 0.5mg IM ONCE, assess response at 2 hours, monitor closely for sedation

No

Haloperidol 0.5mg-1mg PO OD-TDS, assess response at 2-4 hours (max 5mg/day)

Enteral route unavailable haloperidol 0.5mg IM/SC once, assess response at 2 hours and titrate up, switch to PO route ASAP

2nd line on specialist advice – lorazepam as per Parkinson's plan or olanzapine 2.5mg PO (max 10mg per 24hours)

MHRA Alert: Use of Haloperidol in elderly patients for delirium[8]

Before inititation: Check baseline ECG. Correct any electrolyte disturbances is recommended. Cardiac and electrolyte monitoring should be repeated during treatment.

Patients under 65 without frailty

Is enteral route available?

Yes

Enteral Delirium Management

Haloperidol start at 2-5mg TDS. Maximum 15mg/day.
OR
Olanzapine start at 5-7.5mg OD. Maximum 20mg/day.
OR
Lorazepam 0.5-1mg hourly. Maximum 4mg/day.

No

Intramuscular Delirium Management

Ensure medications are available to treat any drug induced extrapyramidal symptoms (eg Intramuscular benzatropine, procyclidine)

Haloperidol start at 1-3mg TDS. Maximum 10mg/day.
OR
Olanzapine[a] start at 2.5-5mg daily May be better tolerated if antipsychotics needed for long periods. Maximum 20mg/day.
OR
Lorazepam[b] 0.5-1mg hourly, Max 4mg in 24 hours.
Ensure flumazenil available in case of respiratory depression.
OR
Promethazine 25-50mg, hourly. Maximum 75 mg/day.
Useful option in a benzodiazepine-tolerant patient.

Delirium symptom management failure
Refer to Management of acutely disturbed or violent behaviour MIL

a. IM olanzapine should NOT be administered within 1 hour of a parenteral benzodiazepine.
b. Lorazepam injection must be diluted 1:1 with water for injection or 0.9% sodium chloride prior to IM administration.

DO NOT MIX any of the above medication in the same syringe

DO Be aware of the maximum daily doses, especially in patients already receiving psychotropic drug therapy

The IV route should NOT be used, except in very exceptional circumstances or in Critical Care