BMJ 2017;357:j2047 doi: 10.1136/bmj.j2047

PRACTICE

PRACTICE POINTER

Hypoactive delirium

Christian Hosker *consultant liaison psychiatrist and lead clinician*[1], David Ward *acute medicine consultant*[2]

[1]Leeds Liaison Psychiatry Service, Becklin Centre, Leeds LS9 7BE, UK; [2]Acute Medicine, Hinchingbrooke Hospital, Huntingdon PE29 6NT, UK

Hypoactive delirium tends to capture less clinical attention than hyperactive delirium. Like all delirium, it can occur in a variety of patients and settings and will consequently be encountered by many groups of doctors. It can be more difficult to recognise, and is associated with worse outcomes, than hyperactive delirium. This article outlines when to suspect, assess, and appropriately manage patients with hypoactive delirium.

What is hypoactive delirium?

Hypoactive delirium is dominated by symptoms of drowsiness and inactivity, whereas hyperactive delirium is characterised by restlessness and agitation (see infographic).[1] Some people experience a mix of these subtypes.[2] All forms of delirium are a syndrome characterised by acute changes from baseline in a patient's ability to maintain attention and awareness, accompanied by other disturbances in cognition that develop over a short period of time (hours to days) and tend to fluctuate in severity over the course of a day (see box 1).[3] It can arise as a physiological consequence of a medical condition, substance withdrawal or intoxication state, exposure to toxins, or a combination of these.

A recent literature review reveals that patients with hypoactive delirium may report incomprehensible experiences, strong emotional feelings, and fear.[5] An additional qualitative study of patients in intensive care units[6] reported on the "overwhelming sense of complete bewilderment and fear expressed in nightmares, altered realities, and false explanations" and found that those affected "often do not internalise the rational account of what they are seeing and instead create their own stories to fit their perceived situation."

Patients' and their carers' experiences of delirium are variable. Two studies, both of which systematically examined the experience of delirium in samples of inpatients with cancer,[7 8] suggest that the level of distress experienced in those with hypoactive delirium is similar to that experienced by those with the other forms. However, care givers in one of the studies found hyperactive symptoms more distressing.[8] The other study[7] suggested that those with hypoactive delirium were less likely to recall the episode (43% compared with 66% of those with hyperactive delirium).

How common is hypoactive delirium?

Available data suggest about 50% of delirium is hypoactive; this and the mixed motor subtype account for 80% of all cases of delirium.[1-10] Data on the dominance of the hypoactive subtypes vary between studies and locations, and considerable uncertainty about its prevalence exists (table 1⇓). Delirium occurs across a range of settings (table 2⇓), and observational data suggest that at least 1 in 10 people in most healthcare setting who are acutely unwell or admitted as inpatients have delirium.

Delirium is associated with a wide range of factors (box 2), and hypoactive delirium is particularly associated with some of them (such as organ failure, prior cognitive impairment, and dehydration). Ultimately, the chance of an event triggering delirium varies according to a person's threshold for developing delirium. For young, fit, non-cognitively impaired people, the precipitant is likely to be more severe such as meningitis, traumatic brain injury, or sepsis requiring intensive care. For older, frail people with dementia it might be minor metabolic disturbance, urinary tract infection, or constipation.

Why is it important to recognise symptoms of hypoactive delirium?

Hypoactive delirium is associated with poorer outcomes compared with mixed or hyperactive delirium,[1-15] including increased mortality and admission to longer term care (see infographic). This may be because it presents or is diagnosed later. If the poorer outcomes in hypoactive delirium are explained by delayed diagnosis then identifying cases sooner, including patients who do not have symptoms but are at greater

Correspondence to: C Hosker christian.hosker@nhs.net

Data supplements on bmj.com (see http://www.bmj.com/content/357/bmj.j2047?tab=related#datasupp)
Infographic:

What you need to know

- Hypoactive presentations of delirium are more common than the classically agitated, hyperactive forms and may be overlooked
- A collateral history can distinguish hypoactive delirium from other causes of behaviour change such as dementia and depression
- Cornerstones of supportive care might include reorientation and a chance to debrief on experiences once the patient is recovered

Box 1: DSM 5 classification of delirium and techniques for diagnosis[3]

In order for a patient to be diagnosed with delirium they must display all of the following:

1. Disturbance in attention (reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment).
   The 4A's Test (4AT)[4] incorporates two simple elements to aid in the assessment of this:
   - Attention is assessed by asking patients to name the months of the year backwards
   - Awareness is assessed by asking patients their age, date of birth, place (name of the hospital or building), and current year
2. The disturbance develops over a short period of time (usually hours to a few days), represents an acute change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day
   Establishing this often requires the use of collateral information—such as other staff who know the patient, case notes containing reference to previous cognitive states, or carers
3. An additional disturbance in cognition (such as memory deficit, disorientation, language, visuospatial ability, or perception).
   If necessary, a cognitive assessment tool can be used to assess for disturbance of cognition beyond that revealed by the 4A's Test. There are several to choose from which vary in length and therefore ease of use and acceptability
4. The disturbances in criteria 1 and 3 are not better explained by a pre-existing, established, or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal such as coma
   Again, this will require the use of a collateral history to determine whether cognitive changes are longstanding and therefore more likely to be due to dementia, which may or may not have been diagnosed previously
5. There is evidence from the patient's history, physical examination, or laboratory findings that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal (that is, due to a drug of misuse or a medication), or exposure to a toxin, or is due to multiple causes
   This is assessed by careful history taking and examination and the use of appropriate investigations

Sources and selection criteria

We searched Medline, Clinical Evidence, and the Cochrane Library using the terms "delirium, hypoactive." Where possible, we have used systematic reviews and have referenced these rather than the individual trials of which they are comprised. The search was limited to citations from 1990 to October 2016.

We also searched the National Institute for Health and Care Excellence and the Scottish Intercollegiate Guidelines Network.

Box 2: Factors associated with developing delirium[1 15]

- Metabolic disturbance*
- Organ failure*
- Prior cognitive impairment*
- Dehydration*
- Increasing age*
- Sensory deprivation
- Sleep deprivation
- Social isolation
- Physical restraint
- The presence of a bladder catheter
- Polypharmacy
- Three or more comorbid diseases
- Severe illness (especially fracture, stroke, sepsis)
- Temperature abnormality
- Malnutrition
- Low serum albumin

*Factors particularly associated with hypoactive delirium[1]

risk, and addressing reversible causes of delirium in these groups may improve outcomes.

A study which examined 805 consecutive acute medical admissions reported that 75% of the cases of delirium were missed by the admitting teams.[16] Patients with hypoactive delirium can be missed because those who are docile may not come to the attention of care providers. In one observational study of 67 elderly inpatients consecutively referred to a psychiatric consultation service with suspected depression, 42% were found to be delirious.[17] There are various reasons why the diagnosis of hypoactive delirium may be overlooked, as laid out in box 3.

Box 3: Reasons why hypoactive delirium can be missed[18 19]

The nature of the condition

- Person too withdrawn to alert a care provider, particularly if isolated without family or carers
- The condition fluctuates, and periods of near-normality may coincide with a clinician's assessment
- Establishing the diagnosis requires a degree of longitudinal overview, to capture the shift from baseline, combined with careful assessment

The nature of healthcare systems

- A lack of continuity of care, poor access to the latest records (such as medication changes, recent admissions, or other risk factors such as dementia), sensory impairment
- Delayed assessment because the patient is not triaged by primary or secondary care services as urgent

Factors inherent within the population at risk

- Elderly patients may be isolated

Misunderstandings within the workforce

- It is normal for older patients to be forgetful or disorientated
- Hyperactive symptoms must be present for a diagnosis to be made, or these are viewed as a marker of severity
- Patients are offended by having their cognition tested
- Hypoactive delirium is irreversible
- Hypoactive delirium is somehow beneficial to the patient in protecting them from the reality of having an advanced disease

How is hypoactive delirium diagnosed?

A variety of sources offer advice on how to approach diagnosis. The NICE guidance on delirium recommends first identifying those at risk of delirium before further assessing for fluctuations in behaviour.[13]

Risk factors (box 2) for delirium, including those most associated with hypoactive delirium, are so common in acutely unwell people that they are of limited predictive value. Box 1 gives an approach to diagnosis based on DSM 5 (diagnostic and statistical manual of mental disorders, fifth edition).[3]

Numerous validated delirium tools exist, which vary in the time required to complete them, the training required, and their suitability for use in hypoactive patients.[20] A recent systematic review of screening tools in hospitalised inpatients[20] recommended the 4A's Test (4AT)[4] and the Nursing Delirium Screening Checklist (NuDESC)[21] due to their validity in hypoactive patients and their suitability for incorporation into busy clinical practice without specific training (see table 3⇓).

Ensure history taking includes information about medication use, the presence of comorbid conditions, and any alcohol or illicit drug use. Perform a thorough physical examination and appropriate investigations (see box 4).

What is a differential diagnosis for hypoactive delirium?

Distinguish hypoactive delirium from other causes of withdrawn, apathetic behaviour. Major depressive episodes can present with reductions in activity levels, but not with reductions in consciousness, fluctuations, or abrupt onsets.

Pre-existing dementia can be a cause of withdrawal and apathy. However, hypoactive delirium can be superimposed upon dementia. Use a collateral history to establish the baseline state and determine whether the changes are acute (suggestive of delirium) or chronic (suggestive of dementia). An abrupt step-change in the patient's mental state, suggests the presence of delirium.

How is hypoactive delirium managed?

There is insufficient evidence to support the routine use of drugs, including antipsychotics, to prevent or treat delirium.[15 22]

Several evidence based guidelines on the management of delirium exist, and all broadly recommend the following approaches.[13-24] Clinicians may consider offering:

- An explanation for symptoms and a diagnosis to patients who may be frightened by their experience, including written information
- Treatment for reversible causes
- Supportive nursing care in a suitable environment to ensure that complications that can arise from patients being withdrawn and unable to self care (dehydration, infections, bed sores, etc) are monitored for and managed
- Reorientation on a regular basis by explaining who you are, as well as communicating the day, date, time, and location.
- An opportunity to discuss their experiences once they are recovered.

Delirium can leave patients confused and frightened. Distress can be even higher in the carers and spouses.[7] The ability of hypoactive patients to engage with information can be limited while they are unwell. After patients have recovered, offer the opportunity to talk about what happened to them and why. Consider supplying information leaflets.

Is delirium avoidable?

There is moderate quality evidence from seven randomised controlled trials that delirium, including its hypoactive form, can be prevented by the use of multicomponent interventions (box 5) in up to a third of high risk hospitalised patients.[15]

Contributors: Both authors met all four ICMJE authorship criteria. CH was the lead author but the article outline was agreed by both authors. Both authors worked on drafts of the article, and agreed on the form of the version to be submitted. Both authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work have been appropriately investigated and resolved.

Competing interests: We have read and understood the BMJ policy on declaration of interests and have no relevant interests to declare.

Provenance and peer review: Not commissioned; externally peer reviewed.

Box 4: Investigations to consider when assessing a patient with suspected hypoactive delirium

The choice of tests will depend on the individual patient

Questions

- Bowel habit inquiry
- Medication review (to identify and discontinue those that are contributory or causative)
- Pain control

Simple tests

- Full blood count—For anaemia, infection
- Urea and electrolytes—For renal failure
- C reactive protein—For inflammatory process
- Bone profile—For hypercalcaemia
- Liver function tests—For liver failure
- Thyroid function tests—For hyperthyroidism or hypothyroidism
- Blood glucose
- Drug levels of prescribed medications
- Urine analysis—For infection
- Electrocardiography—For cardiovascular causes

More specialist tests

- Blood cultures
- Chest x ray
- Arterial blood gas
- Computed tomography of head
- Consider lumber puncture

Box 5: A multi-component approach to prevention of delirium[15 25]

Cognition and orientation

- Cognitive stimulation activities, such as reminiscing
- Orientation board with names of care team members and daily schedule
- Talking to the patient to re-orientate them

Early mobility

- Ambulation or active range-of-motion exercises
- Minimising use of immobilising equipment

Hearing

- Portable amplifying devices and special communication techniques, with daily reinforcement
- Ear wax clearing as needed

Sleep-wake cycle preservation

- Warm milk or herbal tea, relaxation tapes or music, and back massage to encourage sleep
- Unit-wide noise reduction strategies and schedule adjustments to allow uninterrupted sleep

Vision

- Visual aids (glasses, magnifying lenses) and adaptive equipment (large illuminated telephone keypads, large print books, fluorescent tape on call bell), with daily reinforcement of their use

Hydration

- Encourage fluid intake
- Feeding assistance and encouragement during meals

Examples of service delivery

- Programmes of education for ward nursing staff
- Protocols targeting specific risk factors delivered by a trained interdisciplinary team
- Specialist nursing interventions to educate nursing staff, review and change medication, encourage patient mobilisation, and improve patient environment

1 Meagher D. Motor subtypes of delirium: past, present and future. *Int Rev Psychiatry* 2009;21:59-73. doi:10.1080/09540260802675460 pmid:19219713.
2 Lipowski ZJ. Delirium in the elderly patient. *N Engl J Med* 1989;320:578-82. doi:10.1056/NEJM198903023200907 pmid:2644535.
3 American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. (fifth edition). DSM-5. 2013.
4 Bellelli G, Morandi A, Davis DH, et al. Validation of the 4AT, a new instrument for rapid delirium screening: a study in 234 hospitalised older people. *Age Ageing* 2014;43:496-502. doi:10.1093/ageing/afu021 pmid:24590568.
5 Fuller V. Delirium recall - an integrative review. *J Clin Nurs* 2016;25:1515-27. doi:10.1111/jocn.13155 pmid:26961219.
6 Darbyshire JL, Greig PR, Vollam S, Young JD, Hinton L. "I can remember sort of vivid people…but to me they were plasticine." Delusions on the intensive care unit: what do patients think is going on?*PLoS One* 2016;11:e0153775. doi:10.1371/journal.pone.0153775. pmid:27096605.
7 Breitbart W, Gibson C, Tremblay A. The delirium experience: delirium recall and delirium-related distress in hospitalized patients with cancer, their spouses/caregivers,

Education into practice

- How do you describe delirium to patients?
- What steps might you take, or ask others to, to help patients remain orientated?
- Would you consider offering follow-up to patients recovering from delirium to allow the chance to reflect on their experience?
- Is there anything about your approach to exploring the possibility of delirium in an acutely unwell patient that might alter as a result of reading this article?

How patients were involved in the creation of this article

No patients were involved in the creation of this article.

and their nurses. *Psychosomatics* 2002;43:183-94. doi:10.1176/appi.psy.43.3.183 pmid:12075033.

8 Bruera E, Bush SH, Willey J, et al. Impact of delirium and recall on the level of distress in patients with advanced cancer and their family caregivers. *Cancer* 2009;115:2004-12. doi:10.1002/cncr.24215 pmid:19241420.

9 Stagno D, Gibson C, Breitbart W. The delirium subtypes: a review of prevalence, phenomenology, pathophysiology, and treatment response. *Palliat Support Care* 2004;2:171-9. doi:10.1017/S1478951504040234 pmid:16594247.

10 Peritogiannis V, Bolosi M, Lixouriotis C, Rizos DV. Recent insights on prevalence and correlations of hypoactive delirium. *Behav Neurol* 2015;2015:416792. doi:10.1155/2015/416792 pmid:26347584.

11 Siddiqi N, House AO, Holmes JD. Occurrence and outcome of delirium in medical in-patients: a systematic literature review. *Age Ageing* 2006;35:350-64. doi:10.1093/ageing/afl005 pmid:16648149.

12 Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet* 2014;383:911-22. doi:10.1016/S0140-6736(13)60688-1 pmid:23992774.

13 National Institute for Health and Care Excellence. Delirium: prevention, diagnosis and management (clinical guideline 103). 2010. www.nice.org.uk/Guidance/CG103

14 Cole MG, Ciampi A, Belzile E, Zhong L. Persistent delirium in older hospital patients: a systematic review of frequency and prognosis. *Age Ageing* 2009;38:19-26. doi:10.1093/ageing/afn253 pmid:19017678.

15 Siddiqi N, Harrison JK, Clegg A, et al. Interventions for preventing delirium in hospitalised non-ICU patients. *Cochrane Database Syst Rev* 2016;3:CD005563.pmid:26967259.

16 Collins N, Blanchard MR, Tookman A, Sampson EL. Detection of delirium in the acute hospital. *Age Ageing* 2010;39:131-5. doi:10.1093/ageing/afp201 pmid:19917632.

17 Farrell KR, Ganzini L. Misdiagnosing delirium as depression in medically ill elderly patients. *Arch Intern Med* 1995;155:2459-64. doi:10.1001/archinte.1995.00430220119013 pmid:7503605.

18 Meagher D, Leonard M. The active management of delirium: improving detection and treatment. *Adv Psychiatr Treat* 2008;14:292-301doi:10.1192/apt.bp.107.003723.

19 Stephens J. Assessment and management of delirium in primary care. *Prog Neurol Psychiatry* 2015;19:4-5doi:10.1002/pnp.400.

20 De J, Wand AP. Delirium screening: a systematic review of delirium screening tools in hospitalized patients. *Gerontologist* 2015;55:1079-99. doi:10.1093/geront/gnv100 pmid:26543179.

21 Gaudreau JD, Gagnon P, Harel F, Tremblay A, Roy MA. Fast, systematic, and continuous delirium assessment in hospitalized patients: the nursing delirium screening scale. *J Pain Symptom Manage* 2005;29:368-75. doi:10.1016/j.jpainsymman.2004.07.009 pmid:15857740.

22 Neufeld KJ, Yue J, Robinson TN, Inouye SK, Needham DM. Antipsychotic medication for prevention and treatment of delirium in hospitalized adults: a systematic review and meta-analysis. *J Am Geriatr Soc* 2016;64:705-14. doi:10.1111/jgs.14076 pmid:27004732.

23 Scotland HI. Improving the care for older people: delirium toolkit. 2016. www.healthcareimprovementscotland.org/our_work/person-centred_care/opac_improvement_programme/delirium_toolkit.aspx

24 Australian and New Zealand Society for Geriatric Medicine. Position statement 13: Delirium in older people. Revised 2012. www.anzsgm.org/documents/PS13DeliriumstatementRevision2012.pdf.

25 Hshieh TT, Yue J, Oh E, et al. Effectiveness of multicomponent nonpharmacological delirium interventions: a meta-analysis. *JAMA Intern Med* 2015;175:512-20. doi:10.1001/jamainternmed.2014.7779 pmid:25643002.

Tables

Table 1| Reported proportions of delirious patients with the hypoactive subtype110

Setting or patient group	Proportion with hypoactive subtype
Consultation liaison psychiatry referrals	6-32%
Intensive care units	36-100%
Elderly patients	13-46%
Hip fractures	12-41%
Palliative care	20-53%

Table 2| **Delirium prevalence across different healthcare settings**

Setting	Prevalence
General hospitals[11]	11-42%
Care homes[12]	14%
Emergency departments[13]	10-11%
Community within one month of hospital discharge (elderly patients diagnosed with delirium when hospitalised)[14]	45%

Table 3| An overview of the screening tools 4A's Test (4AT)4 and Nursing Delirium Screening Checklist (NuDESC)21 suitable for the detection of hypoactive delirium use in a busy clinical setting

	4AT	NuDESC
Rating by	Any member of staff	Nurses
Time to complete	2-3 minutes	1-2 minutes
No of items	Four: • Alertness • Cognition (4 sub-items) • Attention • Acute change or fluctuations	Five: • Disorientation • Inappropriate behaviour • Inappropriate communication • Illusions or hallucinations • Psychomotor retardation
Sensitivity	89.7%	85.7%
Specificity	84.1%	86.8%