

Dementia Services
Development Centre



Delirium

2nd edition



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Delirium

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Introduction

Delirium is a sudden deterioration in mental functioning, which is triggered by acute illness of the body or brain, acute injury or drug intoxication. Celsus initially used the term delirium in the first century (Lindesay, 1999) but before that, Hippocrates had written about 'phrenitis' and 'lethargus', which are similar to what we would term hyperactive and hypoactive delirium. Despite this long history, the mechanisms causing delirium remain misunderstood, and delirium is generally under-recognised and poorly managed.

Delirium creates problems for health care professionals because it is complex to diagnose and care for. Identification of acute decline in cognition and other mental functions is challenging, as it is often a consequence of multiple interacting medical factors, both acute and chronic. Good management of delirium requires knowledge of mental status assessment and awareness of the medical and environmental factors that may be involved. Delirium is common in all health care settings, occurring in more than 11% of general hospital admissions, with rates of more than 40% in older people with hip fracture in intensive care units (Siddiqi, 2006). In people with advanced or palliative illnesses the rates can be over 80% (Lawlor et al, 2000).

Delirium is a serious condition and a medical emergency. It can be the main presenting feature of life-threatening illness such as pneumonia, and it is associated with many poor outcomes. It can occur at any age but is more common in older people, particularly in those with cognitive impairment. People who experience an episode of delirium may be more likely to develop dementia (Rahkonen, 2001). Delirium can be an extremely distressing experience, remembered by the person and equally concerning for families and staff.

The quality of delirium management has been proposed as an indicator of care quality in both hospitals and residential aged care (Inouye, 2001). Unfortunately, surveys suggest that many professionals lack sufficient knowledge of this condition (Davis et al, 2009). All those involved in the care of older people, and people with advanced disease should be familiar with the main features of delirium; risk factors, management strategies and prevention. Healthcare professionals need to have an excellent working knowledge of delirium because it is a routine part of their job.

What is delirium?

Delirium is a syndrome characterised by acute onset (hours or days) and fluctuating course of deterioration in mental functioning. It is often reversible, sometimes within days. The onset, fluctuation and tendency to resolve make it different from dementia, depression and schizophrenia.

The main mental status disturbance in delirium is inattention. Typically the person cannot sustain, focus or appropriately shift attention. Older people with delirium very often have altered arousal, with drowsiness or hyperactivity, and they usually also have deficits in memory and other types of mental functioning. Alongside the cognitive and alertness symptoms, a person with delirium may also have

hallucinations and delusions, speech and language disturbances (e.g. rambling speech) and emotional disturbances (e.g. mood swings over the course of the day).

Because of the complexity of these symptoms, delirium can manifest in a variety of ways and, without knowledge of its onset, can easily be mistaken for many other conditions including dementia and depression. This means that accurate understanding of the course of the mental status disturbance for the individual is essential.

The International Classification of Disease and the Diagnostic and Statistical Manual-IV criteria of delirium are:

ICD-10 diagnostic criteria	DSM IV diagnostic criteria
Impairment of consciousness or attention	Disturbance of consciousness (that is, reduced clarity of awareness of the environment, with reduced ability to focus, sustain, or shift attention)
Global disturbance of cognition	Change in cognition or a perceptual disturbance (e.g. memory impairment)
Evidence of physical cause.	Evidence from the history, physical examination or laboratory findings that the disturbance is caused by the direct physiological consequences of a general medical condition. (Not strict as in around 10% of cases no clear precipitant for delirium can be found)
Rapid onset / fluctuating course	Rapid onset (days/hours), fluctuating course
Psychomotor disturbance	
Disturbance of sleep wake cycle	
Emotional disturbance	

There are some differences between the two diagnostic classification systems. However DSM-IV and ICD-10 agree on 4 essential criteria:

- > disturbance of consciousness and attention
- > disturbance of cognition
- > rapid onset/ fluctuating course
- > evidence of cause

The features of these two lists are not exclusive to delirium, nor are they all known at the outset and therefore, may not be helpful in early diagnosis (Lindesay, 1999). In particular it may take time to discover the cause or causes. Even if these causes are not immediately obvious, this does not rule out delirium as the diagnosis. The key is an acute deterioration in mental functioning: nearly all older people with acute deterioration in mental functioning will have delirium and require urgent care.

Some of the diagnostic criteria, for example the assessment of consciousness and attention, are considered to be challenging and to require specialist assessment skills. It is likely this perception contributes to the low rates of diagnosis of delirium.

Thus, in aged care an insistence on rigid application of these criteria may be detrimental and for practical purposes any older person with clear acute deterioration of mental status should be identified as having delirium. For example, an older person with rapid onset (hours, days) paranoid delusions and sleep-wake cycle disturbance – diagnostic features which are obvious – is likely to have delirium rather than a functional psychosis, and it is safer to assume that there are reversible causes.

A further issue with the diagnostic criteria is that there is increasing evidence of a subsyndromal delirium, in which there might be relatively mild changes in level of alertness or other aspects of mental status. Whilst this subsyndromal delirium doesn't meet the full criteria for a diagnosis of delirium, it seems to be associated with similar adverse outcomes such as premature placement in residential care.

Perhaps because of its variability, delirium has been given many names, and many informal terms are used to describe the changes in mental status that are common in delirium, including:



Formal terms	Informal terms
Acute confusional state	Flat
Toxic psychosis	A bit knocked off
ICU psychosis	Agitated
Post operative psychosis	Confused
Metabolic encephalopathy	Vague
Acute brain failure	Poor historian
Organic brain syndrome	Not themselves
Cerebral insufficiency	Non-compliant
Dysergastic reaction	Obtunded
Subacute befuddlement	A bit muddled

The lack of precision in diagnosis is a serious problem in providing good quality delirium care: we recommend strongly that the term 'delirium' is used rather than 'acute confusion', 'increased confusion' or 'acute or chronic confusion'.

Delirium is not depression or dementia

Differentiating between delirium, dementia and depression is important to ensuring that older people receive appropriate investigation of illness and treatment. It is important that delirium

and serious complications are not missed because they are confused with existing or developing dementia or depression.

For example the quiet withdrawn person with hypo alert delirium may be misdiagnosed with depression and given antidepressants which worsen the delirium. Or the person with agitated behaviours, inattention and disorientation to time and place might be given a diagnosis of dementia and be placed in long term care. A diagnosis of delirium should therefore be excluded before a diagnosis of depression or dementia is considered.

Your action plan should have included:

- > provide calm reassurance, gentle reorientation and comfort.
- > arrange for someone familiar to stay with Mr Lung to supervise his safety
- > continue to provide meaningful engagement, comfort and reassurance (delirium can cause high levels of anxiety, fear and distress which are intensified if the person is left alone with nothing to do)
- > conduct baseline observations
- > try to obtain a history from Mr Lung about the past few days, assess Mr Lung's mental status and functioning through conversation
- > obtain a mid-stream urine sample and assess bladder and bowel function
- > check medications have been taken as prescribed
- > look for evidence of eating and drinking normally
- > report findings to GP and make clear this is an acute deterioration in mental functioning which requires further investigation
- > notify Mr Lung's son of his changed condition and explain the actions you have taken.

Key points

- > *delirium has an acute onset*
- > *delirium is different to depression or dementia*
- > *delirium has complex and varying symptoms*
- > *knowledge of the individual is key to identification of delirium*
- > *delirium can be hypoactive as well as hyperactive*

Why is delirium important?

Delirium is extremely common, affecting 1 in 8 hospital inpatients. Delirium can occur in any age group and large variations in incidence and prevalence have been reported depending on setting and age group studied. Those with surgical or medical problems such as hip surgery or a diagnosis of cancer have higher rates. Rates in vulnerable populations, such as hip fracture and intensive care unit patients and people living in residential aged care, can be

greater than 50%. Pre-existing cognitive impairment is also associated with increased rates of delirium. Delirium has been identified as the most common complication of hospitalisation in elderly people (Gillick, 1982, Inouye, 1994, Jacobson, 1997).

Prevalence of delirium

The following table shows prevalence for different populations.

Population	%
General population	0.4
General population (>55 years)	1.1
General hospital admissions	9-30
Elderly general hospital admissions	5-55
Elderly accident and emergency attenders	16
AIDS	17-40
Cancer patients (terminal stages)	25-40 (28-85)
Post-operative patients	5-75
Intensive care unit patients	12-50
Nursing home residents	up to 60

Meagher (2001, p 434)

Impact of delirium

Delirium is associated with multiple adverse consequences including falls, pressure sores, loss of independence, risk of new institutionalisation, functional decline, dementia and death (Witlox et al, 2010; National Institute for Clinical Excellence, 2010). Delirium is also associated with considerable distress (O'Malley et al, 2008).

People who have recovered from delirium say:

“it’s left an impression on me”

“very frightening”

“I didn’t tell them because I didn’t want them to think I was crazy”

“I didn’t believe a thing they told me”

“I needed to escape”

“a horror”

“a living nightmare”

It is important to remember that distress occurs regardless of the delirium subtype or profile of symptoms and is often remembered. Furthermore, there is emerging evidence that delirium can trigger post-traumatic stress disorder (Davydow et al, 2008). Although there are few intervention studies available, there is anecdotal evidence that detection of delirium and any associated distress coupled with frequent clear explanations and reassurance, and follow-up in survivors, can help reduce the long-term consequences of delirium-

associated distress. Distress caused by delirium and potential of simple psychosocial interventions to make a difference to the person’s experience of delirium is a growing area of delirium research.

Delirium is also associated with significant distress in the family caregiver, and witnessing delirium in cancer patients, for example, has been associated with increased prevalence of anxiety disorders in the caregiver (Buss et al, 2007). For health care staff the impact can be equally distressing, can create extra workload and can be a health and safety issue.

Unfortunately, studies have shown that in practice delirium is under-identified with reports of non-detection rates of 33 - 66% (Inouye, 1994). Studies suggest that the quiet or less-active person is less likely to be detected. Non-detection of delirium is associated with worse outcomes for people (Kakuma et al, 2003). Mandatory formal screening and assessment for delirium would improve detection.

Persistent delirium

Recent studies have found that delirium persists for at least three months or more in around 20% of cases (Cole et al, 2009). The nature of persistent delirium has not been studied in detail but the available evidence suggests that persistent delirium is more often hypoactive than hyperactive.

Persistent hypoactive delirium is a dangerous condition because the person is at high risk of misdiagnosis and mismanagement: they are often labelled as having ‘cognitive impairment’, without a clear distinction being drawn between delirium and dementia. Without a diagnosis of

delirium, which implies reversibility, there may be a lack of attention to optimising physiological variables, drug treatment and rehabilitation. Strategies to maintain function and the provision of an appropriate rehabilitation environment may not be prioritised. People with persistent hypoactive delirium are often inappropriately institutionalised; there are numerous anecdotes about people recovering from delirium after they have been transferred to residential aged care.

Prevention of delirium

Research has shown that interventions can reduce the number and duration of episodes of delirium in hospitalised older people (National Institute for Clinical Excellence, 2006). Therefore awareness and detection of delirium are important factors, as are assessing risk and planning prevention. Prevention strategies are discussed in greater detail in Chapter 7.

Treatment and care

Thorough nursing and medical assessment is required to identify the causes of delirium for the individual and to resolve them as quickly as possible with appropriate treatment and care. Delirium may be the only presenting sign or symptom of a serious illness in the older person. The misconception that age involves cognitive decline means delirium and underlying serious illness

are at risk of being missed. The care environment and staff need to provide care which reassures, reorientates and reduces the fear and distress often experienced by the person with delirium and their family. Delirium will often mean the person's usual level of independence and self care is altered so nursing and care staff may have to reassess and create a new care plan, ensuring the person has adequate intake of food and fluids, elimination is monitored, appropriate rest is facilitated and pain is managed, as these are all factors which can prolong or increase the severity of the delirium. Treatment is discussed in greater detail in chapter 6.

Key Points

- > *delirium occurs in more than 25% of older hospital inpatients*
- > *delirium has poor outcomes for people*
- > *delirium has a one-month mortality rate of approximately 25%*
- > *persistent delirium may be misdiagnosed*
- > *non-detection rates of 33 - 66% have been reported*
- > *risk of delirium can be reduced*
- > *treatment and care requires a multidisciplinary team approach*
- > *delirium might be the only presenting sign or symptom of serious illness in the older person.*

Risk factors and causes of delirium

Delirium most commonly affects older people with pre-existing disease and other risk factors. A combination of comorbidities is more common as people age. This interaction might be part of the increasing risk of delirium. The delirium can be triggered by a wide variety of acute causes. In many cases there is more than one cause. For example, Purdie et al (1981) found that a single cause of delirium may be found in as little as 50% of cases.

Inouye et al (1996) provide a model which asks clinicians to explore both predisposing factors which increase vulnerability to delirium and also the precipitating factors which have caused the delirium. For example, an older person may have visual and hearing impairment (due to ageing), cognitive

impairment (due to dementia) and multiple comorbidities (such as arthritic pain and cardiac failure) with associated medications, and this makes them highly vulnerable to delirium, caused by seemingly small medical problems such as a urinary tract infection. Conversely a younger person who is otherwise completely well is unlikely to become delirious unless they sustain a serious illness (for example, meningitis).

The following table summarises predisposing factors which in combination with a precipitating factor might cause delirium. Identifying any one combination of these factors should alert staff to the possibility of the person developing delirium and should mean preventative measures are commenced.

Predisposing factors/ vulnerabilities may include	Precipitating factors may include
65yrs +	An unfamiliar environment and people, a challenging or stressful event, e.g. admission to hospital.
Pre-existing cognitive impairment	
Dehydration	
Previous episode of delirium	The current illness (including infection, hypoxia, hypoglycaemia, hypotension, electrolyte abnormality and metabolic disturbance).
Severe illness or comorbidity	
Depression	
Dependence on alcohol or psychoactive drugs	The treatment of that illness (including medications), particularly 3 or more medications added together.
Pain	
Existing illness/comorbidity such as heart disease, cerebral vascular disease, chronic kidney failure, anaemia, chronic obstructive airways disease	Anticholinergic drugs
	Benzodiazepines
Malnourishment	Antihistamines

Predisposing factors/ vulnerabilities may include	Precipitating factors may include
Abnormal sodium levels	Opioids (though pain must be adequately controlled)
Sleep deprivation	Corticosteroids
Sensory impairment	Urinary catheterisation
	Immobility
	Emergency surgery

How these predisposing and precipitating factors lead to delirium is not clear, but it is important to be aware of and document them. This will influence treatment and care of the person because it is important, where possible, to counteract the effects of predisposing factors. For example: providing glasses and hearing aids, correcting anaemia, providing good nutrition, and providing optimal care of medical conditions alongside any specific treatment of the delirium.

Sometimes the main acute trigger to the delirium is obvious, for example, pneumonia or a urinary tract infection. However, the evidence suggests that in many cases there are two or more *acute* processes at work. Therefore, the phrase often used to summarise delirium care – “treat the cause” – is inaccurate.

High quality management requires that all potential acute triggers are assessed. For example, a person with a urinary tract infection and delirium may also have dehydration (because the delirium impairs the ability of the person to find fluids and drink them), acute kidney injury (because of the infection and dehydration) and opioid toxicity (because of accumulation of active metabolites of codeine in acute kidney injury).

To assist in identifying triggers it can be helpful to use a mnemonic. The American Psychiatric Press Textbook of Psychiatry includes a chilling but very useful mnemonic representing a list of factors that can cause delirium: ‘I WATCH DEATH’. This is worth bearing in mind during delirium assessment so that the relevant acute triggers are identified. This mnemonic is not an exhaustive list of illnesses or processes associated with delirium, nor are the categories mutually exclusive.

Medical interventions can also play a role in the causation or increased risk of delirium. The fact that medical treatments can have such an adverse effect means health care professionals need to consider any interventions they plan for the older person very carefully. Medications are often implicated, particularly drugs with anticholinergic effects, opioids, benzodiazepines and corticosteroids.

'I WATCH DEATH'		Causes of delirium
I	Infection	Encephalitis, meningitis and syphilis
W	Withdrawals	Alcohol, barbiturates, sedative-hypnotics
A	Acute metabolic	Alkalosis, acidosis, electrolyte disturbance, hepatic failure and renal failure
T	Trauma	Heat stroke, post-operative, severe burns,
C	CNS pathology	Abscess, haemorrhage, normal pressure hydrocephalus, seizure, stroke, tumour and vasculitis
H	Hypoxia	Anaemia, carbon monoxide poisoning, hypotension and pulmonary or cardiac failure
D	Deficiencies	Vitamin B12, niacin, thiamine and hypovitaminosis
E	Endocrinopathies	Hypo or hyperglycemia and hypo or hyperadrenocortisolism.
A	Acute vascular	
T	Toxins or drugs	Hypertensive encephalopathy and shock
H	Heavy metals	Medications, pesticides and solvents lead, manganese and mercury

Used with permission from American Psychiatric Publishing Inc, 3rd edition, *The American Psychiatric Press Textbook of Psychiatry Table 10-7 Differential Diagnosis for Delirium: Critical Items (I WATCH DEATH)* Wise M, Gray K and Seltzer B, 1999 www.appi.org

Older people may have more illness and be on numerous medications already. The intention is not to stop all medication but to try to:

- > minimise and seek alternatives
- > assess the benefits and costs of each drug that a person with delirium is taking
- > where possible stop or reduce drugs.

These can be re-started if required after the delirium has resolved. Awareness of the additional risks of delirium and

worsening confusion to an already ill individual is important. In particular, anticholinergic medications and benzodiazepines need to be carefully considered, though reduction rather than sudden withdrawal of benzodiazepines is crucial. A 2011 systematic review also identified antihistamines and nifedipine as potentially contributing to delirium risk; where possible, these drugs should be stopped (Clegg et al, 2011). Opioids contribute to delirium risk, but so does pain, so in each person a balance has to

be struck. In some people, a particular opioid may be particularly toxic so changing to a different type of opioid may be beneficial. Chapter 6 has more details on treatment.

The use of physical restraints, indwelling catheters and multiple medications should be minimised as these have been associated with increased risk of delirium. Further detailed information of causes can be found in major medical textbooks.

The environmental risk

A change in the care environment can cause disorientation which might be a key factor for the older person and needs particular consideration by nursing and care staff. Understanding of the person's perspective coupled with constant reassurance and reorientation might be significant in preventing delirium in the older hospitalised person.



Imagine...

You are asleep in your bed but are aware of a strange continuous beeping noise, a door bangs, some footsteps and mumbled voices and it stops....it must have been your next door neighbour's smoke detector going off, she's always burning toast! Back to sleep....but what is that light doing on? It is creating a strange shadow and.....something is moving in that dark corner.....what is it?... You try to lift yourself into a sitting position but the strings on your pyjamas have somehow become tangled and are tying you down. You try to roll over to ask your partner to help you but the bed ends suddenly and you realise something is restricting your arm, it is sore to bend your wrist....perhaps you did too much gardening yesterday..... more mumbled voices in the background.....now a high pitched buzz is somewhere in the rooma young woman wearing dark blue pyjamas is flicking some buttons on a microwave oven over in the cornerthey must be making some hot chocolate.....she comes to you and says something about "observing" you....you didn't realise you were being watched so closely.... better be careful what you do and say.... This is getting very strange and frightening..... perhaps it is best to stay very quiet and still so as not to attract attention..... actually you're feeling quite exhausted by the weight of your sore arm and you drift back to sleep.

Within the environment, pay attention to the following risk factors:

- > noise can be very disorientating, for example patient call systems, intravenous monitors, bed pan washers, a TV which is not visible, banging doors, the unfamiliarity and frequency of sounds
- > light, inappropriate to day and night, artificial or daylight can disrupt sleep-wake cycles
- > view, perhaps of unfamiliar clinical objects, or of other people in bed
- > unintentional restraint such as intravenous therapy or cardiac monitor
- > unfamiliar staff, routines, uniforms, signage
- > different position of bed in relation to toilet.

Key points

- > *delirium has many different risk factors*
- > *there may be many different causes for the health care team to address*
- > *older people are at high risk of delirium due to an increased number of predisposing factors*
- > *the older person's experience of the environment can be a precipitating factor.*

Presentation, detection, assessment and diagnosis of delirium

5

Presentation

Delirium can present with a wide variety of symptoms which may vary from person to person or even throughout the course of the day in one person. A person seen at a morning ward round or in the hostel dining room for breakfast may be quiet and coherent but by that night may be hitting out at staff, extremely confused and uncooperative. This varying picture can cause difficulty in diagnosis, treatment and care. On the other hand, this degree of fluctuation is virtually diagnostic of delirium.

Lipowski (1990) described 3 subtypes of delirium:

Hyperactive-hyper alert type where the person shows increased psychomotor activity and increased vigilance. These people can present with agitation and are usually detected and often present as emergencies. This presentation

causes great disturbance in general hospital wards as the person may not accept treatment and may even interfere with the treatment of others. They may also be aggressive to staff who try to implement treatments.

Hypoactive-hypo alert type which is often missed, as the less active person does not attract as much attention. These people may sit quietly confused, never being diagnosed or being misdiagnosed as depressed.

Mixed type which varies between the two previous types. The person will have quiet, withdrawn periods interspersed with episodes of agitation. The individual symptoms and signs are not exclusive to delirium, leading to the diagnostic dilemma. Delirium is often mistaken for other psychiatric conditions, especially if a careful history of the onset is not obtained.



The 7 key symptoms and signs of delirium are:

Impaired attention	Impaired attention is the core cognitive disturbance. People are easily distracted and perform poorly on testing of attention (e.g. serial sevens). In interactions with staff and other people the person will be distractible and unable to concentrate on conversation.
Disturbance of memory	People with delirium show disturbance of memory. Staff may notice that they constantly have to remind someone of where they are and why they are receiving treatment or care.
Disorientation and disorganised thinking	People with delirium show disorientation and disorganised thinking. This can cause people to be confused about where they are, why they are there and why they are being treated in a particular way. It can be very difficult when these disturbances fluctuate as it can lead to the impression that the person is behaviourally-disturbed or deliberately obstructive.
Disturbance of sleep-wake cycle	Disturbance of sleep-wake cycle is another important feature of delirium and may cause increased confusion. This can often be a total reversal of sleep pattern with the person awake at night when there are fewer staff available to provide care. This feature, coupled with increased activity, can make care challenging and can result in over-sedation of the person.
Disturbance of psychomotor activity	Disturbance of psychomotor activity can also result in the person being somnolent, apathetic or swinging between both states.
Altered perceptions	Altered perceptions occur in delirium and can lead to a misdiagnosis of psychotic illness. People can experience illusions, delusions and hallucinations. Poor lighting and busy, noisy environments such as a hospital ward can compound these. These disturbances can lead a person to be suspicious of, and hostile towards, staff.
Emotional disturbance	Emotional disturbance is also a feature of delirium and can cause the person to be aggressive towards others and staff, or may lead to the misdiagnosis of depression.

Detection

There are many factors which contribute to delirium not being identified, recognised or diagnosed:

- > cognitive disturbances may lead to a misdiagnosis of dementia, particularly in the older person
 - > pre-existing dementia may mean a superimposed delirium is overlooked
 - > the multitude of names given to delirium and changing diagnostic criteria creates non-recognition
 - > the hypoactive or mixed presentation is easily overlooked, particularly in a busy clinical environment
 - > even if worsening confusion is noted, there may be a misperception that it is normal for an older person to be more confused. This in turn leads to lack of monitoring or follow up
 - > the hyperactive variety is not easily missed but may be mistaken for psychiatric illness and therefore not investigated or treated with inappropriate medication
- > the person may not be able to provide an accurate report of the symptoms they are experiencing
 - > vascular dementia can have sudden deterioration and dementia with Lewy bodies can have a fluctuating course. In some cases specialist assessment is required to make the differential diagnosis.

One elderly man, who was nearing the end of an elective admission, kept a group of staff hostage in their office by threatening them with a drip stand until security were able to come and overpower him. It was later discovered that he overheard a staff discussion on moving patients in order to allow another admission and misinterpreted this to mean that they were planning to dispose of him. He felt he had to act to defend himself. It was found that he had an underlying pneumonia, which had not been suspected previously.

Events might not always be as dramatic as this and the person may not clearly recall the events or their reasoning. However, all of the symptoms of delirium



make it more difficult for the person to comprehend where they are and what is happening to them or to understand explanations that are given to them. They might also be unable to give a clear account of their physical symptoms. They can experience fear, uncertainty, mistrust and embarrassment. All staff caring for people in this situation need to be conscious of this in all interactions with the person.

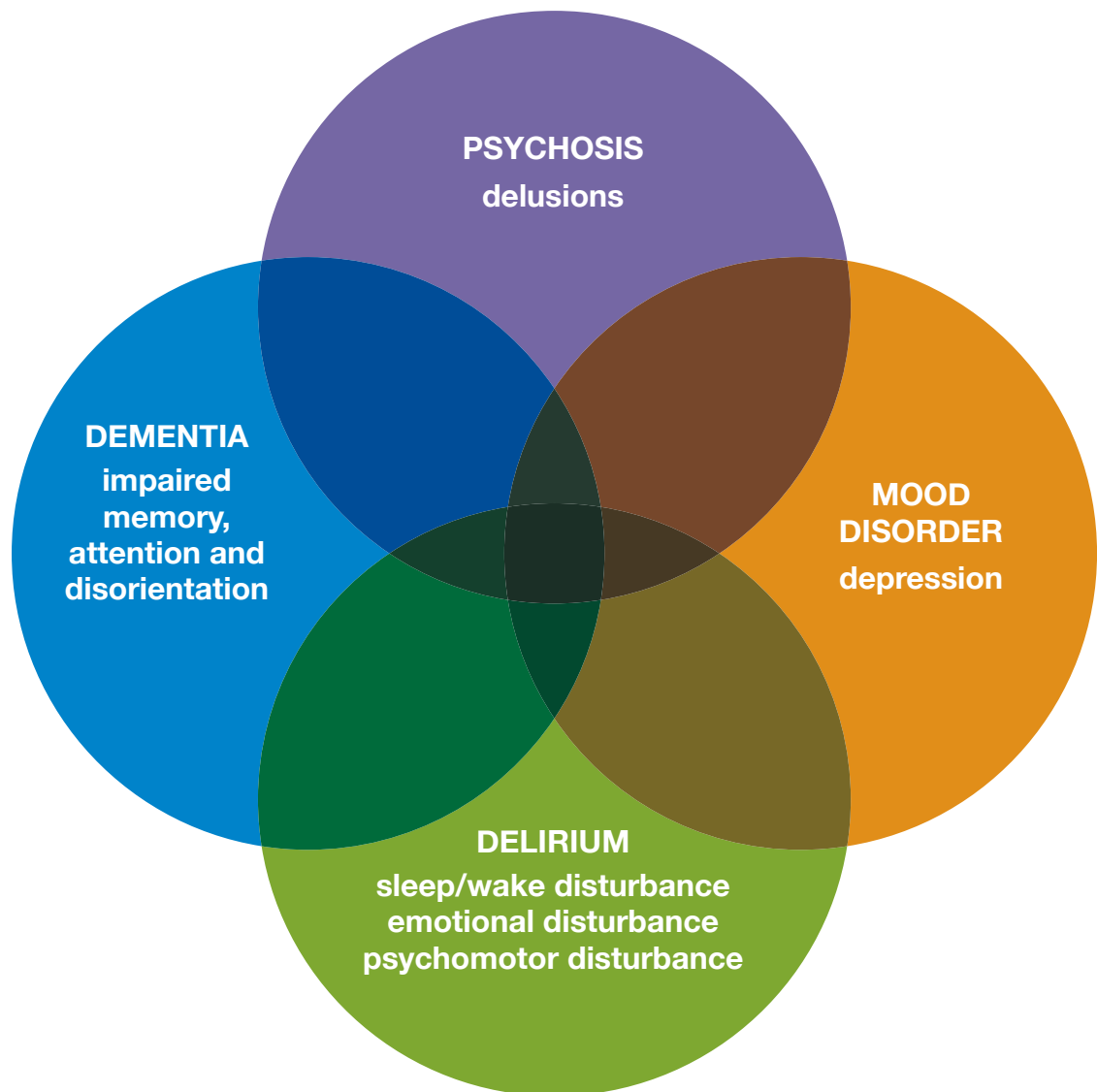
Crammer (2002), a psychiatrist, provides an interesting personal account of his experience of a probable delirium from notes made immediately on recovery. He describes four brief episodes of arousal in a five day period of unconsciousness. His experience included: believing he was being flown to different countries; was at a party with other doctors and that nurses were trying to kill him by

electric shock. On recovery he was able to explain the development of some of these false beliefs; they were plausible, created by the need to understand what was happening and illustrate how frightening a delirium can be.

It is important to understand the course of delirium. It has been thought of as a brief illness, however studies have shown that delirium can last from less than one week to more than two months. When an older person presents with cognitive impairment the health care professional needs to bear in mind that the person might be anywhere on the delirium illness trajectory. Older people are more likely to have a prolonged course and less likely to make a full recovery (Levkoff, 1992 and Rockwood, 1993).



Figure 1: Delirium and other mental ill health overlap



Awareness and detection

The major barrier to delirium recognition is awareness (National Institute for Clinical Excellence, 2010). It is key that all staff caring for older people have a heightened awareness of the risk factors and features of delirium. The 2010 NICE Guidelines state that the phrase 'Think Delirium' should be in the forefront of the minds of those working in healthcare settings.

All older people in hospital are at high risk of delirium: more than 1 in 5 people over 65 years of age in hospital will have, or will develop, delirium. In particular, people with the risk factors listed in chapter 4 are much more likely to get delirium.

Although older people with dementia may be more disoriented in a new environment, this is not always an acceptable explanation for deterioration in other aspects of their cognitive

functioning. A formal cognitive assessment should be part of the routine in the admission/first contact process to any health/residential care. If possible the process should include comment on how the person's state varies from the norm, by someone who knows them well. This assessment forms a baseline which should be continually referred back to.

Assessment and diagnosis

There are two basic steps in delirium diagnosis:

1. Detecting altered mental status
2. Establishing that these changes are of acute onset (hours, days, 1-2 weeks) and/or show a fluctuating course.

Thus, delirium diagnosis requires a combination of 'one to one' assessment and knowledge of any change usually obtained from the referral letter, relatives, carers and staff who know the person.

The NICE guidelines suggest the following common markers of delirium:

- > **Cognitive function:** for example worsened concentration*; slow responses*; confusion
- > **Perception:** for example, visual or auditory hallucinations
- > **Physical function:** for example, reduced mobility*; reduced movement*; restlessness; agitation; changes in appetite*; sleep disturbance
- > **Social behaviour:** for example, lack of cooperation with reasonable requests; withdrawal*; or alterations in communication, mood, or attitude.

Be particularly vigilant for behaviour changes that suggest hypoactive delirium (marked *).

It is important to note that the person with delirium is often drowsy and incapable of undergoing cognitive testing or even a brief interview. Such people often do not receive a diagnosis, with comments like "unable" written beside the cognitive testing score proforma. However, non-comatose patients who show significantly reduced levels of alertness are likely to have delirium and it is safest to assume that this is the diagnosis. For example, the person could be retaining carbon dioxide, have low blood glucose, or have opioid or other medication toxicity. Classifying the person as having delirium and then taking the standard next steps of assessing the trigger(s) will likely reveal these potential causes.

In people who are alert enough to perform cognitive testing, it is valuable to use standard cognitive tests such as the Mini-Mental State Examination (MMSE) to help with severity grading and tracking of progress. Additional tests of attention, such as asking the person to state the months of the year in reverse order, increase sensitivity to delirium; many people with delirium are orientated but show deficits in sustained attention to more prolonged tasks. Inattention can also be detected by observation; people who find it difficult to comply with clinical examination, for example not taking deep breaths when asked during chest auscultation, or selecting the toothbrush instead of the hairbrush when asked to brush their hair, may have delirium.

People may be highly distractible and unable to maintain a normal conversation. Sustained normal conversation is almost always not possible with a person with delirium, in contrast to dementia. The question, "Am I having a normal conversation with this person?" is useful to keep in mind.



The degree of psychomotor activity should be documented. Some people are hyperactive and agitated, but higher proportions are hypoactive, with another group showing a mixed picture and others showing no obvious psychomotor change. Hypoactive delirium is particularly important to recognise because it may be mistaken for depression or dementia.

The person should also be assessed for psychotic symptoms. It is unusual for a person to volunteer that they are experiencing hallucinations and so it is essential to ask about this explicitly. Paranoia or suspiciousness may be apparent in the consultation but asking the person about any concerns or worries may help to elicit these features. It is also important to determine if the person is distressed or fearful. Pain,

thirst, hunger and other symptoms are common in delirium but also may not be volunteered and so should be elicited.

There are many assessment scales both for screening and detection of delirium but in the general ward or residential aged care setting these may not be routinely used or even available. See chapter 10 for some of these scales. Some specialist units have introduced scales into routine practice. Cognitive tests such as the Mini-Mental State Examination can be useful in monitoring progress in delirium but because scores can be low in people with dementia they cannot be used as diagnostic instruments: they should be used as part of a wider assessment involving other aspects of mental status and, crucially, knowledge of onset and course.

Apart from the 'one-to-one' or bedside assessment, a good history is essential because in order to assess change one must know the person's baseline function. When obtaining a history, information will come from multiple sources, and must include:

- > review of food and fluid intake
- > review of medication chart
- > falls history
- > infection risks
- > bladder and bowel function
- > prior cognitive status
- > prior functional status
- > alcohol/drug misuse history
- > past medical conditions/comorbidities
- > social history, changes to living arrangements or recent stressful events
- > identification and review of sensory impairments
- > identification, assessment and evaluation of pain management.

Collateral history is required to establish the onset and pattern of cognitive impairment. Indeed, a 2010 study found that the question 'Do you think [name of person] has been more confused lately?' (the 'Single Question in Delirium' or 'SqID') addressed to a caregiver was 80% sensitive in detecting delirium compared with the gold standard of formal psychiatric assessment (Sands et al, 2010).

Longstanding confusion with no sudden deterioration may indicate dementia. However, even if there is an established history of dementia, a sudden recent deterioration may indicate that delirium is superimposed. Evidence of sudden onset and fluctuating course is required for the diagnosis of delirium.

Specialist referral may be necessary to clarify the diagnosis. In acute hospitals any older person with suspected delirium that does not respond to initial management or for whom there is doubt about the diagnosis should be considered for referral to a specialist in medicine of the elderly, or liaison psychiatry.

There may also be issues regarding placement of the person during treatment, as agitation and aggression are difficult to manage on a general ward. Persons with delirium, especially with the hyperactive hyper-alert type, are often given psychotropic medication prior to consultation, which can complicate the picture. There can also be difficulties for psychiatrists who may diagnose delirium but be unable to give advice as to the underlying causes (See case study 1). Close cooperation between the specialties is very important if such issues are to be resolved.

Key points:

- > *be aware of those at risk*
- > *take a thorough history and plan re-assessment points*
- > *delirium has key features of sudden onset and variable course*
- > *do not assume it is usual for elderly inpatients to be confused*
- > *pay attention to change from baseline and ensure all staff know to report this.*

Investigation of cause, treatment and care

6

Nursing and medical assessment

Delirium can indicate acute, life-threatening illness or drug intoxication. Where delirium is suspected, it is essential to assess airway, breathing and circulation, finger prick blood glucose, and recent medication history (particularly changes in medications and regime). This rapid screen will help to determine if the person has an acute, severe physiological disturbance such as low blood glucose or low blood pressure.

Once acute life-threatening illnesses or processes have been excluded, more detailed assessment can be performed. The examination should include:

- > vital signs (temperature, pulse, respiration, blood pressure, oxygen saturation)
- > mental status examination (arousal, attention and orientation)
- > neurological signs
- > chest (signs of infection)
- > urine and bladder function
- > bowel function and constipation
- > signs of dehydration
- > blood sugar level.

Also screen for:

- > urinalysis and MSU
- > full blood count
- > urea and electrolytes
- > glucose
- > calcium
- > liver function
- > chest x-ray

- > ECG
- > specific investigations based on clinical features.

Note that an adequate work-up of delirium involves not simply identifying and treating the presumed 'cause' but documenting all the important predisposing and precipitating factors, as mentioned above. For a person with a hip fracture, for example, delirium can be the result of the combination of multiple acute factors such as operative stress, pain, dehydration, acute kidney injury, anaemia, opioid toxicity, low blood sodium, infection, and psychological distress. Failure to identify and manage all the acute factors will likely result in a worse outcome. Also, where possible, the effects of predisposing factors such as chronic treatment with anticholinergic drugs, sensory impairment and malnourishment should be addressed.

Many cases of delirium do have an identifiable precipitant, such as a urinary tract infection or pneumonia. However, in cases without a clear major precipitant a more detailed search is necessary. A wide range of disorders which may not be obvious during initial assessment can cause delirium, for example, cholecystitis, endocarditis, hypomagnesaemia, vasculitis, limb ischaemia, vitamin deficiencies, alcohol/benzodiazepine/antidepressant withdrawal, adrenal insufficiency, etc. There may also be primary brain causes that are not immediately apparent, such as stroke, venous sinus thrombosis, viral encephalitis, limbic encephalitis, tumours, and non-convulsive status epilepticus (see the mnemonic I WATCH DEATH discussed in Chapter 4).

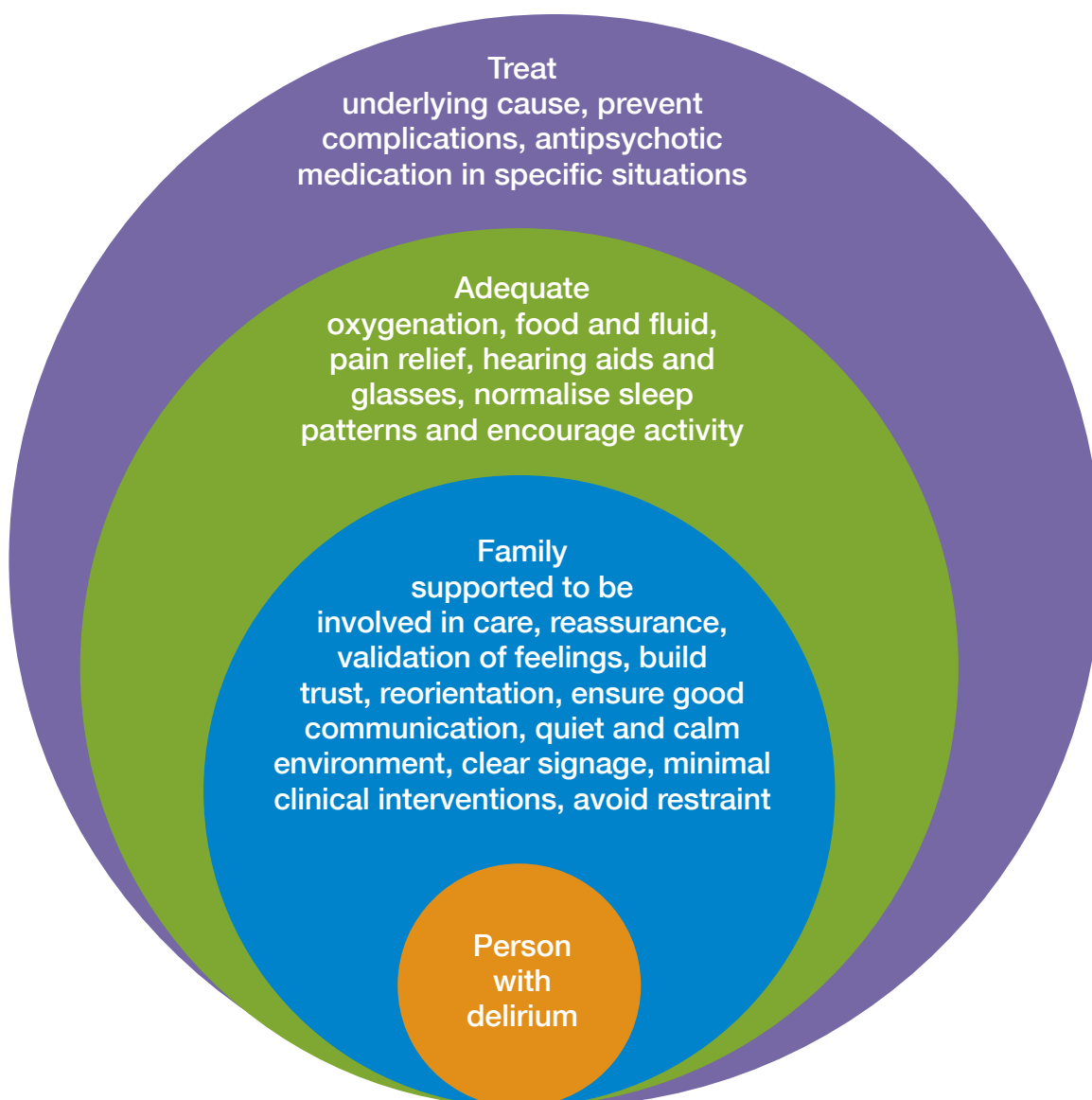
Holistic approach to care and treatment

As we have described so far delirium is a complex interaction of physiological and environmental predisposing and precipitating factors which demand a holistic person-centred approach to care and treatment.

An important and neglected aspect of delirium management is distress. In some cases the distress is manifest by

agitation and hyperactivity. A person-centred approach recognises that non-pharmacological care and treatment approaches must be tried first. These may include giving repeated simple reassurance, checking for pain, urinary retention, constipation, thirst, etc., providing a calm and stable environment, and involving relatives where possible. One to one nursing can be extremely helpful and indeed essential if the person is at risk of injury.

Figure 2. Holistic care



Some key elements in providing a holistic approach are discussed further below.

Environmental and staffing interventions

The environment of the older person with delirium includes everyone the person comes into contact with, as well as the sights, sounds, smells and physical objects the person experiences. Many aspects of just being in hospital are thought to exacerbate the symptoms of delirium. Over-stimulation in a busy, noisy ward with changing staff can worsen confusion. Equally a quiet single room with blank walls, infrequent human contact and under stimulation can mean a person becomes increasingly withdrawn, preoccupied with his or her own thoughts and more confused and frightened. The pattern of activity on a ward, which can be busy day and night, can exacerbate sleep-wake disturbance. It is helpful to:

1. Nurse the person in a quieter corner of the ward where they are least exposed to the 'traffic' of the ward but close enough to nursing observation. Nursing in a single room can be helpful provided the person does not become isolated; 'one on one' nursing is the ideal.
2. Minimise noise levels.
3. Have a non-cluttered care environment with orienting objects visible and modify the environment to reduce risk of injury (low bed, hazards removed, and no restraints).
4. A nightlight may help to reduce fear and anxiety at night (Meagher, 1996 and Jacobson, 1997).
5. Minimise the number of staff dealing with the person perhaps by appointing a key nurse each shift and in maintaining this staff allocation on subsequent days.
6. Offer and initiate opportunities for the person to express their feelings. *How are you today? How are you feeling? What would be most useful/comforting right now? What do you need?* Importantly staff must provide time for responses and listen carefully to understand the person's perspective.
7. Reassure the person that they are known, safe and cared for. For this to be genuine staff need to know as much as possible about the person. *Always address the person by their name, approach with a smile and eye contact so they see you before you before you speak.*
8. Frequently orientate the person to their surroundings, staff, day and time etc. This can be through having familiar objects such as their own clothing and photographs as well as through conversation. Memory impairment is a common symptom of delirium so it is often necessary to repeat information.
9. A person suffering from delusions or hallucinations may be hostile and suspicious. Conciliatory approaches, distracting from the suspicions rather than contradicting, are helpful. Verification is a helpful cognitive intervention - this means acknowledging the person's fear and providing reassurance.
10. Ensure the person has their hearing aid and glasses as delirium may be exacerbated by sensory impairments.

11. Inform relatives of what is happening, providing an explanation of what delirium is, request their help in reorientation and reassurance. Ensuring a relative understands what is happening and has the support they need might be key to managing the person's delirium as the presence of the trusted and familiar loved one could be crucial to progression of the delirium and the person's level of distress.

The person with dementia and delirium

The older person with dementia and delirium is very vulnerable and will need special consideration. It is important to know their level of cognitive function prior to this episode of delirium. Treatment and care should aim to return them to this level of functioning as quickly as possible. The risk for a person with dementia is that less recovery is expected and accepted. The person may be extremely fearful and agitated, perhaps operating on a "fear level". This state requires validation of feelings no matter how bizarre or irrational they may seem. It is important to focus on the person's feelings rather than the content of the hallucination or delusion and to use person-centred communication. Ways this can be done include:

- > anyone attending the person should give their name and why they are there
- > talking to the person at eye level
- > not overloading the person with too much information
- > ensuring that an explanation of all procedures is given and consent of the person with dementia is gained. Consent in this context can be in the

form of facial expression and or body language - verbal or written consent may not be possible

- > orientating the person as much as possible to time of day, where they are and why
- > ensuring that when awake the person has company and engagement in a meaningful activity; having nothing to do and nobody to interact with will exacerbate the delirium
- > physical restraint, which is the last strategy to be considered.

Supporting families

Having a family member experience delirium can be highly distressing. Families may be highly anxious about the functional decline and cognitive changes. Some questions a family might like to ask include:

- > What is delirium?
- > Why has my relative developed delirium?
- > How can I tell if they have delirium or if they are just very ill?
- > How long does delirium usually last?
- > Will it have any lasting effects on their physical and mental health?
- > Is it a psychiatric illness?
- > How will it be treated?
- > What can I do to help?

Supporting family members to stay overnight will assist the family and the person with delirium. Providing them with a comfortable bed, either close to the person or within the unit/ward is recommended.

Assessment and management of pain in delirium

Pain is common in delirium and can be difficult to assess. Several studies have found that pain can trigger and/or maintain delirium, and also that pain is under-detected in delirium. A high index of suspicion is required: in every person with delirium it is crucial to consider the role of pain. When pain is clearly present or suspected, it should be managed carefully with frequent adjustments of the dose of medications and with non-pharmacological methods such as heat packs to provide comfort as is tolerable and safe.

Identifying the cause of pain, preventing and resolving where possible are important. In older people without contraindications it is appropriate to use regular paracetamol by the oral or rectal routes. Beyond this, the main choice is opioids. Non-steroidal anti-inflammatory drugs should generally not be used in older people because of the very high rates of side effects, including acute kidney injury and gastro-intestinal bleeding. Nefopam is contraindicated in delirium because it is highly anti-cholinergic. Tramadol is also inappropriate in delirium because of the high risk of inducing hallucinations. Codeine and dihydrocodeine may be appropriate in mild delirium where there is mild pain not responding to paracetamol alone. However, an alternative approach is to use low dose oxycodone (0.5 or 1mg every 6 hours, for example) because there is some evidence that this opioid is less likely to cause delirium than morphine or codeine/dihydrocodeine. Alfentanil also appears to carry a lower risk than

morphine. For localised pain such as lower back pain secondary to vertebral crush fracture, a lignocaine patch can be highly effective and can reduce the need for systemic medication.

For the person who has been on a stable dose of opioids for pre-existing pain prior to the delirium episode, it is important to consider new onset renal or liver dysfunction or dehydration which may make the person less able to tolerate this dose.

Advice from a pain or palliative care team can be helpful when utilising opioids other than morphine, as most clinicians are less familiar with their indications, dosing, dose equivalents and clinical scenarios for their use.

Pharmacological treatment

Where the above measures fail and the person is still markedly distressed, or is dangerous to themselves or others, or in whom life-saving treatment such as intravenous antibiotics or oxygen cannot be administered because of agitation, low dose haloperidol (for older people an initial dose of 0.25mg every 30 minutes, increasing to 0.5mg if the initial dose was not effective) is the first line treatment (assuming no contraindications e.g. Parkinson's and Lewy Body Dementia). If this fails after 3-4 doses then low dose lorazepam (0.5mg to 1mg) may be required. However, benzodiazepines can worsen and prolong delirium and so should only be used if absolutely necessary.

It is also common for a person without hyperactivity and agitation to be experiencing considerable distress. Again, reassurance and provision of a stable and non-threatening environment, involvement of relatives, etc., are the initial steps. There are occasions where

persistent and distressing psychotic symptoms are present as part of delirium and here it can be appropriate to prescribe haloperidol or another antipsychotic; a psychiatry consultation is helpful in these circumstances.

Prescription and administration of 'as required' (PRN) benzodiazepines in such circumstances need clear MDT communication.

The prescription needs to clearly state:

- > criteria for administration particularly in residential settings or non-acute settings where a doctor is not immediately available (see box below for suggestions)
- > the dose, the route, the frequency and maximum number of doses.

Nursing staff administering medication need to clearly document the dose, frequency, route and effect. The person should be closely monitored and the effect of the medication to be noted. The prescription should be reviewed every 24 hours to ensure overuse is not occurring. It should be a short-term treatment that does not continue for more than 7 days (National Institute for Clinical Excellence, 2010).

Prevent complications

People with delirium are at risk of over-sedation, falls, pressure sores, nosocomial infections and further cognitive decline. They need to be kept under medical review to prevent these. Early mobilisation is important. Catheterisation should be avoided if possible and instead incontinence pads or regular toileting and prompting used. Quality nursing care, a person-centred approach and consideration of environmental factors are important in reducing the risk of severe complications of delirium which have implications for the person, their family and health care resources.

The delirium ward

Where treatment of the person with delirium occurs is often a contentious issue. Staff on general wards may feel unable to cope with the behavioural disturbance and psychotic symptoms that can be present in delirium. For staff the experience can be highly distressing, and impact significantly on workloads and safety. In some areas there are specialised delirium wards, with staff

Questions nursing staff should ask before administering "as required" (PRN) benzodiazepines

- > What objective measure of this person's behaviour change has been used e.g. a behaviour assessment form?
- > What is the behaviour communicating to us about the person's feelings and needs?
- > Is this person's behaviour posing a risk to them or preventing essential investigations or treatment?
- > Is this person's behaviour posing a risk to others?
- > Have we exhausted all other possible care strategies to help this person with their feelings and needs and so to reduce/manage this behaviour?

trained in dealing with both the medical and psychiatric issues. However in the absence of such a setting it should be remembered that delirium is a serious illness and a medical emergency. Psychiatrists can provide advice on psychotropic drug use and all staff should have training in dealing with people who have violent behaviours. Training should contain the following messages and concepts:

- > delirium is a medical emergency: on first assessment, exclude life-threatening physiological disturbance and/or drug intoxication
- > find and treat all underlying causes
- > careful assessment and management of pain is essential
- > use environmental, behavioural and cognitive interventions to reduce distress and improve orientation
- > psychotropic medication may be helpful but needs to be used with care in elderly people.

Key points

- > *the management of delirium requires identification and treatment of all presumed precipitating causes*
- > *brain function should be optimised through modification of all remediable clinical variables and person-centred care*
- > *any distress should be identified and treated*
- > *in many cases, older people require specialist assessment by a geriatrician because of the multiple medical issues involved*
- > *family members require care and support and may be key to the progression and experience of delirium*

Prevention is better than cure

Several studies have demonstrated that delirium is partly preventable; perhaps by up to 30%. The UK National Clinical Guidelines Centre (2010) recommends that systematic approaches to delirium prevention are required and these should be delivered by a multidisciplinary team trained and competent in delirium prevention.

Preventative measures should aim to do the following:

- > ameliorate the effects of cognitive impairment and/or disorientation
 - > avoid dehydration
 - > treat any infections early
 - > avoid urinary catheterisation where possible
 - > avoid constipation
 - > avoid hypoxia
 - > mobilisation and avoidance of bedrest during the day where possible
 - > detect and treat pain
 - > review drugs to reduce negative effects on brain functioning
 - > provide adequate nutrition
 - > ameliorate sensory impairment where possible
 - > promote good sleep
- > develop staff knowledge and skills in the prevention, detection and management of delirium
 - > minimise environmental factors (see table below for specific details)
 - > provide orientation information, such as having an orientation board which clearly states the day, date and location
 - > avoid use of physical restraints, including using tables to inhibit a person standing up
 - > avoid psychoactive/psychotropic medication
 - > ensure equal access to care regardless of cultural or linguistic background.

Large-scale implementation of these types of multi-component interventions tends to require a systematic, top-down approach involving senior managers as well as health care professionals, and rolling programmes of training and audit to ensure adherence. However, individual clinicians and nurses can also apply these measures in day-to-day practice, especially where they are frequently caring for people at high risk of delirium.



Strategies to prevent delirium

Environmental Strategies	Care Strategies
Lighting appropriate to time of day – windows with a view to outside, curtains and blinds open during the day, and minimal lighting at night may reduce disorientation. Utilise natural lighting as far as possible.	Encourage/assist with eating and drinking to ensure adequate intake
Provision of single rooms in hospital – reduces the disturbance caused by staff attending other people in the same room	Ensure that a person who usually wears hearing and visual aids are assisted to use them
Quiet environment especially at rest times – noise reduction strategies (e.g. use of vibrating pagers rather than call bells)	Monitor and assist person to maintain regular bowel function – avoidance of constipation
Encourage family and carer involvement – includes encouraging them to visit and to stay overnight by providing pull out beds	Encourage and assist with mobilisation and regular repositioning to maintain comfort
Provision of clock and calendar that clients can see.	Encourage independence in ADLs and provide assistance as required
Encourage family/carers to bring in client's personal and familiar objects	Medication review
Avoid room changes – frequent changes may increase disorientation	Promote relaxation and sufficient sleep – can be assisted by regular mobilisation, massage, encouraging wakefulness during the day
Limit use of noisy equipment at night and plan the placement of utility rooms to be as far as possible from the person's room	Manage discomfort or pain
Stable staffing within minimal changes for the person to get used to	Provide orienting information including name and role of staff members
Daily visitor program for cognitive orientation, communication and social support	Minimise use of indwelling catheters



Environmental Strategies	Care Strategies
Therapeutic activities program for cognitive stimulation and socialisation	Avoid use of physical restraints
Early mobilisation program	Avoid psychoactive drugs
Non-pharmacological sleep management	Use of interpreters and other communication aids for people from culturally and linguistically diverse backgrounds
	Use of Aboriginal and Torres Strait Islander liaison officer for ATSI populations

Adapted from AHMAC Clinical practice guidelines for the management of delirium in older people (2006)

Key points

- > *prevention is better than cure*
- > *there are clinical, educational, social and environmental factors which should be in place so to prevent delirium.*

Discharge, follow-up and ongoing care

8

Delirium is commonly an indication of underlying frailty. Discharge planning should involve appropriate multidisciplinary assessment and follow-up. This may occur routinely in aged care wards but may not occur for older people in different settings. Even if a person can go home after assessment in the Emergency Department, it is good practice to ensure that proper follow-up is in place via the general practitioner.

Two-thirds of older people with delirium also have dementia. It is always necessary to establish if a person with delirium may also have dementia, because of the implications for acute treatment and monitoring of the delirium (i.e. assessment of recovery), and because of the implications for follow-up after discharge. Importantly, around 50% of dementia is never diagnosed (in inpatient or outpatient settings), and even people for whom a diagnosis of dementia has been made, may not have the dementia documented in the acute hospital medical records. Therefore it is crucial to screen for undiagnosed dementia in a person without known dementia. Cognitive assessment during delirium is not informative, so this screening during delirium relies on informant history. The Informant Questionnaire for Cognitive Decline in the Elderly (IQCODE) is a very useful tool for this purpose (refer to the tool in Chapter 10 – Assessment Scales).

A person who may have dementia should be assessed formally once the acute illness and delirium resolve.

In cases where there is a clear history of longer-term (> 6 months) cognitive and functional decline, assessment by a dementia specialist in the acute hospital or direct referral to a memory clinic or Older Persons Mental Health team is appropriate. Where there is doubt the person can be assessed by the general practitioner in a general geriatrics outpatient clinic. Additionally, older people with delirium who do not have dementia at the time are at 2-3 fold higher risk of developing dementia and therefore should be monitored by the general practitioner with cognitive screening. In no case should older people with delirium be discharged without some form of follow-up involving assessment of cognition. Post-delirium counselling should also be considered as delirium is often remembered as a very distressing experience which can create fear about reoccurrence and lack of confidence in one's cognitive function.

Key points

- > *discharge planning should involve the multidisciplinary team*
- > *older people with delirium have a high risk of developing dementia so should be closely monitored post discharge*
- > *post-discharge follow-up is crucial.*



Case studies

Case One - Joan

Joan is a 78 year old woman, admitted 10 days previously with a foot injury and a history of recurrent falls, referred by a surgical team to the psychiatry liaison service for assessment of confusion. This was not noted to be a major problem on the ward but her family had expressed concern. She was seen on the ward the next day. Her discharge had already been planned and as the psychiatrist saw her, the ambulance was waiting to take her home.

Joan was able to give a reasonable history of her reason for admission and progress since though was unsure how long she had been in hospital. She was unsure if she was going home and revealed on questioning that she felt there was a staff conspiracy against her. She was found on testing to be disoriented in time and place and to have poor concentration and recall. She had no physical complaints.

Examination of nursing notes revealed that Joan had moved wards once since admission and subsequently moved within the second ward to a single room when she developed diarrhoea. Around that time she was noted to be unsettled at night and since then was noted to sleep poorly. However, she had not required medication and posed no management problem on the ward. The diarrhoea had settled after 2 days.

Discussion by the liaison nurse with family members revealed that she had no previous psychiatric history and no cognitive dysfunction prior to admission. They were very concerned at her current presentation and described a worrying incident the previous day. She had been

fine when they came in to visit and seemed back to her usual self. However, after she had walked with them to the shop they noticed that she became very confused and even suspicious and aggressive. She was later noted to be settled by staff.

Staff reported that she was no management problem, sitting quietly in her room most of the time. They agreed she was confused at times but felt this was probably normal for a lady of her age in a new setting.

The psychiatrist felt she had delirium but was unsure if it was due to previous diarrhoea or some other cause. This was discussed with the surgical team who agreed not to discharge her pending medical investigation. A medical review revealed that she had a swollen left leg and low oxygen saturation. She was transferred to a medical ward where she was treated for a deep vein thrombosis and a pulmonary embolus.

Commentary

This is a good example of a delirium which was almost missed because Joan "was no management problem" and staff assumed that being "confused at times" "was probably normal for a lady of her age".

It illustrates that health care staff have to actively exclude delirium rather than wait for a sign or symptom to investigate. In this case the delirium was an indicator of severe illness which was not yet presenting any other symptoms that Joan was able to report. However, nursing or medical assessment would quickly identify the significant signs of hypoxia and the swollen leg.

Case Two - Ray

Ray, a 70-year-old man, known to have early cognitive impairment, was admitted to a medical ward in the early afternoon. He had sustained a fall at home and had been on the floor for some hours. He was admitted for treatment of a urinary tract infection, dehydration and for further assessment of his falling. He had no previous medical history of note and was a relatively fit and strong man.

That evening he was noted to be confused. Later that night he became loud and aggressive, pulling out his intravenous line and hitting out at staff. He went to the next person's bed and also pulled out his line. He then attempted to break a window on the ward. He was eventually physically restrained by staff and given 5mgs of haloperidol intravenously. During the restraint, one nurse sustained an injury that necessitated her going off duty. He continued to be agitated and the

intramuscular haloperidol was repeated on two occasions, giving him a total dose of 15mgs in a nine-hour period.

The following morning an urgent psychiatric referral was made. He was seen by the psychiatrist that afternoon. There had been no further incidents; indeed he had not got out of bed since and was sleeping much of the time. He was roused by the psychiatrist. He walked stiffly and slowly with assistance to the visitors' room for interview. His speech was slurred and he had difficulty following the conversation.

He was also drowsy but easily rousable. He had no recall of the events of the previous evening and denied feeling angry or aggressive towards staff but admitted being concerned at being kept in this place and was unsure of people's intentions towards him. He had to be reminded several times of the psychiatrist's identity. He was disoriented in time and place and had poor concentration and recall.





His family were visiting at that time and they were able to give additional information. He had early dementia but generally coped well at home alone with assistance from a home help five days per week. They found him to be much more confused than before and had never known him to be aggressive. He had no history of psychosis or alcohol abuse. The psychiatrist made a diagnosis of delirium with side effects from haloperidol complicating the picture. His further care was discussed with nursing and medical staff and it was agreed that he remain on the medical ward for continued treatment and investigation. The psychiatric team would assist with prescription of psychotropic medication and behavioural management.

He was started on risperidone 0.25mg as required twice daily. A key nurse was nominated each shift and she concentrated on giving clear instructions

and reorientation techniques. He was encouraged to be mobile. Family members were encouraged to sit with him in the evening. All medical treatments were continued. He made a gradual recovery with no other serious incident. His lorazepam was discontinued after three days and risperidone after four days. He was able to return home with his previous level of support and had brief follow-up by the psychiatric team.

Commentary

This case emphasises the importance of identifying risk factors and planning care to prevent delirium; perhaps one-to-one reassurance and reorientation from an allocated nurse would have reduced the level of Ray's agitation and aggression and could have avoided the over-sedation. Over-sedation carries an increased risk of dehydration and probably prolonged his recovery.

Assessment scales

It is important to identify the differences between these tools and to use them for the right task. The Delirium Rating Scale (Trzepacz, 1988), the Confusion Assessment Method (Inouye, 1990) and the 4AT are designed to identify delirium but the IQCODE is for identifying dementia.

The Delirium Rating Scale

The Delirium Rating Scale (Trzepacz, 1988) is based on the DSM-III criteria for delirium and consists of 10 items to assess the symptoms of delirium. It takes 10 minutes to complete and is designed for use by the clinician

1. Temporal onset of symptoms

0. No significant change from longstanding behaviour, essentially a chronic or chronic-recurrent disorder
1. Gradual onset of symptoms, occurring within a six month period
2. Acute change of behaviour or personality occurring over a month
3. Abrupt change in behaviour occurring over a one to three day period

2. Perceptual disturbances

0. None evident by history or observation
1. Feelings of depersonalisation or derealisation
2. Visual illusions or misperceptions including macropsia, micropsia, e.g. might urinate in waste basket or mistake bedclothes for something else
3. Evidence that the patient is markedly confused about external reality, not discriminating between dreams and reality

3. Hallucination type

0. Hallucinations not present
1. Auditory hallucinations only
2. Visual hallucinations (with or without auditory hallucinations) present by patient's history or inferred by observation
3. Tactile, gustatory or olfactory hallucinations present (with or without visual or auditory hallucinations)

4. Delusions

0. Not present
1. Delusions are systematised i.e. well-organised and persistent
2. Delusions are new and not part of pre-existing psychiatric disorder
3. Delusions are not well circumscribed. They are transient, poorly-organised and mostly in response to misperceived environmental cues

5. Psychomotor behaviour

0. No significant retardation or agitation
1. Mild restlessness, tremulousness or anxiety evident by observation and a change from the patients usual behaviour
2. Moderate agitation
3. Severe agitation needs to be restrained, may be combative or has significant withdrawal not due to major depression or schizophrenic catatonia

6. Cognitive status during formal testing

4. No cognitive deficits (or deficits which can be explained by lack of education or prior mental retardation)
5. Very mild cognitive deficits which might be attributable to inattention due to pain, fatigue, depression or anxiety
6. Cognitive deficits largely in one major area tested but otherwise intact
7. Significant cognitive deficits which are diffuse. Must include periods of disorientation to time or place at least once in each 24 hour period; registration and/or recall are abnormal; concentration is reduced
8. Severe cognitive deficits including motor or verbal perseverations, confabulations, disorientation to person, remote and recent memory deficits and inability to co-operate with formal mental status testing

7. Physical disorder

0. None present or active
1. Presence of any physical disorder which might affect mental state
2. Specific drug, infection, metabolic or CNS lesion or other medical problem which can be implicated in causing the altered behaviour or mental state

8. Sleep-wake cycle disturbance

0. Not present
1. Occasional drowsiness during the day and mild sleep disturbance at night
2. Frequent napping and unable to sleep at night. Significant disruption of or a reversal of usual sleep-wake cycle
3. Drowsiness prominent. Difficulty staying alert during interview. Loss of self control over alertness and somnolence
4. Stuporose or comatose periods

9. Mood lability

0. Not present
1. Mood somewhat altered and changes over the course of hours. Patient says mood changes not under self control
2. Significant mood changes not appropriate to the situation
3. Severe disinhibition of emotions

10. Variability of symptoms

0. Symptoms stable and mostly present during daytime
1. Symptoms worse at night
2. Fluctuating intensity of symptoms. They wax and wane during 24 hour period

Reprinted from the Journal of Psychiatric Research, Vol no 23, Author Trepacz PT et al A Symptom Rating Scale for Delirium Psychiatry Research, Copyright (1998), with permission from Elsevier Science.

The Confusion Assessment Method

The Confusion Assessment Method (Inouye et al., 1990) to detect delirium consists of nine items, based on DSM-III-R criteria. It takes five minutes to complete and is designed for use by the non-psychiatric clinician.

1. *Acute onset:*

Is there evidence of an acute change in mental status from the patient's baseline?

.....
.....

2. *Inattention***

A. Did the patient have difficulty focusing attention e.g. being easily distractible or having difficulty keeping track of what was being said?

- a. Not present at any time during the interview
- b. Present at some time during the interview but in mild form
- c. Present at some time during the interview in marked form
- d. Uncertain

B. If present or abnormal, did this behaviour fluctuate during the interview i.e. tend to come and go or increase and decrease in severity?

- a. Yes
- b. No
- c. Uncertain
- d. Not applicable

C. If present or abnormal, describe this behaviour

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.....
.....

3. *Disorganised thinking*

Was the patient's thinking disorganised or incoherent e.g. rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?

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.....
.....

4. Altered level of consciousness

Overall how would you rate this patient's level of consciousness?

- a. Alert (normal)
- b. Vigilant (hyperalert, overly sensitive to environmental stimuli, startled very easily)
- c. Lethargic (drowsy, easily aroused)
- d. Stupor (difficult to arouse)
- e. Coma (unrousable)
- f. Uncertain

5. Disorientation

Was the patient disoriented at any time during the interview e.g. thinking he or she was somewhere other than in the hospital, using the wrong bed or misjudging the time of day?

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6. Memory impairment

Did the patient demonstrate any memory problems during the interview e.g. inability to remember events in the hospital or difficulty remembering instructions?

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.....
.....

7. Perceptual disturbances

Did the patient have any evidence of perceptual disturbances e.g. hallucinations, illusions, misinterpretations?

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.....
.....

8. Psychomotor agitation

At any time during the interview, did the patient have unusually increased levels of motor activity e.g. restlessness, picking at bedclothes, tapping fingers or making frequent sudden changes of position?

.....

.....

.....

9. Psychomotor retardation

At any time during the interview, did the patient have an unusually decreased level of motor activity e.g. sluggishness, staring into space, staying in one position for a long time or moving very slowly?

.....

.....

.....

10. Altered sleep-wake cycle

Did the patient have evidence of disturbances of sleep-wake cycle e.g. excessive daytime sleepiness with insomnia at night?

.....

.....

.....

**Consider a diagnosis of delirium if features 1 and 2 and either 3 or 4 are present.*

***The questions listed under this topic are repeated for each topic where applicable.*

The 4AT

The '4As' Test or **4AT** is a new screening tool for delirium and cognitive impairment, developed in Edinburgh.

The 4AT is designed to be used at first contact with the person, and at other times when delirium is suspected. It incorporates the AMT4, a very brief validated screening tool for general cognitive impairment (Schofield et al., 2010). The 4AT was produced to help increase the local rates of detection of delirium in acute general hospital settings. It was developed because there are no delirium screening instruments which have all of these features, which are important in admissions units in acute general hospital settings:

- > brevity (<5 minutes)
- > does not require special training
- > allows for assessment of 'untestable' patients, that is, those who cannot undergo cognitive testing or interview because of severe drowsiness or agitation
- > incorporates general cognitive screening

Currently there are validation studies ongoing. See www.the4AT.com for updates on these studies.

Guidance Notes for the 4AT

The 4AT is a screening instrument designed for rapid and sensitive initial assessment of cognitive impairment and delirium.

- > a score of 4 or more *suggests* delirium but is not diagnostic: more detailed assessment of mental status may be required to reach a diagnosis.

- > a score of 1-3 suggests cognitive impairment and more detailed cognitive testing and informant history-taking are required.

Items 1-3 are rated *solely on observation of the patient at the time of assessment*.

Item 4 requires information from one or more source(s), e.g. your own knowledge of the person, other staff who know the person (e.g. ward nurses), GP letter, case notes, carers. The tester should take account of communication difficulties (hearing impairment, dysphasia, lack of common language) when carrying out the test and interpreting the score.

Alertness: Altered level of alertness is very likely to be delirium in general hospital settings. If the person shows significant altered alertness during the bedside assessment, score 4 for this item.

AMT4 (Abbreviated Mental Test - 4): This score can be extracted from items in the full AMT if done immediately before.

Acute Change or Fluctuating Course: Fluctuation can occur without delirium in some cases of dementia, but marked fluctuation usually indicates delirium.

To help elicit any reports of hallucinations and/or paranoid thoughts ask the person questions such as, "Are you concerned about anything going on here?"; "Do you feel frightened by anything or anyone?"; "Have you been seeing or hearing anything unusual?" In general hospital settings psychotic symptoms most often reflect delirium rather than functional psychosis (such as schizophrenia).



The 4A Test: screening instrument for cognitive impairment and delirium

(label)

Patient name:

Date of birth:

Patient number:

.....

Date:

Time:

Tester:

CIRCLE

[1] ALERTNESS

This includes patients who may be markedly drowsy (eg. difficult to rouse and/or obviously sleepy during assessment) or agitated/hyperactive. Observe the patient. If asleep, attempt to wake with speech or gentle touch on shoulder. Ask the patient to state their name and address to assist rating.

- Normal (fully alert, but not agitated, throughout assessment) **0**
- Mild sleepiness for <10 seconds after waking, then normal **0**
- Clearly abnormal **4**

[2] AMT4

Age, date of birth, place (name of the hospital or building), current year.

- No mistakes **0**
- 1 mistake **1**
- 2 or more mistakes/untestable **2**

[3] ATTENTION

Ask the patient: "Please tell me the months of the year in backwards order, starting at December." To assist initial understanding one prompt of "what is the month before December?" is permitted.

- Months of the year backwards
 - Achieves 7 months or more correctly **0**
 - Starts but scores < 7 months / refuses to start **1**
 - Untestable (cannot start because unwell, drowsy, inattentive) **2**

[4] ACUTE CHANGE OR FLUCTUATING COURSE

Evidence of significant change or fluctuation in: alertness, cognition, other mental function (eg. paranoia, hallucinations) arising over the last 2 weeks and still evident in last 24hrs

- No **0**
- Yes **4**

4 or above: possible delirium +/- cognitive impairment
1-3: possible cognitive impairment
0: delirium or cognitive impairment unlikely (but delirium still possible if [4] information incomplete)

4AT SCORE

IQCODE

Now we want you to remember what your friend or relative was like 10 years ago and to compare it with what he/she is like now. 10 years ago was in 20___. Below are situations where this person has to use his/her memory or intelligence and we want you to indicate whether this has improved, stayed the same or got worse in that situation over the past 10 years. Note the importance of comparing his/her present performance **with 10 years ago**. So if 10 years ago this person always forgot where he/she had left things, and he/she still does, then this would be considered “Hasn’t changed much”. Please indicate the changes you have observed by **circling the appropriate answer**.

Compared with 10 years ago how is this person at:

	1	2	3	4	5
1. Remembering things about family and friends e.g. occupations, birthdays, addresses	Much improved	A bit improved	Not much change	A bit worse	Much worse
2. Remembering things that have happened recently	Much improved	A bit improved	Not much change	A bit worse	Much worse
3. Recalling conversations a few days later	Much improved	A bit improved	Not much change	A bit worse	Much worse
4. Remembering his/her address and telephone number	Much improved	A bit improved	Not much change	A bit worse	Much worse
5. Remembering what day and month it is	Much improved	A bit improved	Not much change	A bit worse	Much worse
6. Remembering where things are usually kept	Much improved	A bit improved	Not much change	A bit worse	Much worse
7. Remembering where to find things which have been put in a different place from usual	Much improved	A bit improved	Not much change	A bit worse	Much worse

	1	2	3	4	5
8. Knowing how to work familiar machines around the house	Much improved	A bit improved	Not much change	A bit worse	Much worse
9. Learning to use a new gadget or machine around the house	Much improved	A bit improved	Not much change	A bit worse	Much worse
10. Learning new things in general	Much improved	A bit improved	Not much change	A bit worse	Much worse
11. Following a story in a book or on TV	Much improved	A bit improved	Not much change	A bit worse	Much worse
12. Making decisions on everyday matters	Much improved	A bit improved	Not much change	A bit worse	Much worse
13. Handling money for shopping	Much improved	A bit improved	Not much change	A bit worse	Much worse
14. Handling financial matters e.g. the pension, dealing with the bank	Much improved	A bit improved	Not much change	A bit worse	Much worse
15. Handling other everyday arithmetic problems e.g. knowing how much food to buy, knowing how long between visits from family or friends	Much improved	A bit improved	Not much change	A bit worse	Much worse
16. Using his/her intelligence to understand what's going on and to reason things through	Much improved	A bit improved	Not much change	A bit worse	Much worse



Indicators of quality delirium care

Delirium is a significant health care issue for older people but there are many actions which health care organisations and staff can take to prevent delirium and ensure negative outcomes of delirium are minimised. Key structures and processes which will support quality delirium care are listed below. How does your service fair?

Indicator	Yes/ No	Action to implement
Screening on admission and risk assessed		
Assessment of cognitive function		
Signage appropriate to older people with dementia		
Noise reduction		
Person-centred handovers		
Staff allocation which aims to ensure continuity of care		
Delirium awareness		
Medication protocols		
Restraint-free environment		
Families given education on delirium		
Staff given regular education about delirium		

Glossary of terms

ADL = Activities of daily living	MDT = Multi-disciplinary team	PRN = Pro re nata, or as required
Anticholinergic:	The term used to describe the mechanism of action of a group of drugs which inhibit the neurotransmitter acetylcholine, and reduce parasympathetic nerve transmission.	
Antipsychotic:	A group of psychoactive medications used in the treatment of a number of conditions, also known as neuroleptic medications.	
Attention:	Attention is the cognitive process of applying the mind to something. People with delirium have a reduced capacity to shift focus and maintain attention to environmental stimuli.	
Consciousness:	The state of being conscious; fully alert, aware, oriented, and responsive to the environment. People with delirium have a disturbance in consciousness with reduced clarity of awareness of environment.	
Disorientation:	Deficits in awareness of one's own identity and circumstances (space/time).	
Delusions:	A false belief based on incorrect inference about external reality that is firmly sustained despite what almost everybody else believes and despite what constitutes incontrovertible and obvious proof or evidence to the contrary. The belief is not one ordinarily accepted by other members of the person's culture or subculture (e.g., it is not an article of religious faith).	

Illusions:	Misinterpretations of inner or external perceptions. They can be simple such as bedcovers mistaken for objects or more complex (e.g. doctors misidentified as ghosts).
Hallucinations:	Perception in the absence of an object (can be simple visual or auditory, to complex formed scenes, music, tactile, emotional experiences).
Hyperactive delirium:	A specific subtype of delirium characterised by restlessness, increased arousal, agitation, verbalisation and psychomotor overactivity.
Hypoactive delirium:	A specific subtype of delirium characterised by reduced arousal, lethargy and drowsiness. The person often responds slowly to questions and does not initiate movement.
Subsyndromal delirium:	Subsyndromal delirium is when the person has some features of delirium or prodromal symptoms in the days before the onset of overt delirium or when people manifest delirium symptoms but do not meet the Diagnostic and statistical manual of mental disorders. Fourth edition (DSM-IV-TR) criteria for diagnosis of delirium.

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Important. Research and knowledge in the field of dementia care are constantly changing. As new information emerges, changes in how we support people with dementia become necessary. The authors and publishers have, as far as possible, taken care to ensure that the information given in this text is accurate and up to date at the time of publication. However, readers are strongly advised to confirm the information complies with current legislation and standards of practice.

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