Delirium overview

January 18, 2022

7:00 PM

Delirium

Confusional states are among the most common mental disorders

Encountered in patients with medical illness

Particularly among those who are older.

DEFINITION (DSM-IV) Criteria;

Disturbance of consciousness with reduced ability to focus, sustain, or shift attention.

A change in cognition or the development of a perceptual disturbance that is not better accounted for by a preexisting, established, or evolving dementia.

Edward A Stehlik, MD

Reza, thank you for agreeing to head a special Department of Medicine blue ribbon workgroup to evaluate how we identify and treat delirium in the hospital. As we all know this is a vexing problem, identified inadequately, managed poorly, and an ongoing concern. As we discussed, several recent cases that we have seen have brought this issue again to the forefront.

Our expectation is that this committee will come up with best practice recommendations to include prevention of delirium, recognition of delirium, evaluation of delirium, and management of delirium. It is clear that hospitalists, nurses, and neurologists are 3 disciplines that are prominently and regularly involved in this process, with other professionals engaged frequently as well.

The plan is that you will have a multidisciplinary team, with representatives hopefully from multiple sites, and various disciplines involved. Certainly hospitalist physicians, nurses, geriatricians, neurologists, and others may be included. Nonetheless the workgroup should be small enough to be effective and relatively easy to get together. Certainly reliance on the existing literature for best practices and consensus guidelines should help focusing the work of your group effectively.

As I mentioned, Bruce Naughton, who serves on our Mortality Committee has expressed a strong interest in this subject, and Brian Snyder, another geriatrician who was one of our medical directors is also very interested in this subject. If you find either or both of them would be useful to have on the group, then I'm sure they would be willing to assist. If you are looking for names of people in relevant roles at other hospital sites, feel free to reach out to me or the associate medical directors who are copied on this email for any suggestions that you may need.

Two suggestions:

1. *I think a workgroup achieving a consensus is an excellent format. Either Bruce Naughton or Brian Snyder or both are two people I know who are very interested in this subject and may be helpful members of a consensus workgroup.*
2. *Our expectation from this group is not simply a delineation of best practice, although that is extremely important. We are also looking toward how do we implement the best practice, monitor how well this is being done, and provide guidance to reviewers and leaders as to how to evaluate our performance with respect to evaluating and managing delirium in the hospital.*

Thank you again for agreeing to work on this, as it is very important and should make a significant impact in improving the care we deliver.

Stehlik, MD Edward A

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Thanks to the members of committee

Dr. Steve Chrzanowski

Dr. Sanjay Gupta

Dr. Jeffrey Lach

Dr. Eric Kock

Dr. Matthew Missert

Dr. Bruce Naughton

Dr. Akash Parashar

Dr, Thevanayagam

Objectives

Proactive in recognition risk factors

Diagnosis

Management

Monitoring the progress in delirium management

The delirium about delirium is the many terms used to describe this disorder:

Acute confusional state	*Altered mental status*	*Acute organic syndrome*	*Acute brain failure*	*Acute brain syndrome*
Acute cerebral insufficiency	*Exogenous psychosis*	*Metabolic encephalopathy*	*Organic psychosis*	*ICU psychosis*
	Toxic encephalopathy	*Toxic psychosis*	*Others*	

Delirium vs confusional states

There is no generally accepted consensus regarding the distinction between the two

"acute confusional state,"

"acute brain syndrome,"

"toxic / metabolic encephalopathy"

are often used synonymously with delirium.

Delirium
acute behavioral decompensation

With fluctuating attention, regardless of etiology or the presence of baseline cognitive deficits or preexisting dementia

Underlying dementia is a major risk factor for delirium

One of the most important clinical distinctions is that between delirium and dementia,

Delirium is acute in onset (usually hours to a few days)

Dementia is chronic (usually insidious in onset and progressive)

Etiologies

- *Neurological disorder*
- *Mental health /psychiatric*
- *Systemic disorder*

Arousal and attention may be disrupted

by brain lesions involving the ascending reticular activating system (ARAS) from the mid-pontine tegmentum rostrally to the anterior cingulate regions.

The results of brainstem auditory evoked potential, somatosensory evoked potentials, and neuroimaging studies have supported an important role for:

Subcortical (eg, thalamus, basal ganglia, and pontine reticular formation)

Cortical structures in the pathogenesis of delirium

Acetylcholine

Anticholinergic drugs cause delirium when given to healthy volunteers and are even more likely to lead to acute confusion in frail elderly persons

An altered level of consciousness and/or disorganized thinking are usual components of delirium

Early recognition of delirium is important in ensuring prompt delivery of appropriate care.

The Confusion Assessment Method (CAM) is frequently used to diagnose delirium.

Confusion assessment method (CAM) for the diagnosis of delirium

Feature	Assessment
1. *Acute onset and fluctuating course* * (required) *Usually obtained from a family member or nurse and shown by positive responses to*	*"Is there evidence of an acute change in mental status from the patient's baseline?"* *"Did the abnormal behavior fluctuate during the day, that is, tend to come and go, or increase and decrease in severity?"*
2. *Inattention* * (required) *Shown by a positive response to*	*"Did the patient have difficulty focusing attention, for example, being easily distractible or having difficulty keeping track of what was being said?"*
3. *Disorganized thinking* *Shown by a positive response to*	*"Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?"*
4. *Altered level of consciousness* *Shown by any answer other than "alert" to the following:*	*"Overall, how would you rate this patient's level of consciousness?"* *Normal = alert* *Hyperalert = vigilant* *Drowsy, easily aroused = lethargic* *Difficult to arouse = stupor* *Unarousable = coma*

In general, awareness, attention, and cognition fluctuate over the course of a day.

Disorganized thinking

Altered level of consciousness

Perceptual disturbances

Impaired sleep/wake cycle

Impaired psychomotor activity

Impaired orientation

Impaired memory

Other cognitive, behavioral, and emotional disturbances

May also occur as part of the spectrum of delirium.

Delirium can be summarized into the 10 clinical characteristics

10 clinical characteristics
of Delirium

Acute onset of mental status change with fluctuating course

Attentional deficits

Confusion or disorganized thinking

Altered level of consciousness

Perceptual disturbances

Disturbed sleep/wake cycle

Altered psychomotor activity

Disorientation and memory impairment

Other cognitive deficits

Behavioral and emotional abnormalities

Features are commonly present in delirium:

Sleep/wake cycle disturbance
Psychomotor disturbance
Perceptual disturbances (e.g, hallucinations, illusions),
Emotional disturbances
Delusions
Labile affect
Dysarthria
EEG abnormalities (generalized slowing of background activity)

The disturbance develops over a short period of time

(usually hours to days) and tends to fluctuate during the course of the day.

There is evidence from the history, physical examination, or laboratory findings that the disturbance is caused by a medical condition, substance intoxication, or medication side effect .

Nearly 30 percent of older medical patients

Experience delirium at some time during hospitalization .

The incidence ranges between 6% and 56% of hospitalized patients,

11%–51% postoperatively in elderly patients,

80% or more of intensive care unit (ICU) patients

The consequences of delirium are serious:

Prolonged hospitalizations

Increased mortality

High rates of discharges to other institutions

Severe impact on caregivers and spouses

Approximately $150 billion annually in direct healthcare costs in the United States

Many aspects of hospitalization inherently promote delirium for the older patient.

The change in environment from the comfort of home to a hospital room is disruptive to the patient's daily routine.

An older patient, particularly someone with preexisting cognitive impairment, is prone to developing delirium.

Elderly patients with dementia are two to five times

more likely to develop delirium than those without dementia, with increased admission to institutions and mortality

Patients with dementia may develop delirium

after minor medication changes or other relatively insignificant precipitating factors

Moreover, premorbid impairment in executive functions may be independently associated with greater risk of developing delirium

Other Risk factors for delirium.

Pain

Interruption in sleep patterns

Several classes of medications

Impaired Sensory input (lacks access to eyeglasses or hearing aids)

Other important predisposing factors for delirium are:

Advanced age, especially older than 80 years

Presence of chronic medical illnesses

Many of these have cerebral atrophy or white matter and basal ganglia ischemic changes on neuroimaging

Additional predisposing factors are:

The degree of physical impairment

Hip and other bone fractures

Serum sodium changes

Infections and fevers

Multiple drugs

(particularly those with narcotic, anticholinergic, or psychoactive properties)

The predisposing factors for delirium are additive

Each new factor increasing the risk considerably.

Frail elderly patients often have multiple predisposing factors the most common being

- *Functional dependency*
- *Multiple medical comorbidities*
- *Depression*

Predisposing and Precipitating Factors for Delirium

Elderly, especially 80 years or older
Dementia, cognitive impairment, or other brain disorder

Fluid and electrolyte disturbances and dehydration

Other metabolic disturbance, especially elevated BUN level or hepatic insufficiency

Number and severity of medical illnesses, including cancer

Infections, especially urinary tract, pulmonary, and AIDS

Malnutrition, low serum albumin level

Cardiorespiratory failure or hypoxemia

Prior stroke or other nondementia brain disorder

Polypharmacy and use of analgesics, psychoactive drugs, or anticholinergics

Drug abuse, alcohol or sedative dependency

Sensory impairment, especially visual

Predisposing and Precipitating Factors for Delirium

Sensory overstimulation and "ICU psychosis"
Sensory deprivation

Sleep disturbance

Functional impairment

Fever, hypothermia

Physical trauma or severe burns

Fractures

Male gender

Depression

Predisposing and Precipitating Factors for Delirium

Specific surgeries:

- *Cardiac, especially open heart surgery*
- *Orthopedic, especially femoral neck and hip fractures, bilateral knee replacements*
- *Ophthalmological, especially cataract surgery*
- *Noncardiac thoracic surgery and aortic aneurysmal repairs*
- *Transurethral resection of the prostate*

In many cases the cause of delirium is multifactorial,

resulting from the interaction between

Patient-specific predisposing factors

Multiple precipitating factors

Five specific factors that can independently precipitate delirium are:

- *Use of physical restraints*
- *Malnutrition or weight loss (albumin levels <30 g/L)*
- *Use of indwelling bladder catheters*
- *Adding more than three medications within a 24-hour period*
- *An iatrogenic medical complication*

Other precipitating factors for delirium,

Electrolyte disturbances (hyponatremia, hypercalcemia, etc)

Major organ system disease

Occult respiratory failure

Occult infection

Pain

Specific medications

Other precipitating factors for delirium,

Specific medications such as

Sedative hypnotics

Histamine-2 blockers

Sleep disturbances

Alterations in the environment.

Novel situations and unfamiliar surroundings contribute to sensory overstimulation in the elderly, and sensory overload may be a factor in producing “ICU psychosis.

” *Ultimately,*

Delirium occurs in patients from a synergistic interaction of

predisposing factors with precipitating factors.

In addition to the risk factors already discussed, heritability of delirium is an area of investigation

A systemic review and meta-analysis found that there is

no evidence to prescribe antipsychotic medication for the prevention or treatment of delirium.

Guidelines

from the American Geriatrics Society and the American College of Surgeons

Recommend against the use of antipsychotic medications in this population on the prevention and treatment of postoperative delirium

Unless there is concern for imminent harm to the patient or care team.

Effective measures to prevent delirium include:

Orientation protocols

Environmental modification

Nonpharmacologic sleep aids (eg, warm milk or herbal tea offered at bedtime, relaxing music, soft lighting, massage)

Early and frequent mobilization

Minimizing use of physical restraints

Use of visual and hearing aids (eg, pocket talkers)

Adequate pain treatment

Reduction in polypharmacy (particularly psychoactive drugs).

Dedicated room

Some hospitals have found that patients with delirium benefit from specialized care delivered in a dedicated room for disoriented patients

This room supports multidisciplinary care that avoids the use of restraints and reduces use of psychoactive drugs

"delirium rooms"

These "delirium rooms" can offer a useful option for caring for delirious patients,

*using the T-A-DA method (**T**olerate, **A**nticipate, and **D**on't **A**gitate) to guide the approach to caring for delirious patients.*

It is important to assess a patient's cognition at the time of admission and regularly throughout their hospitalization.

Older patients are vulnerable to acute brain failure (delirium) and commonly present with this condition.

Standard of care at many hospitals now requires CAM screening every 8 to 12 hours by frontline nursing staff.

Clinicians should be attentive to the patient's CAM scores and conduct brief assessments of cognition daily.

Patients with dementia are at increased risk for developing delirium.

A patient's baseline cognitive status prior to their acute illness is critical to understanding any cognitive changes noted during hospitalization.

Diagnosing dementia in the acute setting can be challenging given the prevalence of superimposed delirium.

Among older surgical patients, the risk for delirium varies from 10 to greater than 50 percent;

The higher figures are associated either with

Frail fallers (e.g, those who have fallen and sustained a hip fracture) or

Complex procedures such as cardiac surgery .

Fluid and electrolyte disturbances (dehydration, hyponatremia and hypernatremia)

Infections (urinary tract, respiratory tract, skin and soft tissue)

Drug or alcohol toxicity

Withdrawal from alcohol

Withdrawal from

- *Barbiturates*
- *Benzodiazepines*
- *Selective serotonin reuptake inhibitors*

Metabolic disorders

Hypoglycemia

Hypercalcemia

Uremia

Liver failure

Thyrotoxicosis

Low perfusion states (shock, heart failure)

Postoperative states, especially in the elderly

Neuroimaging

Neuroimaging with head CT may be used selectively rather than routinely for most patients with delirium.

However, neuroimaging is necessary, if no obvious cause of delirium is apparent on first evaluation.

Electroencephalography (EEG)

is useful in patients with altered consciousness in order to;

Exclude seizures, especially nonconvulsive or subclinical seizures

Confirm the diagnosis of certain metabolic encephalopathies or infectious encephalitides that have characteristic EEG patterns .

Epilepsy

Abnormal brain electrical activity is associated with delirium in four conditions:

(1) ictally, with absence status, complex partial status, tonic status without convulsions, or periodic lateralizing epileptiform discharges;

(2) postictally, after complex partial or generalized tonic-clonic seizures;

(3) interictally manifested as increasing irritability, agitation, and affective symptoms associated with the prodrome of impending seizures; and

(4) from the cognitive effects of anticonvulsant medications

Lumbar puncture

Should be performed as part of the workup when the cause is uncertain

Because most cases of delirium are due to medical conditions, lumbar puncture and neuroimaging are needed in only a minority of delirious patients .

Other essential laboratory tests include a

Complete blood cell count;

Measurements of glucose,

Electrolytes

Blood urea nitrogen,

Creatinine

Transaminase

Ammonia levels

Thyroid function tests

Arterial blood gas studies

Chest radiographs

Electrocardiogram

Urinalysis

Urine drug screening.

Less routine tests, such as antibody tests against Hu or N -methyl- d -aspartate receptors, should be considered when routine labs are unrevealing and there is a suspicion for malignancy

Although they are nonspecific, evoked potential studies often show prolonged latencies.

Thank you