

DELIRIUM IN THE ELDERLY

CCSMH NATIONAL GUIDELINES- INFORMED INTERACTIVE CASE-BASED TUTORIAL

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INTRODUCTION

- Guidelines have been developed by the Canadian Coalition for Seniors Mental Health for the diagnosis and management of delirium in the elderly
- Please refer to the handout you have been given to work through the following case examples

REFERRAL

You are a seniors' mental health clinician working in the hospital. You receive the following referral to see Mrs. Adele O'Leary, who is a patient of the cardiovascular surgery service.

“Please see this 75 year old female who is POD#6 for CABGx3. She lays in bed most of the day and is not interacting with staff, which is impairing her recovery. She is confused, and appears sad and unmotivated. Please assess and treat for depression.”

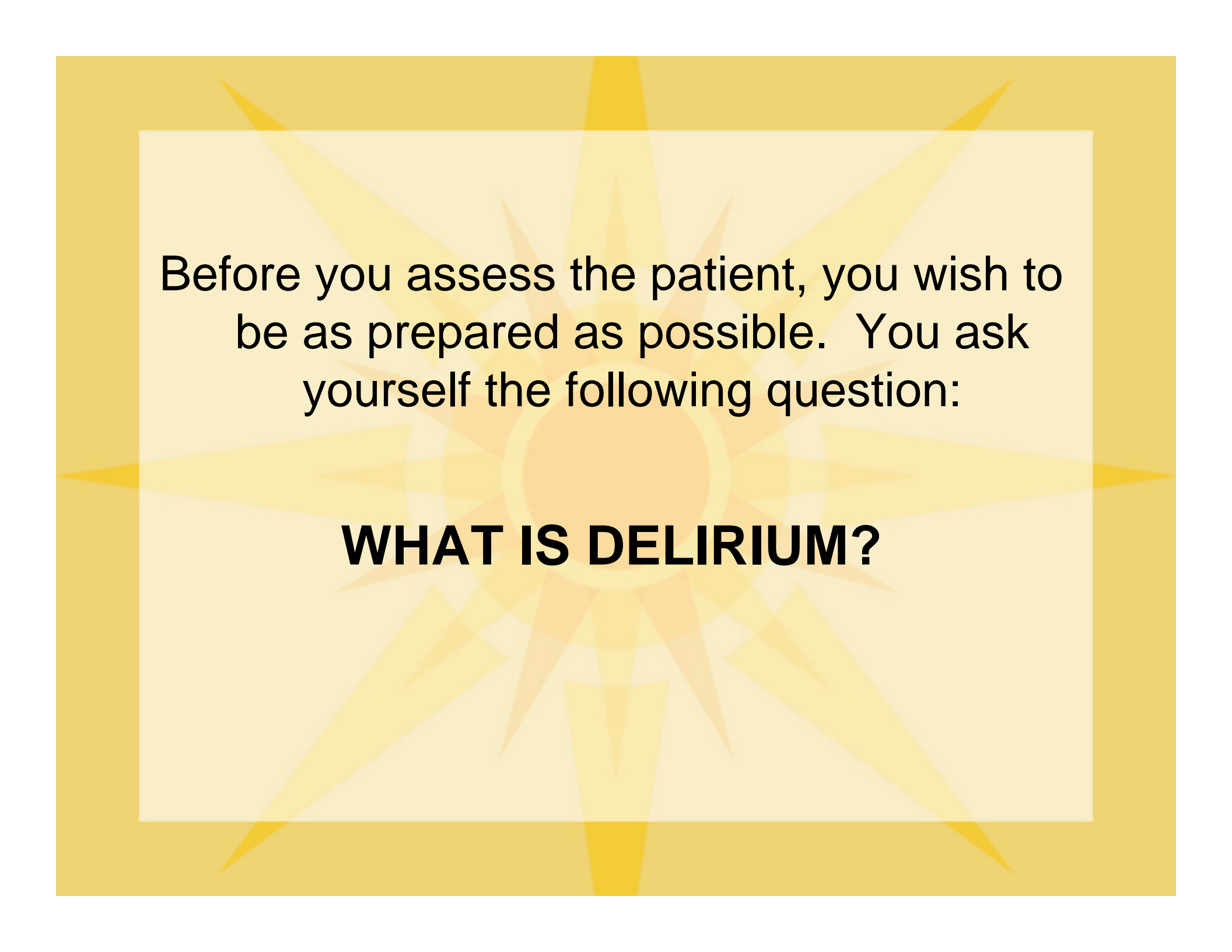


**WHAT IS YOUR DIFFERENTIAL
DIAGNOSIS?**

Depression

Delirium

Dementia



Before you assess the patient, you wish to be as prepared as possible. You ask yourself the following question:

WHAT IS DELIRIUM?

DSM-IV DEFINITION

Core features of DSM-IV criteria:

1. Disturbance of **consciousness** with reduced ability to sustain, or shift attention
2. Change in **cognition** or development of a perceptual disturbance not better explained by a preexisting condition
3. Disturbance develops over a short period of time and tends to **fluctuate** during course of the day

CLINICAL FEATURES

- Acute onset
 - Usually develops over hours to days
 - Onset may be abrupt
- Prodromal phase
 - Initial symptoms can be mild/transient if onset is more gradual
 - Fatigue/daytime somnolence
 - Decreased concentration
 - Irritability
 - Restlessness/anxiety
 - Mild cognitive impairment

Cole 2004

See CCSMH Delirium Guidelines p 22

CLINICAL FEATURES

- **Fluctuation**
 - Unpredictable
 - Over course of interview
 - Over course of 1 or more days
 - Intermittent
 - Often worse at night
 - Periods of lucidity
 - May function at “normal” level
- **Psychomotor disturbance**
 - Restless/agitated
 - Lethargic/inactive

Cole 2004

See CCSMH Delirium Guidelines p 22

CLINICAL FEATURES

- Disturbance of consciousness
 - Hyperalert (overly sensitive to stimuli)
 - Alert (normal)
 - Lethargic (drowsy, but easily aroused)
 - Comatose (unrousable)
- Inattention
 - Reduced ability to focus/sustain/shift attention
 - Easily distractible
 - External stimuli interfere with cognition
 - May account for all other cognitive deficits

Cole 2004

See CCSMH Delirium Guidelines p 22

CLINICAL FEATURES

- Disruption of sleep and wakefulness
 - Fragmentation/disruption of sleep
 - Vivid dreams and nightmares
 - Difficulty distinguishing dreams from real perceptions
 - Somnolent daytime experiences are “dreamlike”
- Emotional disturbance
 - Fear
 - Anxiety
 - Depression

Cole 2004

See CCSMH Delirium Guidelines p 22

CLINICAL FEATURES

- Disorders of thought
 - Abnormalities in form and content of thinking are prominent
 - Impaired organization and utilization of information
 - Thinking may become bizarre or illogical
 - Content may be impoverished or psychotic
 - Delusions of persecution are common
 - Judgment and insight may be poor

Cole 2004

See CCSMH Delirium Guidelines p 22

CLINICAL FEATURES

- Disorders of language
 - Slow and slurred speech
 - Word-finding difficulties
 - Difficulty with writing
- Disorders of memory and orientation
 - Poor registration
 - Impaired recent and remote memory
 - Confabulation can occur
 - Disorientation to time, place, and (sometimes) person

Cole 2004

See CCSMH Delirium Guidelines p 22

CLINICAL FEATURES

- Perceptual disturbances
 - Distortions
 - Macropsia/micropsia
 - Derealization/depersonalization
 - Illusions
 - Misinterpretation of external sensory stimuli
 - Hallucinations
 - May respond as if they are real
 - Visual
 - Often occur only at night
 - Simple to complex
 - Auditory
 - Simple sounds, music, voices
 - Tactile (less common)

Cole 2004

**DOES DELIRIUM PRESENT
SIMILARLY IN ALL PATIENTS?**

NO

**THERE ARE THREE CLINICALLY
RECOGNIZED VARIANTS**

CLINICAL VARIANTS

1. Hyperactive

- Restless/agitated
- Autonomic arousal
- Aggressive/hyper-reactive
- 15-47% of cases

2. Hypoactive

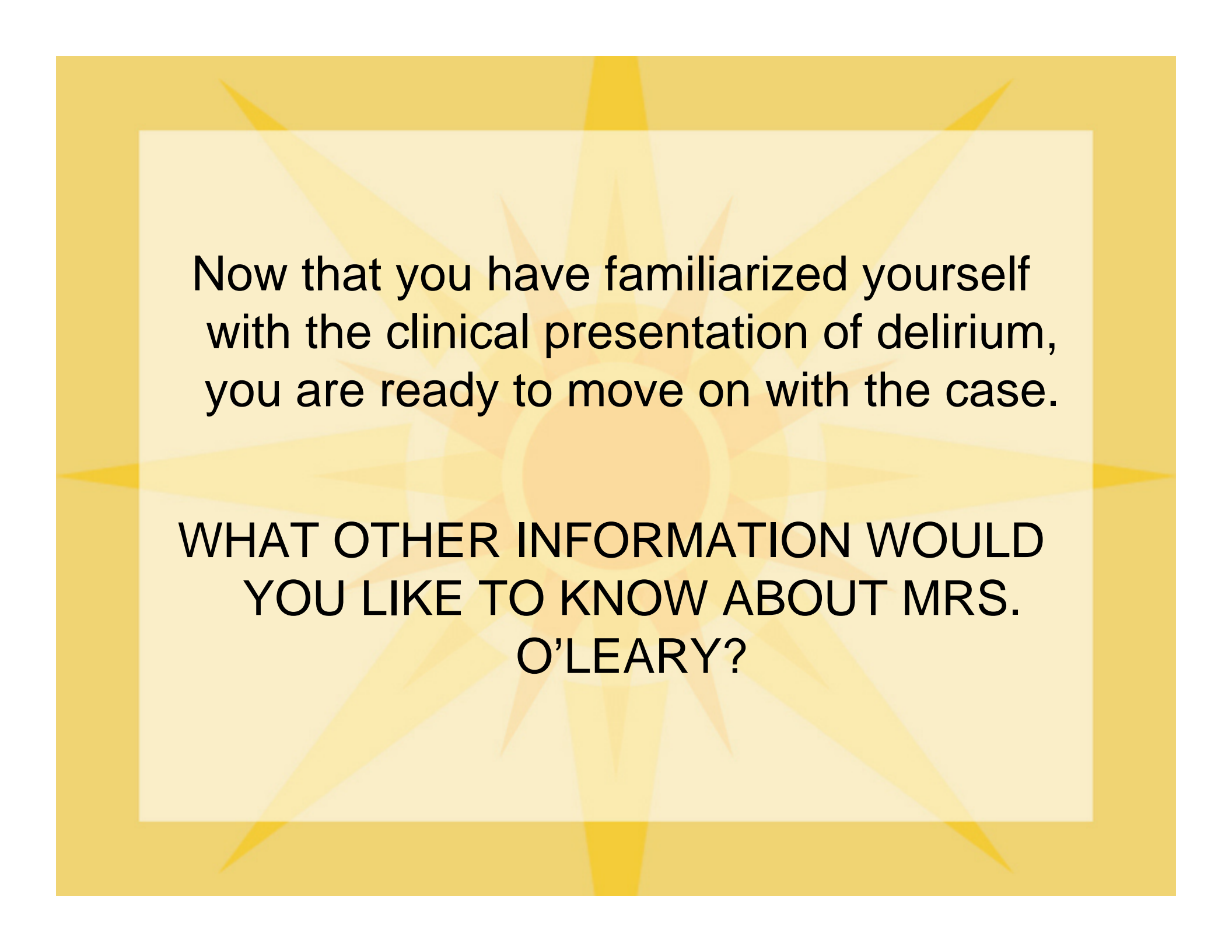
- Lethargic/drowsy
- Apathetic/inactive
- Quiet/confused
- Often escapes diagnosis
- Often mistaken for depression
- 19-71% of cases

3. Mixed

- 43-56% of cases

Cole 2004

See CCSMH Delirium Guidelines p 23



Now that you have familiarized yourself with the clinical presentation of delirium, you are ready to move on with the case.

WHAT OTHER INFORMATION WOULD YOU LIKE TO KNOW ABOUT MRS. O'LEARY?

PATIENT HISTORY

1. Past psychiatric history
2. Past medical history
3. Current medications
4. Family history
5. Personal history
6. Pre-morbid cognitive status

CASE

You now attempt to see Mrs. O'Leary to obtain her history and observe her current mental status. She is dressed in a hospital gown lying in bed, looking older than her stated age. Her eyes are closed, and you have a difficult time rousing her.

Her words are slurred and difficult to understand. She is unable to respond appropriately to your questions. She appears to be picking at things in the air. You are unable to assess her mood, but her affect is restricted. She is confused, and when asked where she is mumbles something about "being in Newfoundland".

DELIRIUM SCREENING TOOLS

AS PART OF YOUR ASSESSMENT, WHAT ARE SOME POSSIBLE DELIRIUM SCREENING TOOLS YOU COULD USE?

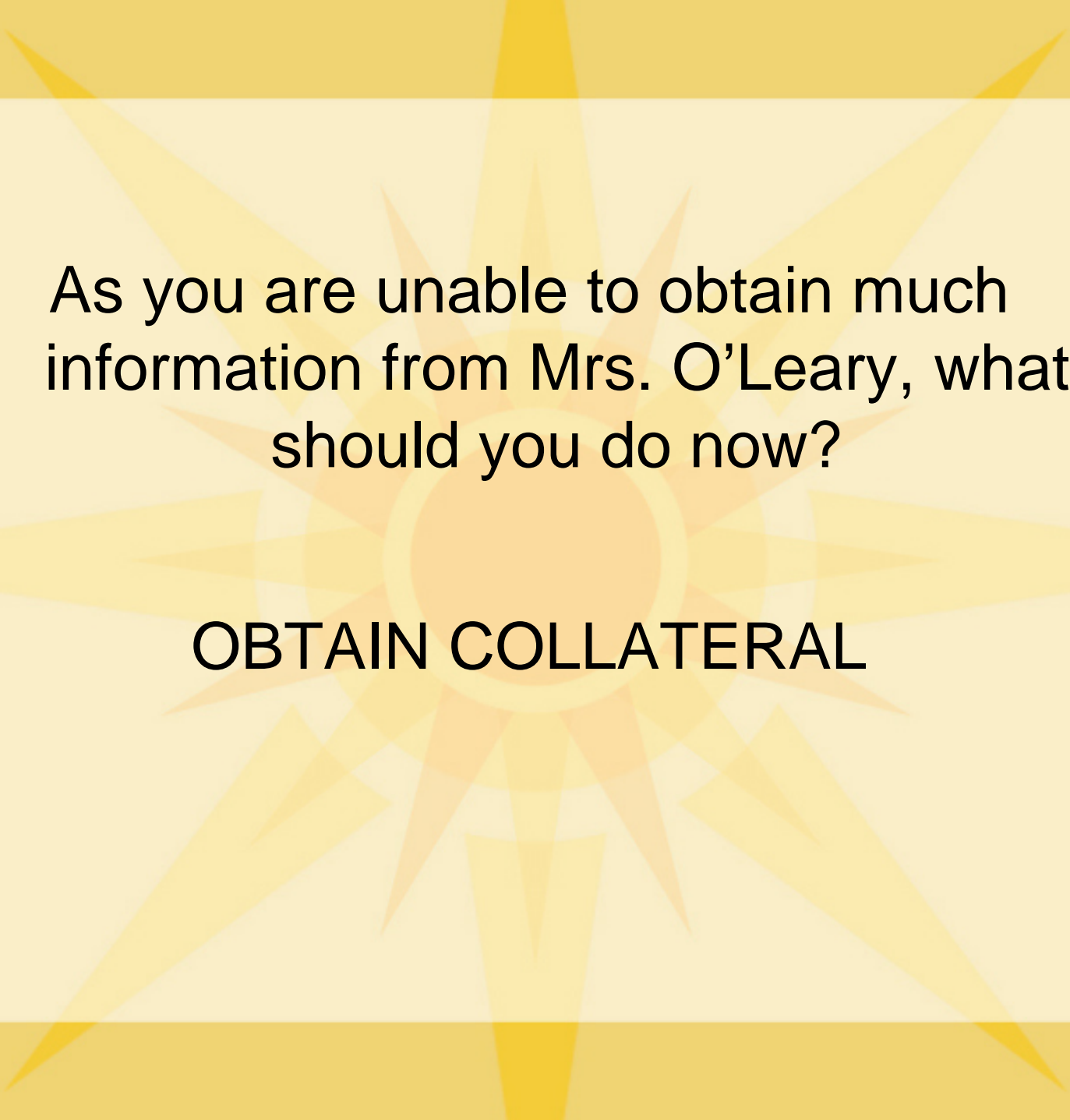
MMSE

CONFUSION ASSESSMENT METHOD (CAM)

MONTREAL COGNITIVE ASSESSMENT (MoCA)

You attempt to perform an MMSE, but Mrs. O'Leary is unable to pay attention long enough to complete the test

See CCSMH Delirium Guidelines p 29



As you are unable to obtain much information from Mrs. O'Leary, what should you do now?

OBTAIN COLLATERAL

CASE

- You review the medical chart and speak with Mrs. O'Leary's daughter to obtain collateral information. You find out the following information.

COLLATERAL

No prior psychiatric problems

- No history of depression

Past medical history:

1. Angina
2. Hypertension
3. Dyslipidemia
4. Hearing impairment
 - Uses hearing aid
5. Hysterectomy (1985)
6. Smoker (30 pack years)

COLLATERAL

Medications

1. Metoprolol 25 mg BID
2. Atorvastatin 20 mg OD
3. ECASA 81 mg OD
4. Multivitamin 1 tab OD
5. Amitriptyline 10 mg HS
6. Ramipril 5 mg OD*
7. Ranitidine 150 mg OD*
8. Hydromorphone 2-4 mg q2h prn*
 - Receiving approx. 6 mg/day

*New medications

COLLATERAL

No family history of mental illness

Personal history

Mrs. O'Leary is the second oldest in a sibship of six. She was born in Nova Scotia and achieved a grade 8 education. She worked in a store until she married at the age of 21. She then stayed home to raise 3 daughters. Her husband retired at age 65 and they spent much time in Florida. He passed away two years ago, and Mrs. O'Leary now lives alone in a seniors apartment. Prior to surgery, she had a busy social life, and enjoyed knitting and playing weekly bingo. She does not drink alcohol.

COLLATERAL

Pre-morbid cognitive functioning

- Mrs. O’Leary has occasionally been forgetting names of friends/family over the past year, but there are no other memory deficits.
- She is independent for all IADL’s/ADL’s
- She scored 30/30 on a recent MMSE done at her GP’s office
- **Her family now find her drowsy and confused, which gets worse later in the day**

DIAGNOSIS

Now that you have collateral information, you summarize the case:

- 76 year old female post-CABG
- Decreased level of consciousness
- Confused and disoriented
- Amotivated and apathetic
- Fluctuation of symptoms
- No prior history of depression
- No prior history of dementia



OF YOUR DIFFERENTIAL, WHICH IS
THE MOST LIKELY DIAGNOSIS?

DEPRESSION

DELIRIUM

DEMENTIA



WHAT TYPE OF DELIRIUM DO YOU
THINK IT IS?

HYPERACTIVE

HYPOACTIVE

MIXED



NOW THAT YOU HIGHLY SUSPECT A
DIAGNOSIS OF HYPOACTIVE
DELIRIUM, WHAT SHOULD YOUR
NEXT STEP BE?

DELIRIUM “WORK UP”

You are looking for an underlying medical
cause

DELIRIUM “WORK UP”

WHAT INVESTIGATIONS WOULD YOU CONSIDER ORDERING?

- CBC
- Electrolytes
- BUN/creatinine
- Magnesium and phosphate
- Calcium and albumin
- Liver function tests
- TSH
- Urinalysis
- Blood gases
- Blood culture
- Chest x-ray
- ECG

See CCSMH Delirium Guidelines p 33

DELIRIUM “WORK UP”

**REMEMBER THAT DELIRIUM IS A
MEDICAL EMERGENCY!!**

IT IS IMPORTANT TO DO A PHYSICAL
EXAMINATION THAT INCLUDES:

1. Neurological examination
2. Hydration and nutritional status
3. Evidence of sepsis
4. Evidence of alcohol abuse and/or withdrawal

See CCSMH Delirium Guidelines p 33

INVESTIGATION RESULTS

- You perform an appropriate work-up and order investigations. You obtain the following **ABNORMAL** results:
 - Na 147
 - BUN 17.2
 - All other results are normal

WHAT DO THE ABOVE RESULTS SUGGEST?

DEHYDRATION

Now that you have made a diagnosis of delirium and performed the appropriate “work-up”, you need to make a treatment plan. Before you can do this, you need to learn more about the epidemiology and etiology (cause) of delirium.

IS DELIRIUM A COMMON DISORDER?

YES

- It occurs in up to 50% of older persons admitted to acute care settings

See CCSMH Delirium Guidelines p 23

EPIDEMIOLOGY

- Minimal info on community incidence
 - Age >85: 10% 3 year incidence
 - Age >65 with dementia: 13% 3 year incidence
- Most studies focus on in-patients
 - Admission to medical unit:
 - 10-20% prevalence at time of admission
 - 5-10% incidence during hospitalization
- Special populations
 - Long-term care home residents: 6-14%
 - General surgical patients: 10-15%
 - Cardiac surgery patients: 30%
 - Hip fractures: 50%
 - Age >65 admitted to ICU: 70%
 - Palliative advanced cancer patients: 88%

Cole 2004

See CCSMH Delirium Guidelines pp 23-4

EPIDEMIOLOGY

- Delirium is **OFTEN UNRECOGNIZED!!**
 - Many cases undiagnosed
 - ~40% of elderly with delirium sent home from ED in one study
 - Misdiagnosed as depression
 - ~40% of cases in one study

Hustey et al 2002

Cole 2004

WHAT ARE RISK FACTORS FOR DELIRIUM IN THE ELDERLY?

- Advanced age
- Male sex
- Cognitive impairment
 - Dementia
- Functional impairment
- Depression
- Sensory impairment
- Medication use
 - Narcotics
 - Psychotropics
- Alcohol abuse
- Severe medical illness
- Fever
- Hypotension
- Electrolyte abnormalities
- High urea/creatinine ratios
 - Dehydration
- Hypoxia
- Fracture on admission
- Surgery
 - Especially unplanned

WHICH RISK FACTORS DOES MRS. O'LEARY HAVE?

See CCSMH Delirium Guidelines pp 24-26 (Table 2.1)

WHAT ARE COMMON POTENTIAL CAUSES OF DELIRIUM?

- **Drug-induced**
 - Sedative/hypnotics
 - Anticholinergics
 - Opioids
- Alcohol and drug withdrawal
- **Surgical procedures**
- Infection
 - Pneumonia
 - Urinary tract infection
- **Fluid-electrolyte disturbance**
 - Dehydration
- Severe pain
- Metabolic endocrine
 - Uremia
 - Hypo/hyperthyroidism
- Cardiopulmonary hypoperfusion and hypoxia
 - CHF
- Intracranial
 - Stroke
 - Head injury
- **Sensory/environmental**
 - Sensory impairment
 - Acute care settings

WHAT ARE POTENTIAL CAUSES IN MRS. O'LEARY?

See CCSMH Delirium Guidelines pp 24-26 (Table 2.1)

ETIOLOGY MNEMONIC

- **I**nfectious
- **W**ithdrawal
- **A**cute metabolic
- **T**rauma
- **C**entral nervous system pathology
- **H**ypoxia
- **D**eficiencies (nutritional)
- **E**ndocrinopathies
- **A**cute vascular
- **T**oxins/drugs
- **H**heavy metals

See CCSMH Delirium Guidelines p 31 (Table 3.1)

HIGH RISK MEDICATIONS

Sedative/hypnotics

- Benzodiazepines
- Barbituates
- Antihistamines

Anticholinergic drugs

- Oxybutynin
- Tricyclic antidepressants
- Antipsychotics
- Warfarin
- Furosemide (Lasix)
- Cumulative effect of multiple drugs

Narcotics/opioids

Histamine blocking agents

- Ranitidine

Anticonvulsants

- Phenytoin

Antiparkinsonian medications

- Dopamine agonists
- Levodopa-carbidopa
- Benztropine

See CCSMH Delirium Guidelines p 39 (Table 4.1)

MRS. O'LEARY'S MEDICATIONS

1. Metoprolol 25 mg BID
2. Atorvastatin 20 mg OD
3. ECASA 81 mg OD
4. Multivitamin 1 tab OD
5. Amitriptyline 10 mg HS
6. Ramipril 5 mg OD
7. Ranitidine 150 mg OD
8. Hydromorphone 2-4 mg q2h prn
 - Receiving approx. 6 mg/day

WHICH MEDICATIONS MAY CAUSE DELIRIUM?

CASE

YOU HAVE NOW IDENTIFIED SEVERAL RISK FACTORS AND POTENTIAL CAUSES FOR THIS CASE OF DELIRIUM. WHICH ONE IS THE MOST LIKELY CAUSE?

YOU CANNOT SAY - MRS. O'LEARY HAS SEVERAL DIFFERENT POTENTIAL CAUSES

DELIRIUM OFTEN HAS A MULTIFACTORIAL ETIOLOGY

REMEMBER

NOT FINDING A SPECIFIC CAUSE DOES NOT INDICATE THAT A DELIRIUM IS NOT PRESENT - MANY CASES HAVE NO DEFINITE FOUND CAUSE

MANAGEMENT

YOU HAVE NOW MADE A DIAGNOSIS OF HYPOACTIVE DELIRIUM, AND IDENTIFIED SEVERAL POTENTIAL CAUSES. WHAT SHOULD BE YOUR FIRST MANAGEMENT STRATEGY?

TREAT ALL POTENTIALLY CORRECTABLE CONTRIBUTING CAUSES OF DELIRIUM

MANAGEMENT

WHAT ARE YOUR TWO BASIC
APPROACHES TO MANAGEMENT?

NON-PHARMACOLOGICAL
PHARMACOLOGICAL

NON-PHARMACOLOGICAL MANAGEMENT

Assess safety

- Prevent harm to self or others
- Try to avoid physical restraints

Establish physiological stability

- Adequate oxygenation
- Restore electrolyte balance
- Restore hydration

Address modifiable risk factors

- Correct sensory deficits
- Manage pain
- Support normal sleep pattern

See CCSMH Delirium Guidelines pp 33, 35, 36 (Table 3.3)

NON-PHARMACOLOGICAL MANAGEMENT

Optimize communication

- Continuous monitoring of mental status
- Calm, supportive approach
- Avoid confrontation
- Use re-orientation strategies
 - Clock, calendars
- Provide staff consistency
- Involve friends/family
- Promote meaningful activities
- Provide education about delirium

See CCSMH Guidelines pp 33, 35, 36 (Table 3.3)

NON-PHARMACOLOGICAL MANAGEMENT

- Mobilize the older person
- Support routines
- Encourage self care
- Optimize environment
 - Avoid sensory deprivation and overload
 - Minimize noise to promote normal sleep pattern
 - Provide appropriate lighting
 - Reduces misinterpretations
 - Promotes sleep at night
 - Provide familiar objects
- Evaluate response to management
 - Modify as needed

See CCSMH Delirium Guidelines pp 33, 35, 36 (Table 3.3)

PHARMACOLOGICAL MANAGEMENT

General principles:

1. Psychotropic medications should be reserved for patients in distress due to agitation or psychotic symptoms
2. In the absence of psychotic symptoms causing stress, treatment of hypoactive delirium with psychotropic medications is not recommended
3. Psychotropic medications are not indicated for wandering
4. Aim for monotherapy at the lowest dose
5. Taper as soon as possible

See CCSMH Delirium Guidelines p 41

PHARMACOLOGICAL MANAGEMENT

**WHAT TYPES OF MEDICATIONS ARE
FREQUENTLY USED IN MANAGING
THE SYMPTOMS OF DELIRIUM?**

ANTIPSYCHOTICS

(TYPICAL, ATYPICAL)

BENZODIAZEPINES

CHOLINESTERASE INHIBITORS

OTHERS

See CCSMH Delirium Guidelines pp 41-44

TYPICAL ANTIPSYCHOTICS

- RCT evidence for haloperidol
 - Preferred over low-potency antipsychotics
 - Less anticholinergic
 - Less sedating
 - Range of doses/formulations available

WHAT DOSE WOULD YOU CONSIDER?

START LOW

For example 0.25-0.5 mg od-bid

See CCSMH Delirium Guidelines pp 41-44

HALOPERIDOL

WHAT SIDE EFFECTS WOULD YOU MONITOR FOR?

- QT prolongation
 - Risk of ventricular arrhythmias
 - Consider getting a baseline ECG
- Extrapyramidal side effects
 - Acute dystonia
 - Parkinsonism
 - Akathisia
- Neuroleptic malignant syndrome
- Orthostatic hypotension (falls)
- Oversedation

See CCSMH Delirium Guidelines p 42

ATYPICAL ANTIPSYCHOTICS

- Some evidence for risperidone, olanzapine, and quetiapine
- Clozapine is NOT recommended
- Lower rates of extrapyramidal side effects compared to haloperidol
- Considerations:
 - Olanzapine has anticholinergic properties
 - Metabolic syndromes
 - Glucose dysregulation
 - Hypercholesterolemia
 - Less relevant if used for short duration
 - Increased risk of stroke/mortality in dementia patients
 - Possibly less relevant if used for short duration

See CCSMH Delirium Guidelines pp 42-43

ATYPICAL ANTIPSYCHOTICS

- **Dosing:**
 - Risperidone
 - 0.25 mg od-bid
 - Olanzapine
 - 1.25-2.5 mg/day
 - Quetiapine
 - 12.5-50 mg/day
- **Preferred if patient has:**
 - Parkinson's Disease
 - Lewy Body Dementia

See CCSMH Delirium Guidelines p 43

OTHER TREATMENTS

- Benzodiazepines
 - Indicated for treatment of alcohol or benzodiazepine withdrawal
 - **“As benzodiazepines can exacerbate delirium, their use in other forms of delirium should be avoided”**
- Cholinesterase inhibitors
 - Some evidence in case reports
- Other agents (eg trazodone) have limited evidence base

See CCSMH Delirium Guidelines p 44

CASE

YOU SUGGEST THE FOLLOWING
RECOMMENDATIONS TO THE SURGERY TEAM:

- Correct hypernatremia
- Correct dehydration
- Give Mrs. O'Leary her hearing aid
- Create a calm, supportive environment
- Frequently re-orient patient

IN SPITE OF THESE MEASURES, MRS. O'LEARY
CONTINUES TO PRESENT WITH SYMPTOMS OF
HYPOACTIVE DELIRIUM

WOULD YOU TREAT MRS. O'LEARY
WITH AN ANTIPSYCHOTIC
MEDICATION AT THIS POINT?

NO

- She is not agitated
- She is not distressed by symptoms of psychosis

MEDICATION REVIEW

YOU DECIDE TO REVIEW MEDICATIONS -
COULD YOU MAKE ANY HELPFUL
CHANGES?

1. Metoprolol 25 mg BID
2. Atorvastatin 20 mg OD
3. ECASA 81 mg OD
4. Multivitamin 1 tab OD
5. ~~Amitriptyline 10 mg HS~~
6. Ramipril 5 mg OD*
7. ~~Ranitidine 150 mg OD*~~
8. ~~Hydromorphone 2-4 mg q2h prn*~~
 - Receiving approx. 6 mg/day

CONSIDER USING ACETAMINOPHEN INSTEAD OF OPIOIDS

CASE

Your medication suggestions were followed, and Mrs. O'Leary's pain is adequately treated with acetaminophen. Over the next few days, her mental status dramatically improves and she is no longer confused and drowsy. It seems as though the delirium has been "cured".

**WHAT IS THE LONG TERM OUTCOME OF
DELIRIUM?**

DELIRIUM OUTCOME

- Poor prognosis in the elderly
- Independently associated with:
 - Increased functional disability
 - Increased length of hospital stay
 - Greater likelihood of admission to long-term care institution
 - Increased mortality
 - 1 month: 16%
 - 6 months: 26%
- Symptoms often persist 6 months later

CASE

Approximately three years later, Mrs. O'Leary is admitted to orthopedic surgery with a fractured hip from a fall. After a surgical repair, you are asked to see her on POD#6.

She is somewhat lucid in the mornings, but becomes very agitated in the afternoons. This lasts most of the night, during which time she often yells and tries to get out of bed. She also hit a nurse while receiving care.

CASE

You take the same approach as before, and find out that she was diagnosed with Alzheimer's Disease two years ago. She now lives in an assisted living facility.

You perform an appropriate medical work-up, and all investigations are within normal limits. Her medications are the same, except she is getting morphine for pain every four hours. You are unable to perform an MMSE as she is very agitated and obviously confused.



WHAT IS THE MOST LIKELY
DIAGNOSIS?

DELIRIUM

HYPERACTIVE TYPE

WHAT RISK FACTORS DOES MRS. O'LEARY HAVE FOR DELIRIUM?

- Advanced age
- Dementia
- Medication use
 - Opioids (morphine)
- Fracture on admission
- Hearing impairment
- Past history of delirium

CASE

The treatment team optimizes the environment, and morphine is discontinued. However, Mrs. O'Leary continues to be very agitated at night, and hit one of the nurses again.

WHAT IS YOUR NEXT STEP?

PHARMACOLOGICAL MANAGEMENT

CASE

Using your previously acquired expertise on treatment of delirium, you suggest starting haloperidol in small twice daily doses. The treatment team asks Mrs. O'Leary if she will accept treatment with this medication, but she does not seem to understand.

WHAT MUST THE TREATMENT TEAM DO AT THIS POINT?

ASSESS CAPACITY TO MAKE TREATMENT DECISIONS

CAPACITY

To have capacity to make treatment decisions, one must be able to:

1. Communicate a decision
2. Demonstrate an understanding of the information material to the decision
3. Rationally be able to manipulate the information material to the decision
4. Demonstrate an appreciation of the nature of the situation including reasonably foreseeing consequences of the decision options

See CCSMH Delirium Guidelines p 47

CASE

The treatment team finds Mrs. O'Leary is not capable of making treatment decisions, and gets her daughter to be a substitute decision maker.

Mrs. O'Leary is treated with haloperidol 0.5 mg bid, and gradually returns to her baseline functioning with resolution of agitation.

CASE

Shortly before discharge home, Mrs. O'Leary acutely becomes confused and agitated at night again.

WHAT WOULD BE YOUR NEXT STEP?

MEDICAL INVESTIGATIONS

(To rule out a medical cause)

CASE

A new round of medical investigations is ordered, and urinalysis shows the presence of a urinary tract infection.

Mrs. O'Leary is treated with an antibiotic, and the delirium resolves. She moves back to the assisted living facility, and you await the next referral.



QUESTIONS?

REFERENCES

- Cole, Martin B. “Delirium in Elderly Patients”. American Journal of Geriatric Psychiatry 12:1, January-February 2004.
- Hogan et al. “National Guidelines for Seniors’ Mental Health: The Assessment and Treatment of Delirium”. Canadian Coalition For Seniors’ Mental Health. May 2006.
- Hustey et al. “The Prevalence and Documentation of Impaired Mental Status in Elderly Emergency Department Patients”. Ann Emerg Med 2002; 39:248-253.