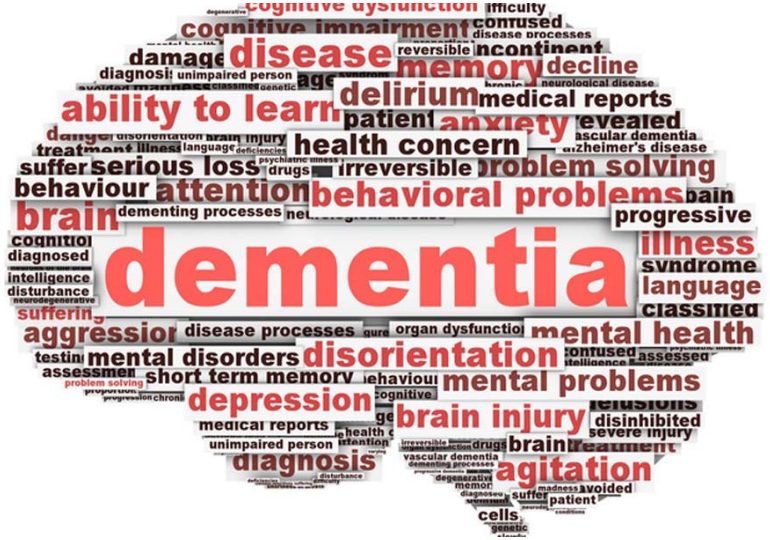
Dementia, comorbidities, and delirium risk, prevention and team management

Nancy Isenberg MD MPH



Objectives:

- Implement 5M person-centered care in Dementia
- Understand Delirium risks, prevention, treatment pathways

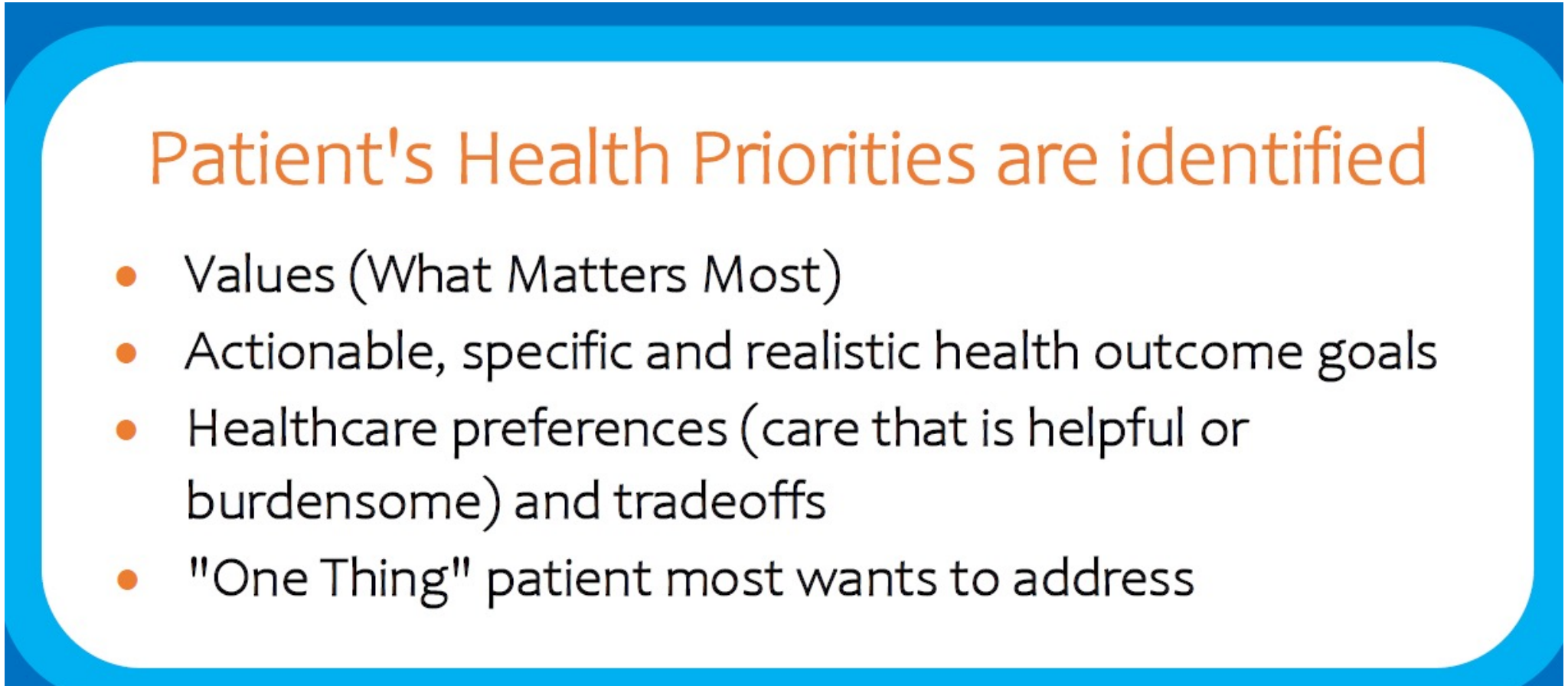
How does AFHS (5M) improve dementia care?

- Dementia care is whole person care, at the core of which is the person with dementia and their caregiver (the dyad)
- Dementia care is complex, but it's the simple interventions that matter most.
- Incorporating 5Ms to guide your care of dementia patients (and all older adults, and all people!) will help you provide consistent and comprehensive person-centered care.
- https://www.youtube.com/watch?v=QoODRr4mOkA

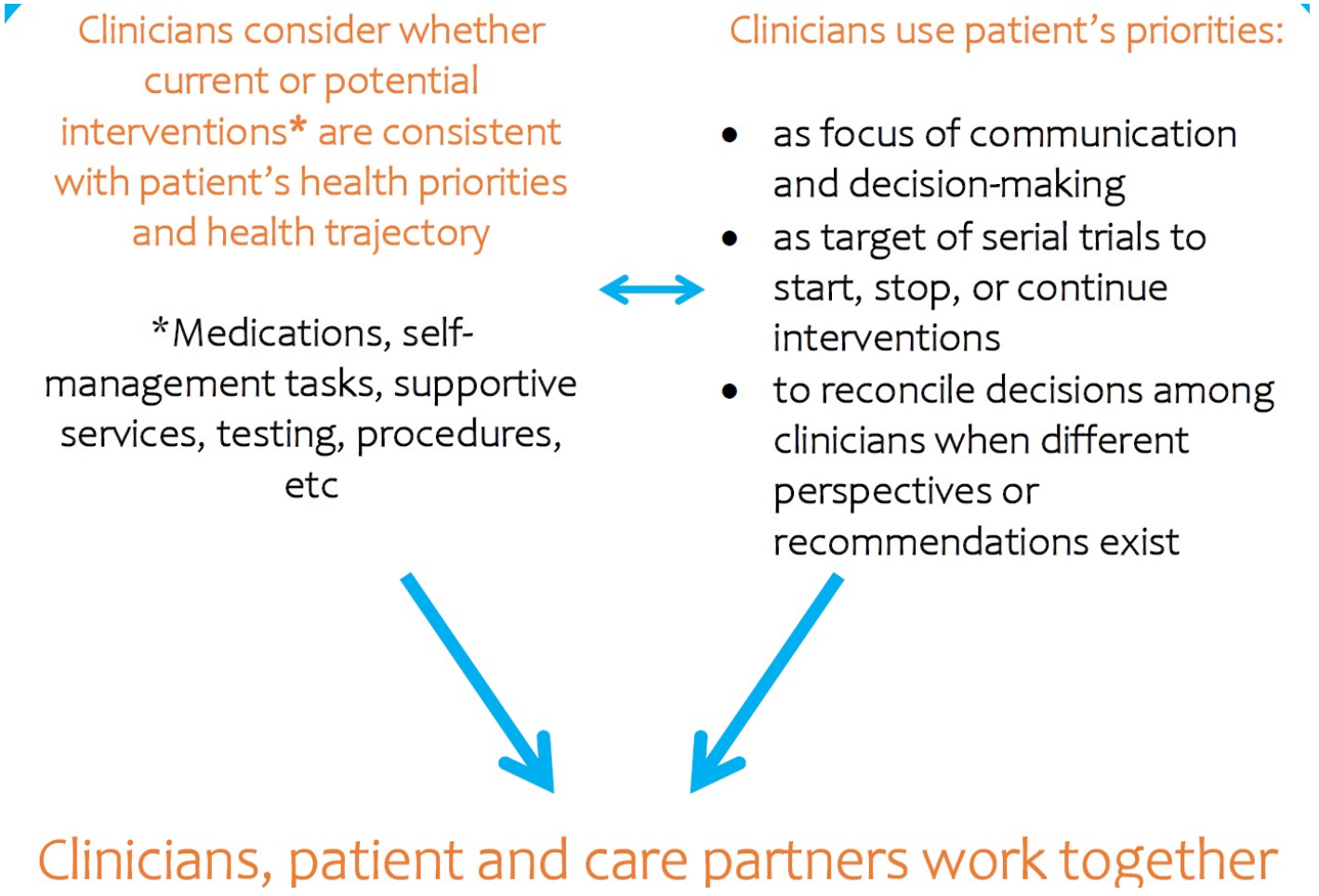
Providence

Choosing what matters, doing what works
Patient Priorities & Care M Tinetti MD

- https://patientprioritiescare.org/patient-facing-materials/
- https://patientprioritiescare.org/what-is-patient-priorities-care-and-why-is-it-important/



Aligning care with patient's priorities



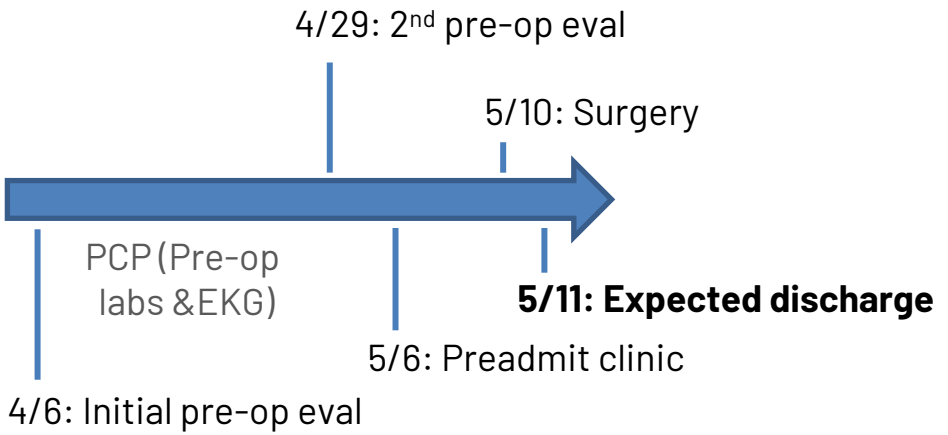
Hospitalization Rates in Dementia

- Each year **40%** of community-dwelling People with dementia (PwD) will visit ED and **30%** will be hospitalized at least once.
- Hospital care is **3 times as costly** compared to older people w/o dementia
- Acute hospitalization in PwD is associated with increased **risk of delirium, falls, cognitive and functional decline, 30 day readmission, longer LOS, long-term care admission and death**
- ***What are causes of delirium you commonly see in your practice?***

- Shepherd *et al, BMC Medicine* 2019

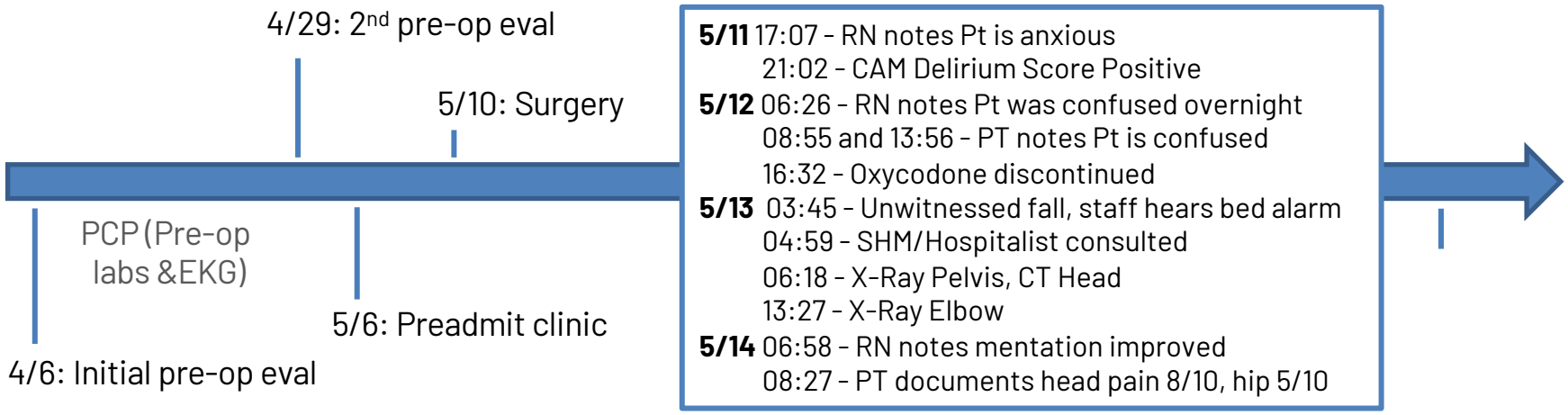
Delirium related safety event

72yo F sustains a radial head fracture and head trauma after an unwitnessed fall on POD#3 from her THA, in the setting of post-operative delirium



Safety Event

72yo F sustains a radial head fracture and head trauma after an unwitnessed fall on POD#3 from her THA, in the setting of post-operative delirium



LOS 3 days > expected | Hospital acquired radial head fracture | DOH reportable fall

Safety Event – MAR

5/10
13:17 Scopolamine patch
13:17 Famotidine 20mg BID started
21:27 Tylenol 1000mg
21:28 Xanax 1mg
22:37 Ambien 10mg
5/11
08:39 Oxycodone 5mg
12:22 Oxycodone 5mg
12:54 Xanax 1mg
14:01 Tylenol 1000mg
15:54 Oxycodone 5mg
19:59 Oxycodone 5mg
21:01 CAM Positive
21:52 Xanax 1mg
21:52 Oxycodone 5mg
22:00 Ambien 10mg

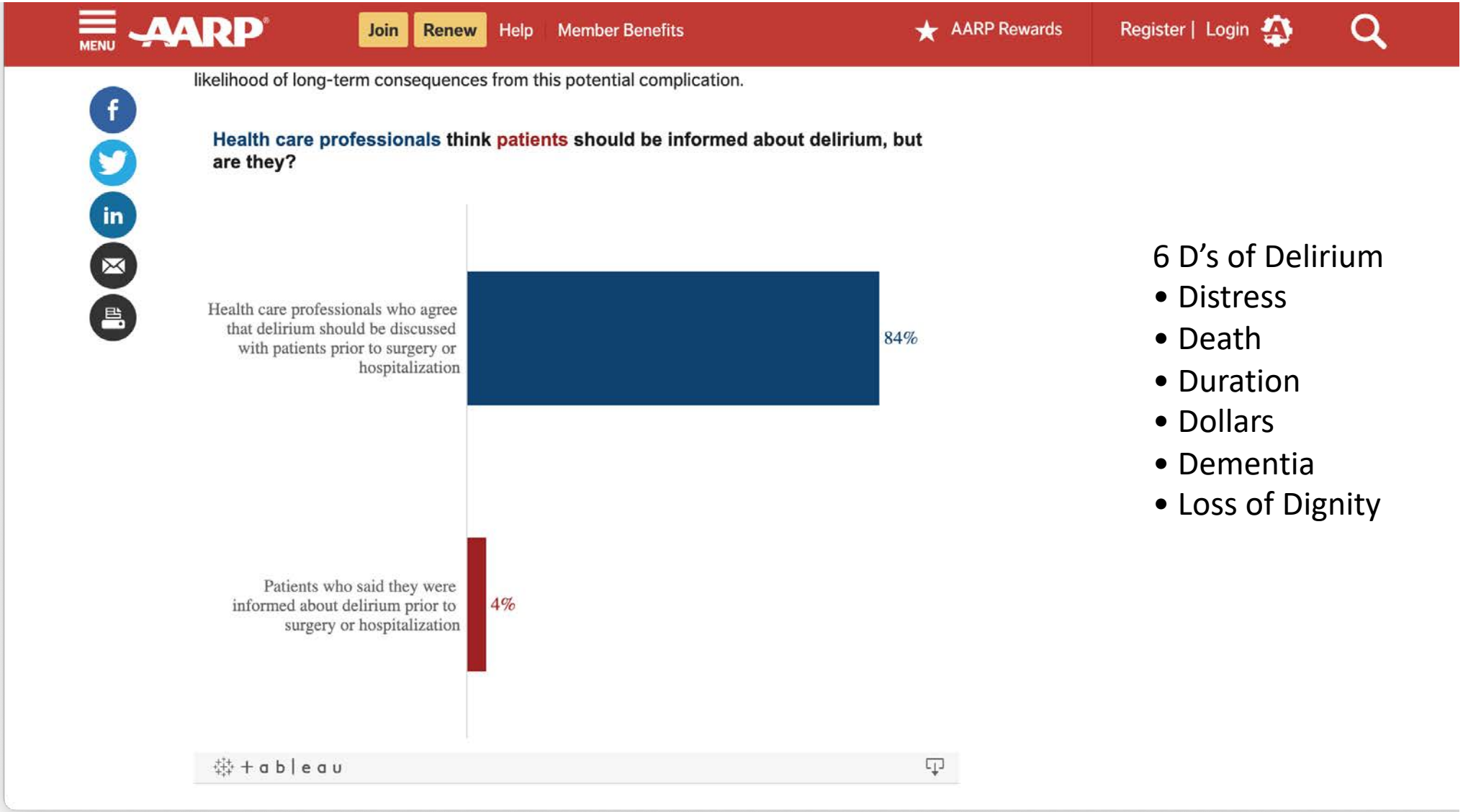
5/12
01:41 Oxycodone 5mg
06:22 Tramadol 50mg
06:22 Tylenol 1000mg
09:37 Xanax 1mg (initially held at 08:22 as Pt was delirious)
14:44 Tylenol 1000mg
21:06 Tylenol 1000mg
22:45 Ambien 10mg
5/13
03:45 Unwitnessed fall
08:47 Lidocaine patches added
13:59 Scopolamine patch removed
22:29 Melatonin 3mg added
No additional Ambien, Oxycodone, or Xanax administered

Narcotic Anticholinergic/Antihistamine Benzodiazepine / Benzodiazepine receptor agonists

Unchanged Medications

	Details
acetaminophen 650 MG CR tablet	Take 1 tablet by mouth every 8 hours. aka: TYLENOL 8 HOUR
albuterol 90 mcg/puff inhaler	INHALE 2 PUFFS INTO THE LUNGS EVERY 6 HOURS AS NEEDED FOR WHEEZING
ALPRAZolam 0.5 mg tablet	TAKE 1 TO 2 TABLETS BY MOUTH EVERY DAY AS NEEDED. aka: XANAX
aspirin 325 MG EC tablet	Take 1 tablet by mouth 2 times daily.
BENADRYL ALLERGY PO	Take by mouth nightly as needed.
CLARITIN-D 24 HOUR PO	Take by mouth Daily as needed.
cyclobenzaprine 10 mg tablet	TAKE 1 TABLET BY MOUTH EVERY NIGHT aka: FLEXERIL
EPINEPHrine auto-injector 0.3 mg/0.3 mL injection	Inject 0.3 mL s into the muscle as needed for Anaphylaxis.
FLONASE 50 mcg/nasal spray Generic drug: fluticasone	1 spray by Nasal route as needed.
fluconazole 200 MG tablet	TAKE 1 TABLET BY MOUTH EVERY DAY FOR 10 DAYS, REPEATING AS NECESSARY. aka: DIFLUCAN
gabapentin 300 mg capsule	TAKE 3 CAPSULES BY MOUTH EVERY NIGHT aka: NEURONTIN
ixekizumab 80 mg/mL injection (syringe)	Inject 80 mg under the skin Every 30 days. aka: TALTZ
meloxicam 7.5 mg tablet	Take 1 tablet by mouth Daily. aka: MOBIC
MULTIVITAMIN ADULT PO	Take by mouth Daily.
ondansetron 4 mg disintegrating tablet	Take 1 tablet by mouth every 6 hours as needed for Nausea or Vomiting. aka: ZOFRAN ODT
polyethylene glycol 17 g/capful powder	Take 17 g by mouth Daily as needed Mix into 4-8 oz of juice or water and take by mouth once daily as needed for constipation. aka: MIRALAX
valACYclovir 1 g tablet	TAKE 1 TABLET BY MOUTH THREE TIMES DAILY AS NEEDED. aka: VALTREX
zolpidem 10 mg tablet	Take 1 tablet by mouth nightly aka: AMBIEN

- resources for deprescribing
- https://deprescribing.org/resources/deprescribing-guidelines-algorithms/



6 D's of Delirium

- Distress
- Death
- Duration
- Dollars
- Dementia
- Loss of Dignity

https://www.aarp.org/health/brain-health/info-2020/delirium-report.html

Delirium

Acute & **under-recognized** disorder of attention, consciousness and cognition

Types:

Hyperactive with agitation

Hypoactive with lethargy- assc. w/ worse outcomes, higher mortality, lower QOL, longer LOS, increased falls, institutionalization.

Mixed BOTH

In ~20% cases delirium may persist for weeks to months

Associated with high rates of rapid readmission, increased mortality, cost, LOS (twice length and average $2500/pt) & post-op/post-hospital cognitive decline, institutionalization

Pallaria et al, *J PeriAnesthesia Nursing* 2018
Oldham M. et al, *J Neuropsychiatry Clin Neurosci* 2018

Prevalence

- 2020 meta-analysis of 33 studies of medical inpatients found ~1/4
- Increased in major surgery
- Meta-analysis after acute stroke 32 studies ~1/4 post-stroke
- 2019 systematic review 42 studies with pooled prevalence 35% across community to inpatient units receiving palliative care
- Nursing homes 4-38%
- Ventilated patients in ICU 50-70%

Wilson J. et al *Nature,* 2020
Mart, M et al, *Semin Respir Crit Care Med* 2021

Delirium

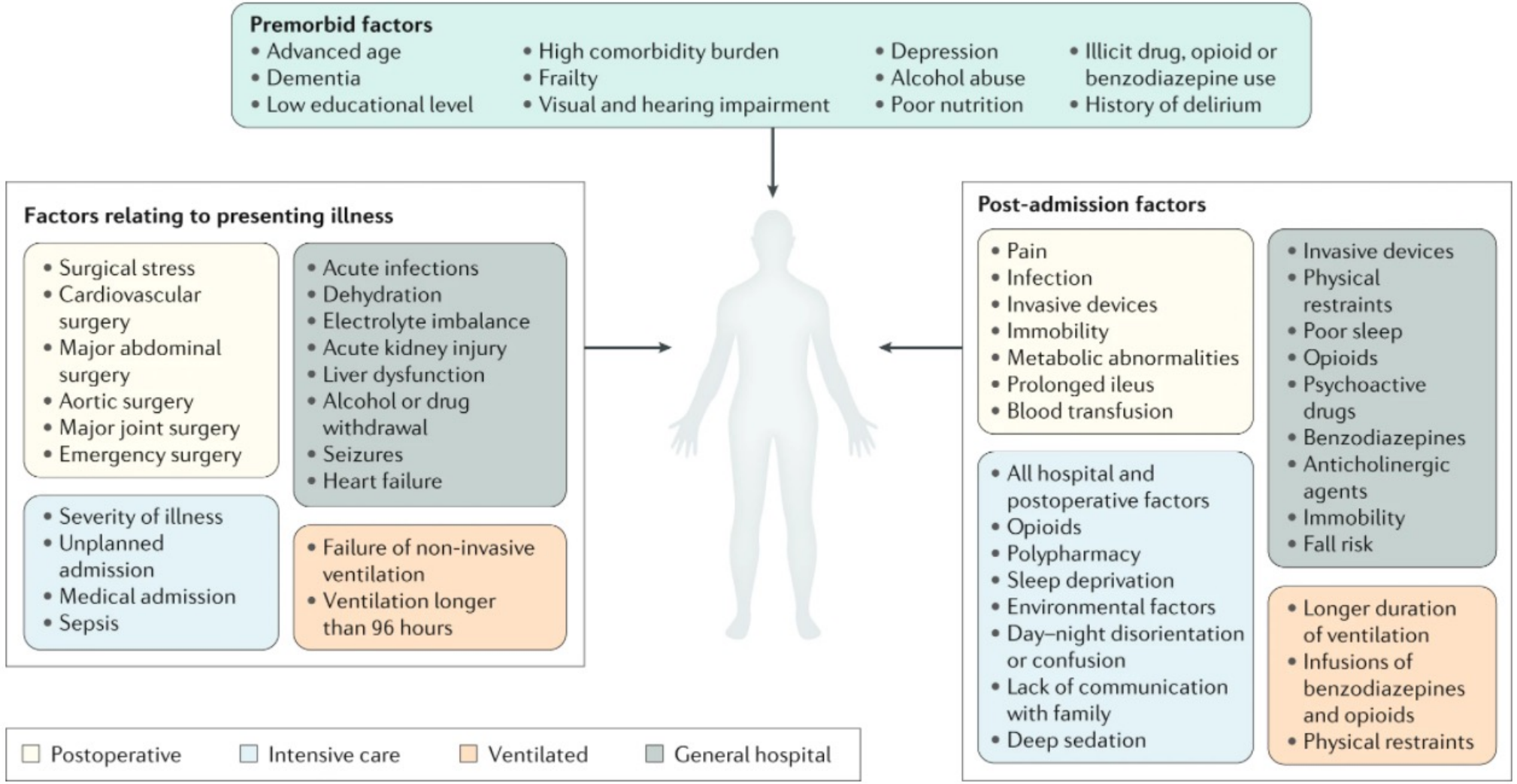
- 48% hospital days are patients >65 yr
- 42% medical patients and 80% of critical care patients experience *undiagnosed* delirium, likely higher in Covid
- 73.5% incidence of delirium during perioperative period
- Delirium is WELL ESTABLISHED RISK FACTOR for incident dementia and worsening of existing dementia.

Delirium: a missing piece in the COVID-19 pandemic puzzle

Key points

- Older people are most vulnerable to severe COVID-19 infections and mortality.
- Current guidance for diagnosis does not routinely include delirium, which may lead to under-detection of COVID-19.
- The care home population is particularly at risk, as failure to promptly detect COVID-19 may lead to outbreaks.
- Non-pharmacological approaches to management of delirium may be more difficult to implement but remain the priority.

Mnemonic Clinical causes and interventions **Dr. DRE**
Diseases Evaluate the patient for new or worsening disease, such as congestive heart failure or sepsis, as well as other disease findings such as metabolic abnormalities
Drug Removal Look for and stop deliriogenic medications including benzodiazepines, antihistamines, and inappropriate opioids
Environment Encourage daytime mobilization and remove restraints, provide frequent reorientation as well as cues such as clocks and windows to the outside, reduce night-time interventions to promote restful sleep



Risk factors for delirium relate to premorbid or predisposing factors (that is, a patient's characteristics) and to precipitating factors, which are factors relating to the presenting illness or that occur after hospital or intensive care unit admission.

Lower brain volumes, more microvasc disease

Wilson J. et al *Nature,* 2020
Mart, M et al, *Semin Respir Crit Care Med* 2021

Across Care Continuum

Box 2 | **Delirium prevention in different health-care settings**

Consensus guidelines[241,282] make a number of recommendations for delirium prevention in various health-care settings.

General settings

Multicomponent interventions

- Early recognition of high-risk factors (age >65 years, dementia, hip surgery and high acuity)
- Daily screening for delirium
- Environmental orientation (sensory, auditory, dentures, time, events, family visits and music)
- Maintain normal hydration
- Regulation of bladder and bowel function
- Early establishment of normal diet
- Correction of metabolic disorders
- Cardiorespiratory optimization (with provision of oxygen if appropriate)
- Early identification of infection
- Effective treatment of pain
- Daily mobilization
- Avoidance of antipsychotic drugs
- Avoidance of benzodiazepines
- Reduced nocturnal disturbances to promote sleep
- Early removal of devices (intravascular and airway devices)
- Avoidance of physical restraints
- Sleep promotion (eye mask and earplugs)

Pharmacological interventions

- None with high-level evidence

Intensive care and high acuity units, intubated and non-intubated patients

Non-pharmacological interventions (as above, consider also)

- Early recognition of high-risk patients (age >65 years, high acuity, sepsis, shock, dementia and ventilation)
- Light sedation
- No benzodiazepines
- Early mobilization
- Promotion of day–night routine
- Environmental awareness and orientation
- Removal of devices (intravascular and airway devices)

Pharmacological interventions

- Some suggestive evidence but not recommended by consensus guidelines

Table 1 Primary delirium prevention principles

Primary delirium prevention principles

- Repeated reorientation
- Provisions of cognitively stimulating activities multiple times a day
- A sleep protocol
- Early mobilization
- Timely removal of catheters and physical restraints
- Use of eye glasses, magnifying lenses, hearing aids, and earwax disimpaction
- Correction of dehydration
- Use of a scheduled pain management protocol
- Minimization of unnecessary noise and tactile stimuli

https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/Transitional-Care-Management-Services-Fact-Sheet-ICN908628.pdf

Delirium Prevention
30-40% cases are preventable

- Avoid anticholinergics, benzodiazepines, opioids, H2 blocker, TCA, steroids, 3rd gen cephalosporins
- Fluid management- avoid dehydration
- Early mobilization
- Avoid sleep disturbances
- Minimize perceptual deficits/glasses/aids
- Environmental awareness, nutrition, oxygenation.
- HELP, ABCDE bundle and ACE program multicomponent program
- Pharmacist led medication review in institutional long-term care

Assessment

- Confusion Assessment Method (CAM) has sensitivity of 94-100%, specificity 90-95%

1. Acute onset/fluctuating course
2. Inattention
3. Disorganized thinking
4. Altered level of consciousness

(see resources in appendix)

Delirium Management

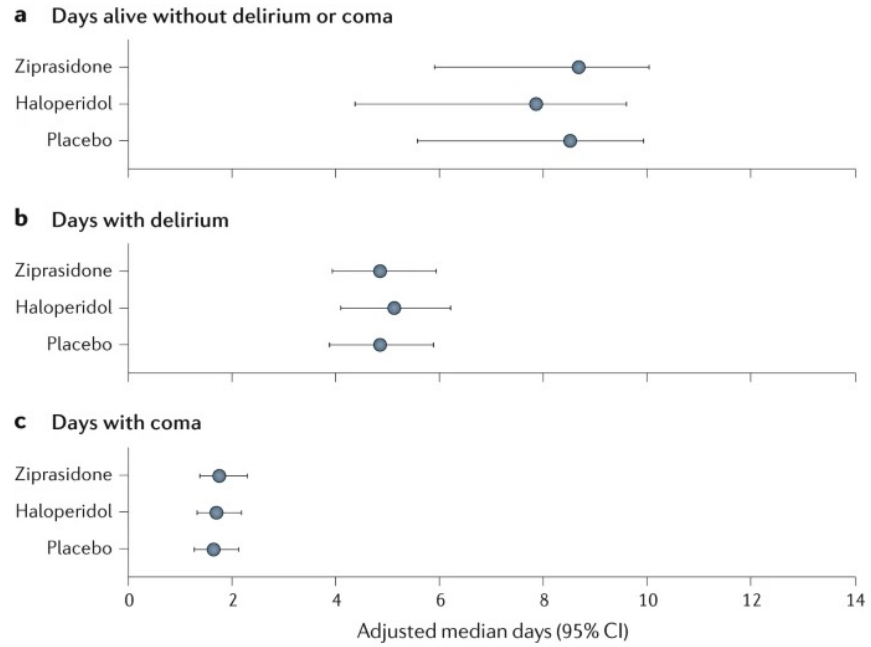
- 2019 Cochrane Review of 14 trials with 1844 patients:
  - Precedex (dexmedetomidine) is most preferred as compared to placebo for shortening length of ICU stay
  - No antipsychotic has been shown to treat length/severity of delirium, pre-op administration does not prevent occurrence of delirium
- Melatonin has only weak evidence for benefit, newer agents ramelteon and orexin-antagonist suvorexant being studied
- Anticholinesterase (e.g Rivastigmine) show no benefit, may increase LOS
- Avoid benzodiazepines, can worsen delirium

Antipsychotics in delirium treatment

- 2018, 2019, 2020 Cochrane reviews no effect on delirium severity, symptom resolution or mortality. No effect on duration, severity or LOS. Efficacy unclear
- Cholinesterase inhibitors unclear benefit, but abruptly stopping can worsen delirium
- If distressing psychosis/intractable distress there is limited role in patients with delirium when other measures have been ineffective (SIGN 2019)
- Staffing shortages, safety issues eg falls, self or other harm, and avoiding physical restraints

MIND-US largest randomized study examining antipsychotics for delirium in 566 ICU patients with delirium.

Fig. 7: Antipsychotic drugs are ineffective in delirium treatment.



In the MIND-USA trial[159], the efficacy of the antipsychotic drugs haloperidol and ziprasidone was compared with placebo for the treatment of delirium in critically ill patients. There was no significant association between study drug (the atypical antipsychotic drug ziprasidone, the typical antipsychotic drug haloperidol or placebo) and days free from delirium or coma (part **a**), days with delirium (part **b**) or days with coma (part **c**). From ref.[159], *The New England Journal of Medicine*, Girard, T. D. et al. Haloperidol and ziprasidone for treatment of delirium in critical illness. **379**, 2506–2516,

Girard, Timothy D et al. “Haloperidol and Ziprasidone for Treatment of Delirium in Critical Illness.” *The New England journal of medicine* vol. 379,26 (2018): 2506-2516. doi:10.1056/NEJMoa1808217

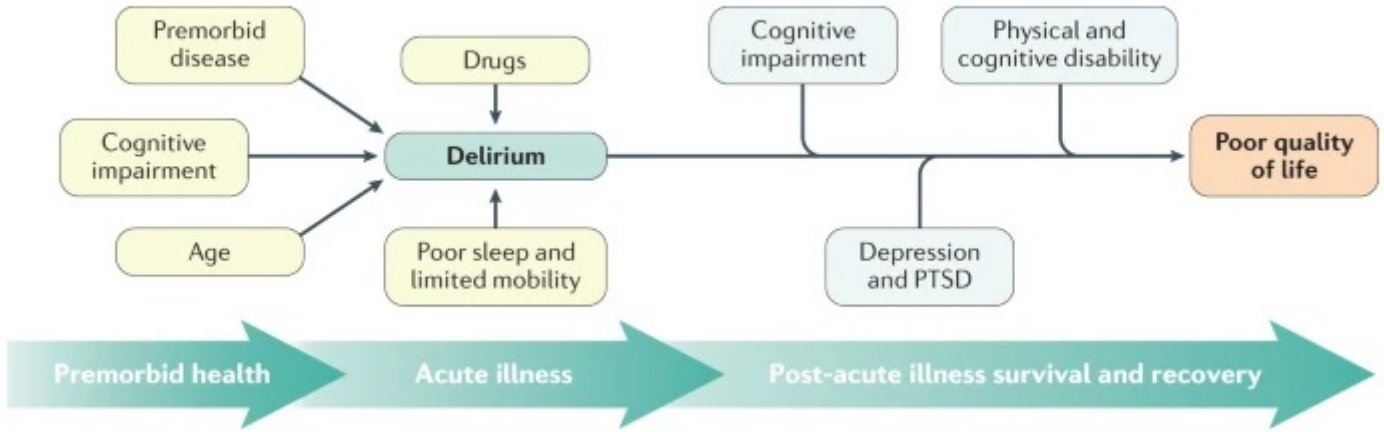
ABCDEF Bundle

ABCDEF bundle component[267]	Approach	Delirium risk factor
A	Assess, prevent and manage pain	Undertreated pain; over-sedation caused by analgesics
B	Both spontaneous awakening trials and spontaneous breathing trials	Over-sedation; mechanical ventilation
C	Choice of sedation and analgesia	Over-sedation caused by analgesics; over-sedation caused by sedatives; exposure to deliriogenic sedatives (for example, benzodiazepines)
D	Delirium: assess, prevent and manage	Disordered sleep–wake cycle; vision and hearing impairment; other unrecognized delirium risk factors
E	Early mobility and exercise	Immobility
F	Family engagement and empowerment	Disorientation

Information compiled from ref.[267].

Delirium and QOL

Fig. 9: Relationship between delirium and post-ICU quality of life.



Mild cognitive impairment and perioperative delirium

1. Delirium is common in the elderly following surgery, especially in those with preexisting reduction in neurocognitive function. Other RF include frailty, ICU admission, foley use

2. Delirium is associated with risk of cognitive decline following surgery.

3. 60% of geriatric patients with delirium at hospital admission developed dementia over next 3 years compared to 18.5% of those without delirium.

4. 23% of patients with perioperative delirium developed MCI at first follow up compared to 7% w/o delirium.

5. **MCI increases risk of perioperative delirium**.

Mayo Clin Proc. 2016 Feb; 91(2): 273–274.
doi: 10.1016/j.mayocp.2015.12.008

Medication overview

Key messages for patients about medication management

- A complete medication review (including over-the-counter and herbal remedies) should be performed frequently, and especially during care transitions, such as post-surgery or hospital discharge.
- Over-the-counter medications (such as antihistamines, sedatives, and other medications that have strong anticholinergic activity), may have significant cognitive side effects, so their use should be carefully assessed.

Online resources for safe medication use in older adults:

- American Geriatrics Society Beers Criteria (including public education resources)
- American Geriatrics Society—What To Do and What to Ask Your Healthcare Provider If A Medication You Take is Listed in the Beers Criteria for Potentially Inappropriate Medications to Use in Older Adults
- National Institute on Aging—Safe Use of Medicines
- National Institutes of Health Senior Health—Taking Medications Safely
- Centers for Disease Control and Prevention—Adults and Older Adult Adverse Drug Events
- Food and Drug Administration—Medicines and You: A Guide for Older Adults
- Institute of Medicine—Preventing Medication Errors: Quality Chasm Series

www.nas.edu/cognitiveaging
https://www.youtube.com/watch?v=E1h5jOWdX30

Early detection of MCI/dementia

- Growing evidence regarding the importance of early detection and accurate diagnosis –

-Cardiometabolic risk reduction/improving management of comorbid conditions/reducing polypharmacy/iatrogenic harm

-Connecting with community resources, programs/services

-Reducing preventable hospitalizations, inappropriate surgeries, delirium, PHCD/POCD and emergency room visits

-Identifying goals around end-of-life care and improving advance care planning

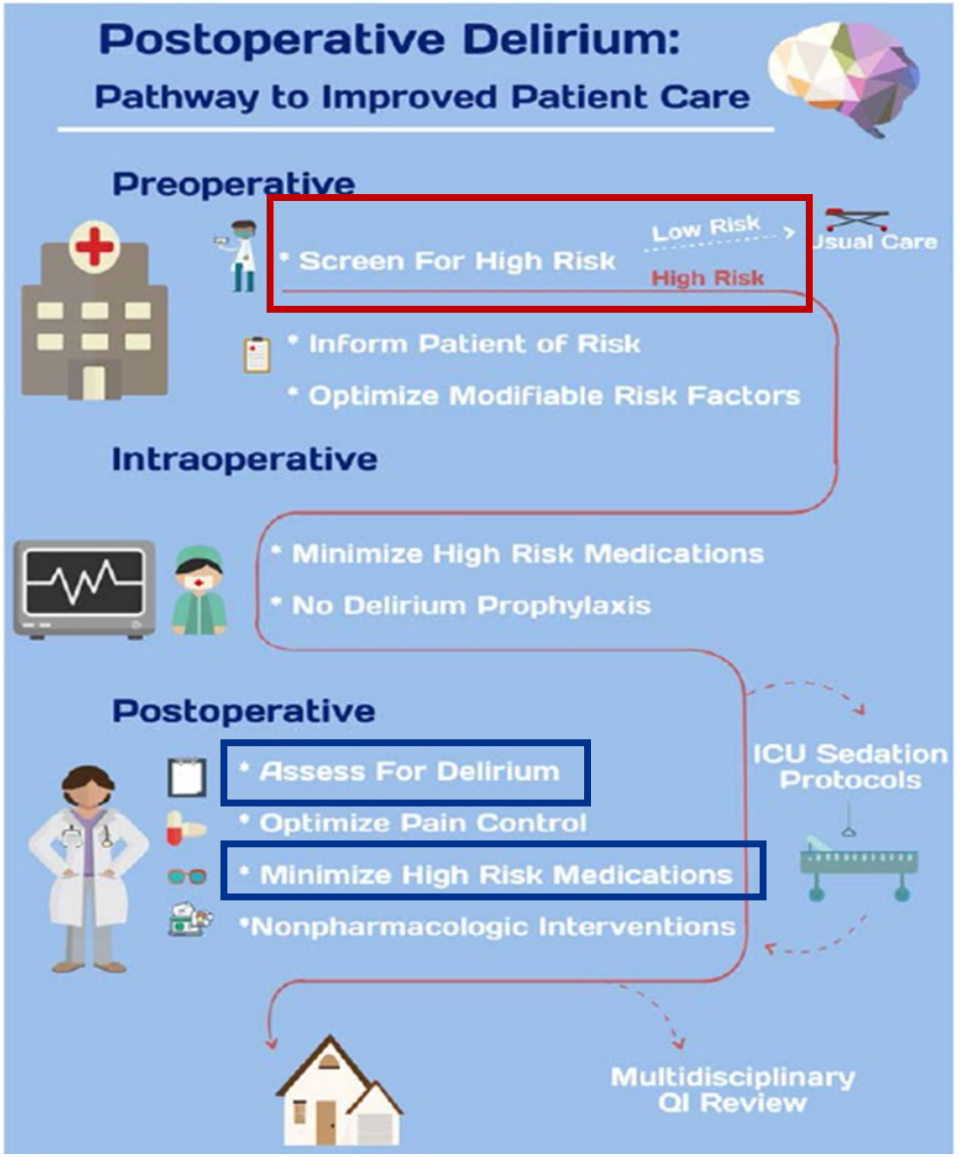
Post-Operative Delirium

Occurs in up to 50% of patients after major surgery[1]

Associated with:

- Increased length of stay
- Higher rates of institutionalization after discharge
- Higher rates of readmission
- Functional decline and cognitive impairment after surgery

30-40% of delirium cases are preventable[2]



American Society for Enhanced Recovery and Perioperative Quality Initiative Joint Consensus Statement on Postoperative Delirium Prevention
June 2020 doi: 10.1213/ANE.0000000000004641

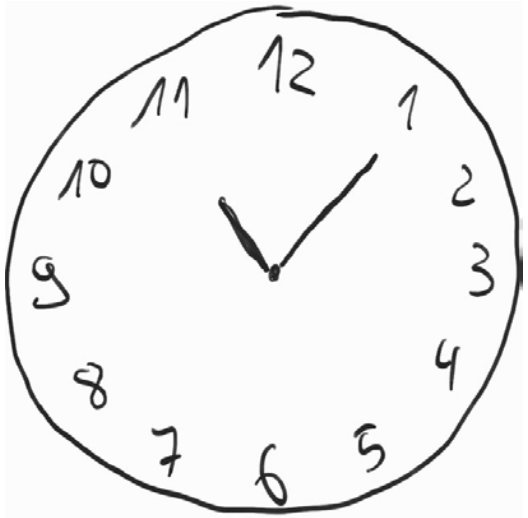
Delirium Risk Screening | Brief Cognitive Screen

Patients with **Mild Cognitive Impairment (MCI)** are at higher risk for delirium (16/126 (13%) vs 12/562 (2%), **OR (95% C.I.) = 6.6**, P<0.01 in a 2017 Mayo Clinic retrospective analysis [1])

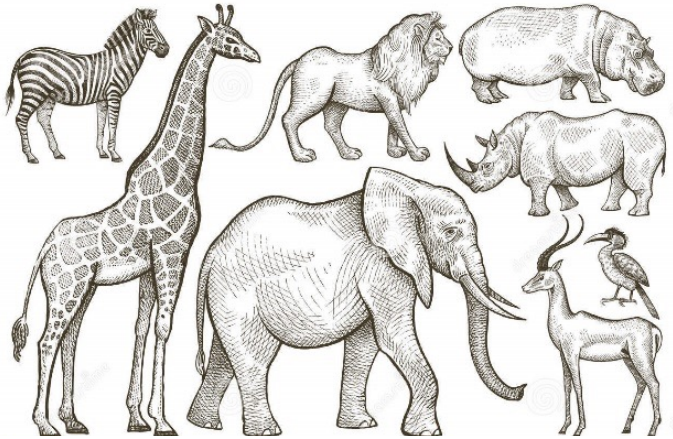
Dementia patients have superimposed delirium during hospitalizations at rates ranging from **22% to 89%**[2]

- In a 2001 prospective cohort of Swedish hip facture patients age >65 (n=101), 86% of the patients with dementia developed delirium (18/21)

MCI has an estimated prevalence of 20% in patients > 65, and dementia 6.5%. Both are underrecognized and underdiagnosed.

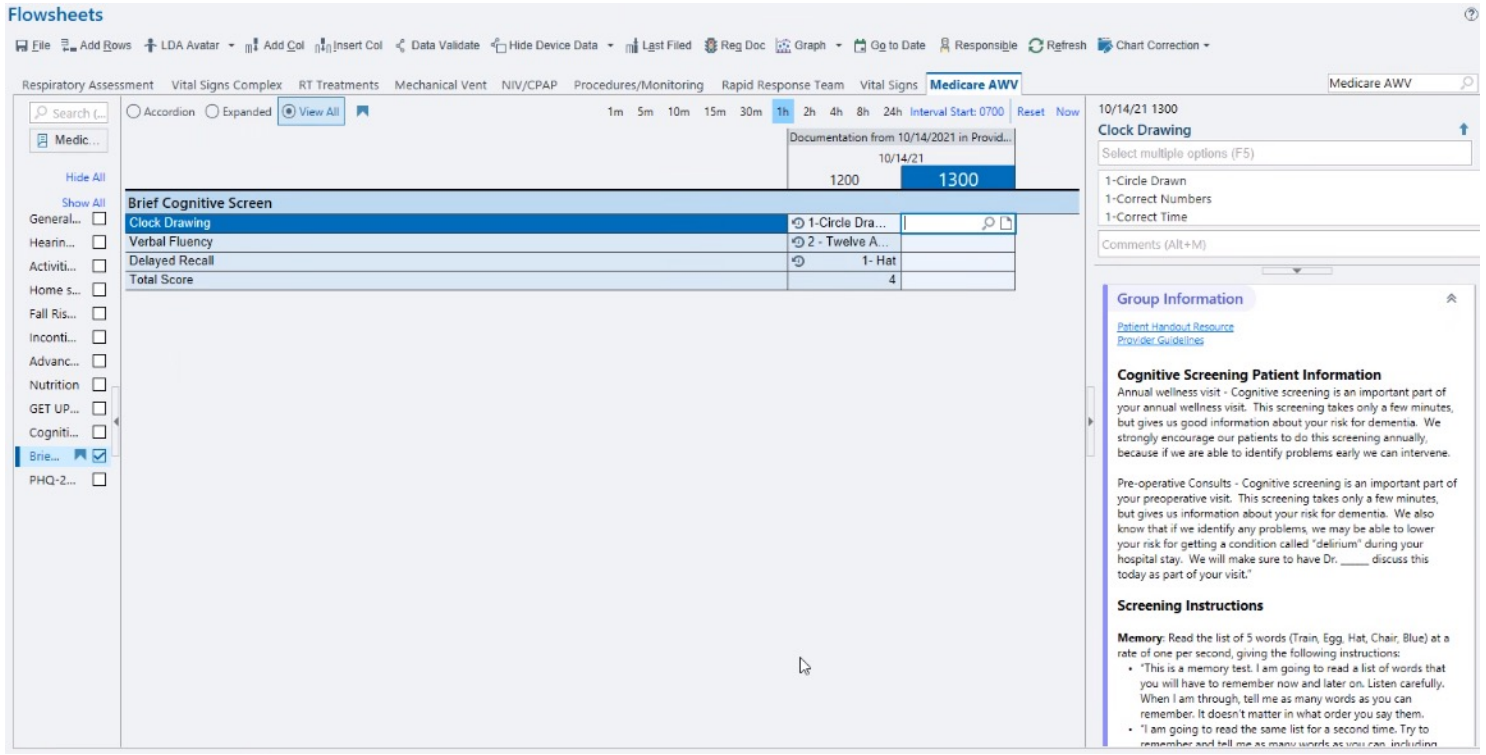


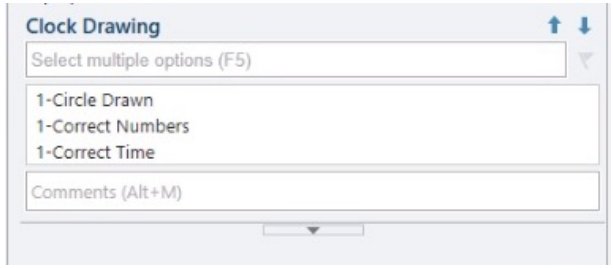
Train
Egg
Hat
Chair
Blue

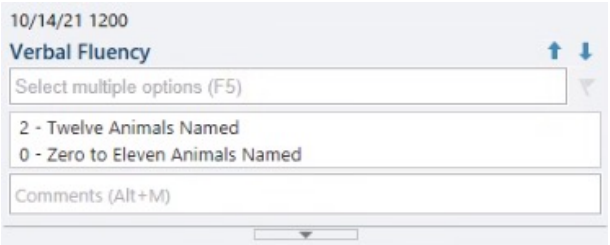


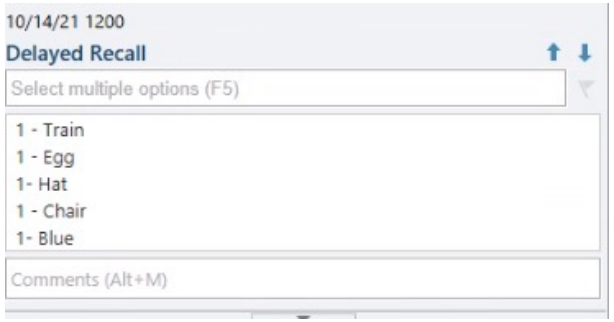
1. **Perioperative Delirium and Mild Cognitive Impairment** https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4961244/
2. **Delirium Superimposed on Dementia** https://agsjournals.onlinelibrary.wiley.com/doi/full/10.1046/j.1532-5415.2002.50468.x?casa_token=kzbmSjY5ZEcAAAAA%3AFuIk62k9gzVsHiztp-COaSu-segbHuOUaMjfR3D2BRA93Fcp4vNBq_5dsPABoeP5_I50b_uI9iL-m7M

Brief Cognitive Screen | Epic Integration (In progress)









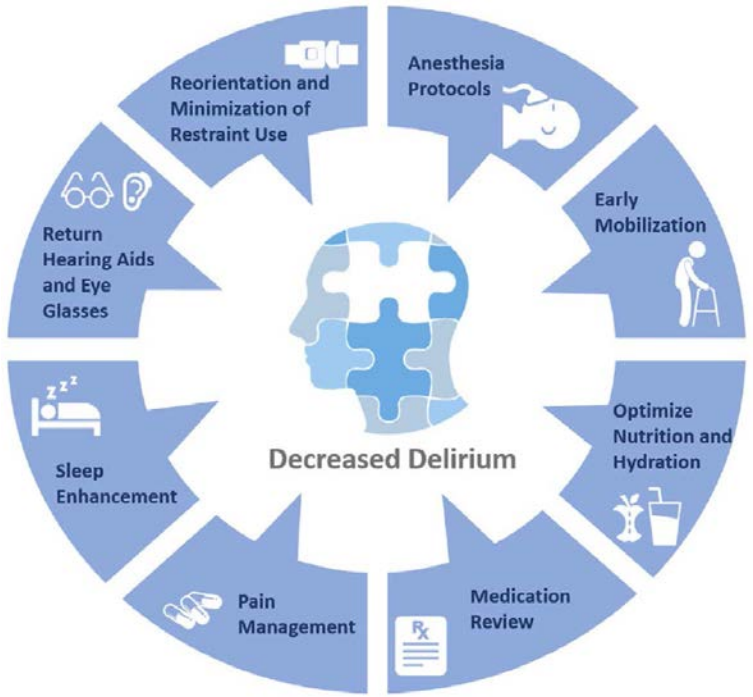
Delirium Risk Screening – High Risk Medications

A long list of common offenders

- Benzodiazepines
- Antihistamines, especially 1st generation (diphenhydramine, promethazine, hydroxyzine)
- Opioids (note low-dose opioids for pain may reduce delirium, but excessive use or use as a sedative will exacerbate)
- Anticholinergics (tricyclic antidepressants, scopolamine, atropine)
- H2 blockers (cimetidine, famotidine, ranitidine)
- Zolpidem and related benzodiazepine-receptor agonist sedatives
- Antispasmodics (baclofen, cyclobenzaprine)
- Steroids
- Metoclopramide (reglan)

To be balanced against the risk of withdrawal effects for longstanding home medications

Delirium Risk Screening and Prevention | Improved Outcomes



Risk stratify patients pre-operatively

-Brief Cognitive Screen as a high yield tool

-Flag patients with multiple high risk medications

- Cognitive Vital sign visible on Dashboard

Prioritize delirium prevention strategies for high risk patients once admitted

Delirium and fall risk nursing protocols
Earlier pharmacist and/or hospitalist assistance once delirium detected
Consider order set adjustments (e.g. PPI instead of famotidine for stress ulcer prophylaxis)

Brain Health Rx

- Alcohol (and drugs): Limiting 0-1 drinks
- Medications: deprescribe/avoid sedating and anticholinergic
- Contributing Conditions: Sleep apnea, hearing loss, cataracts.
- Exercise: >150 min/week aerobic & strength training 2-3 times week.
- Cognitive Stimulation/Mindfulness
- Socialization (generally more useful thar puzzles) try HealthyMinds
- https://hminnovations.org/meditation-ap
- Nutrition Mediterranean/ MIND/ WFPD
- SBP <120
- LDL <70 if TIA or stroke

https://www.aarp.org/health/brain-health/global-council-on-brain-health/resource-library/

Thank you for your attention!

Questions?

Contact Information

- Center for Healthy Aging

Swedish Neuroscience Institute. Moving in May to Cherry Hill
7320 216th Street SW
Edmonds, WA 98026
Ph. 206-320-7200 fax 425 673 3803
Nancy.Isenberg@Swedish.org
https://www.swedish.org/locations/center-for-healthy-aging

- Wilson, J.E., Mart, M.F., Cunningham, C. *et al.* Delirium. *Nat Rev Dis Primers* **6,** 90 (2020). https://www.nature.com/articles/s41572-020-00223-4
- Oldham MA, Flanagan NM, Khan A, Boukrina O, Marcantonio ER. Responding to Ten Common Delirium Misconceptions With Best Evidence: An Educational Review for Clinicians. J Neuropsychiatry Clin Neurosci. 2018 Winter;30(1):51-57. doi: 10.1176/appi.neuropsych.17030065. Epub 2017 Sep 6. PMID: 28876970.

Age-Friendly Health Systems (AFHS)

Providence's 5 Ms for Age- Friendly Health

WHAT MATTERS

Know your care preferences and set goals for your health. Establish Advance Directives and Trusted Decision Makers.

MEDICATION

Manage your medications and understand how they may impact your mobility and cognition.

MENTATION

Get the emotional and cognitive support you need. Understand, prevent, and seek treatment for dementia, delirium, and depression.

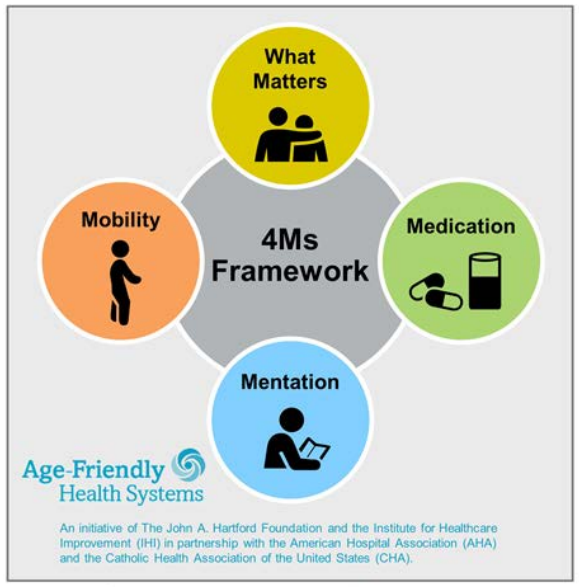
MOBILITY

Keep active and mobile, preventing injuries and falls. Learn how to safely mobilize as you age.

MALNUTRITION

Commit to proper nutrition and assess malnutrition risk regularly.

You can use the 5Ms in any setting: AFHS and Telehealth



What Matters	Mobility	Mentation	Medications	MIND Diet/malnutrition
Advance care planning	Show me how you…	Address isolation	Adequate supply, consider med delivery	Improved controls of other chronic conditions
Family/caregiver presence	Demonstrate exercises on video	Cognitive assessment and care	Review meds and OTC together	Improved outcomes
Basic Needs	Home safety assessment	Comfort of home	Consider deprescribing	Culinary medicine
Faith and Community				
Plan for future				

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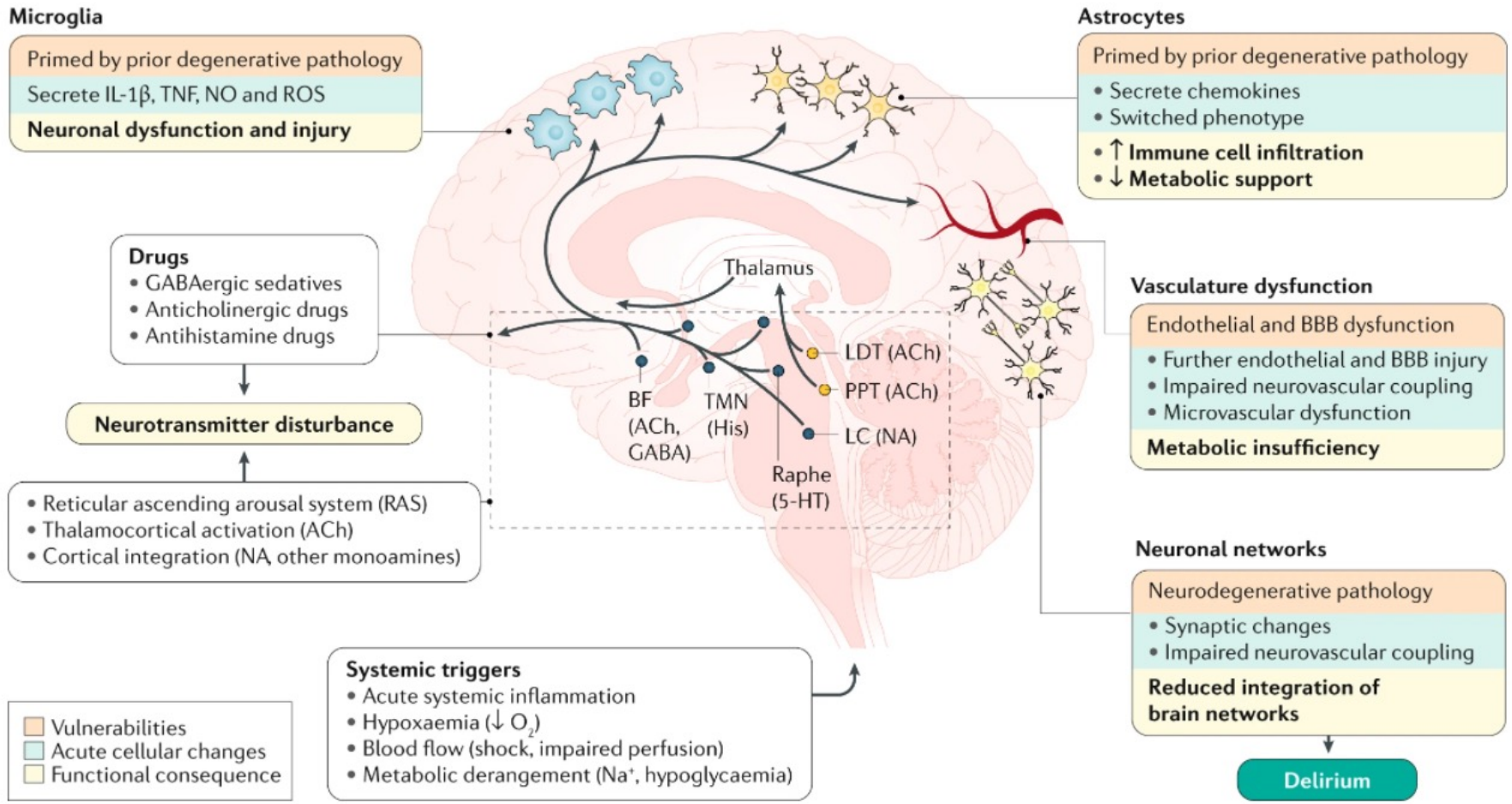
From: Delirium



Confusion assessment method (CAM) for the diagnosis of delirium*

The diagnosis of delirium requires the presence of features **1 AND 2 plus either 3 OR 4.*

1. Acute onset and fluctuating course
"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
"Did the patient have difficulty focusing attention, for example, being easily distractible or having difficulty keeping track of what was being said?"

YES if Letters attention test with >2 errors
Say C-A-S-A-B-L-A-N-C-A. Patient should squeeze your hand when the letter A is spoken. Error is missing an A or squeezing without an A.

3. Disorganized thinking
"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?"

YES if the combined number of errors to questions and commands >1
Ask the patient the following yes/no questions and count errors: 1. Will a stone float on water?; 2. Are there fish in the sea?;
3. Does 1 pound weigh more than 2 pounds?; 4. Can you use a hammer to pound a nail?
Next, ask the patient to follow your commands: a) “Hold up this many fingers” (hold up 2 fingers) ;
b) “Now do the same thing with the other hand” (do not demonstrate the number of fingers).
If unable to move both arms, for part “b” ask patient to hold up one more finger. Count errors if patient is unable to complete the entire command.

4. Altered level of consciousness
YES if RASS is not 0 (calm and alert) - either sedated or agitated

Patient is either **CAM Positive** or **CAM Negative** after performing the above, with a sensitivity of 94-100% and specificity of 90-95%.

Fig. 5: Common tools to screen for delirium in different settings.