Pacient s delíriom v anestéziologickej a intenzívnej starostlivosti

Štefan Trenkler

I. klinika anestéziológie a intenzívnej medicíny

UPJŠ LF Košice

CEEA 2020 on-line

Vyhlásenie o konflikte záujmov autora

- □ **Nemám potenciálny konflikt záujmov**
- □ Deklarujem nasledujúci konflikt záujmov

Podľa UEMS (upravené v zmysle slovenskej legislatívy)

Delírium - tézy

Definície

Incidencia

Dôsledky

Rizikové faktory

Diagnostika

Liečba

Prevencia

Záver

Delírium - tézy

Defini

In

Ciele prezentácie

1.Treba sa tomu venovať
2.Skríning je možný
3.Sedácia – cielená a monitorovaná
4.Lieky, lieky, lieky... minimalizovať
5.Multimodálny (nefarmakologický) prístup
- ABCDEF zväzok
6.Referenčné pracovisko

Záver

MODS - MOF

- Pľúca
- Zrážací systém
- Krvný obeh
- Obličky
- Pečeň
- Mozog - dysfunkcia

somnolencia – *delírium* – sopor – kóma

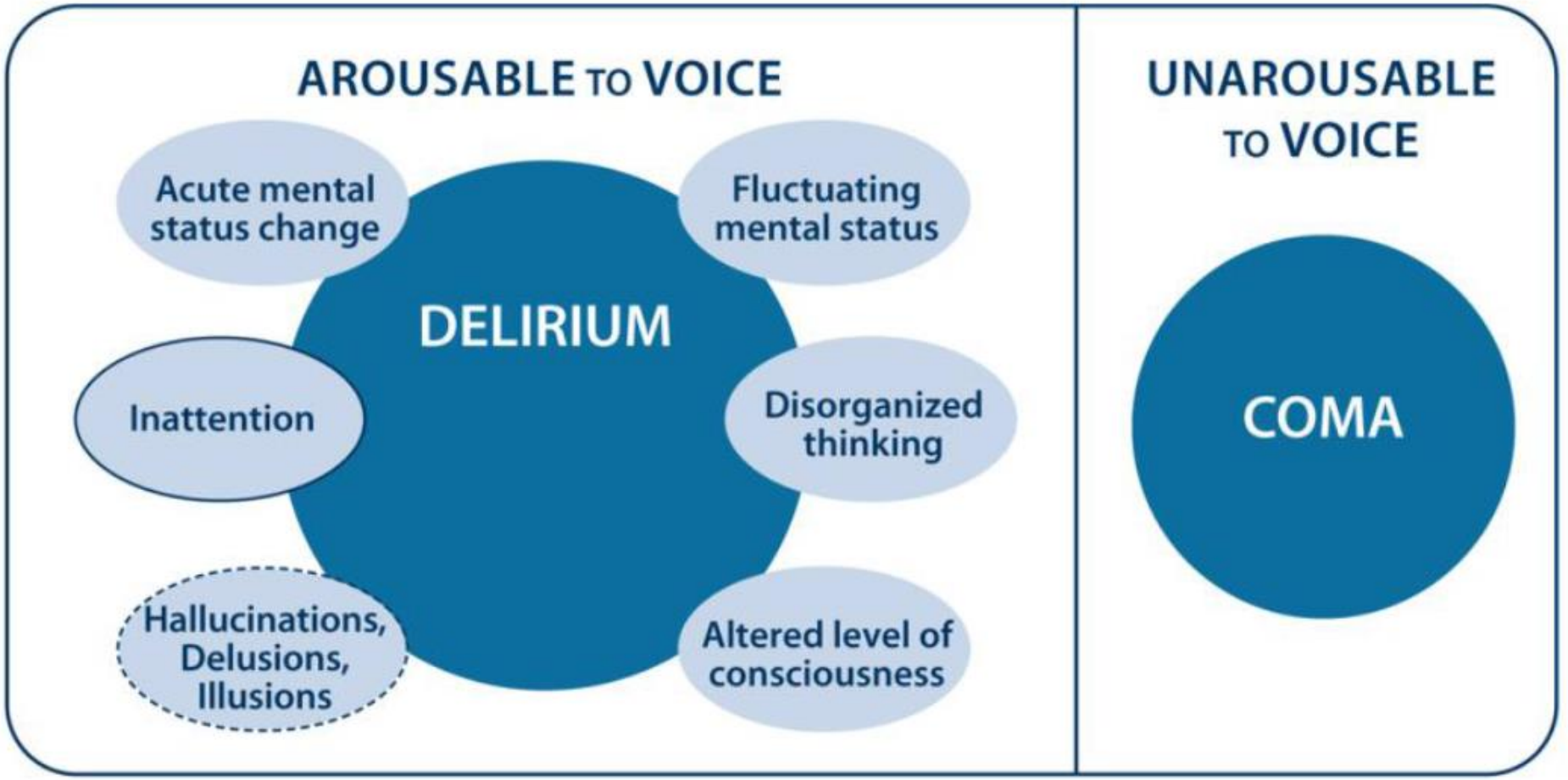
Čo je to delírium (F05)

- Organicky podmienený stav:
  1) porucha vedomia
  2) akútny nástup
  3) kolísavý priebeh
  4) porucha kognitívnych funkcií
     = schopnosť prijímať, spracovávať, ukladať
     a vyvolávať informácie

Charakteristiky podľa DSM-V

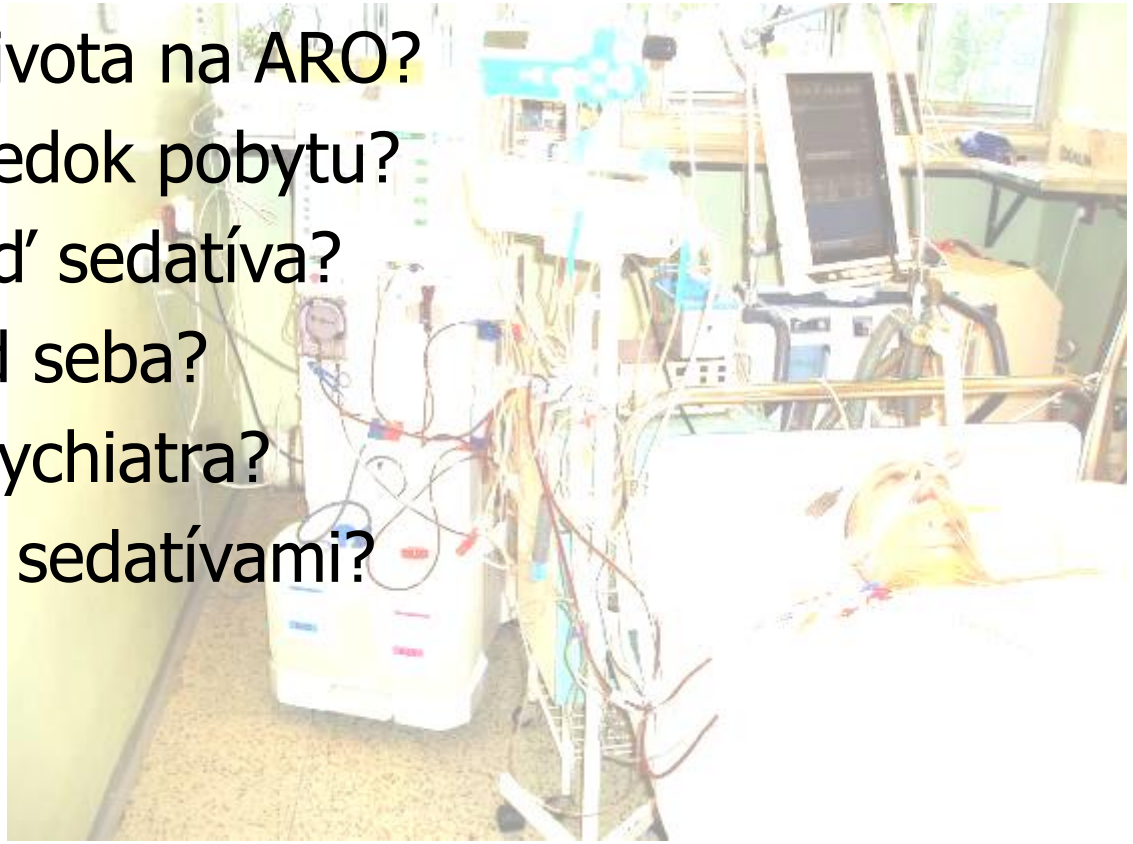
- Akútny nástup, kolísanie
- Zmenená hladina vedomia (okolie, pozornosť)
- Dezorientácia, poruchy pamäte, reči
- Poruchy percepcie – halucinácie, delúzie
- Psychomotorická agitácia/retardácia
- Emočné poruchy (strach, depresia, hnev)
- Poruchy cyklu bdenie/spánok

Cardinal Symptoms of Delirium and Coma



Delírium

- Rutinná súčasť života na ARO?
- Nevyhnutný následok pobytu?
- Ochorenie + snáď sedatíva?
- Vyrieši sa sám od seba?
- Treba privolať psychiatra?
- Riešiť ako násilie sedatívami?



Delírium

- Po anestézii
  - emergentné (krátko trvajúce)
  - klasické
- V intenzívnej starostlivosti

Incidencia, prevalencia

- 16 – 40 – 83 %, v závislosti od:
  - definície
  - súboru pacientov
  - spôsobu diagnózy (aktívne vyhľadávanie)
  - nástroja hodnotenia (skúsenosť)
  - manažmentu analgosedácie

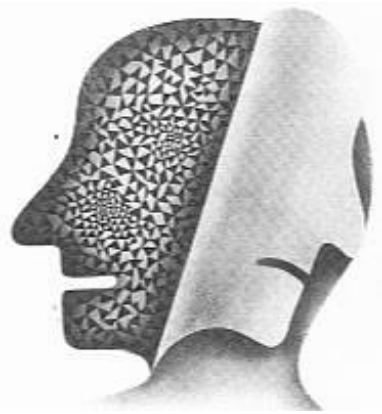
Nástup: 2 ± 1,7 dňa

Trvanie: 4,2 ± 1,7 dňa

- ďalší nárast?

Typy delíria

- **Hyperaktívne** (mladší)
- **Hypoaktívne** (starší)
- **Zmiešané**



Peterson 2006, geriatrickí pacienti:

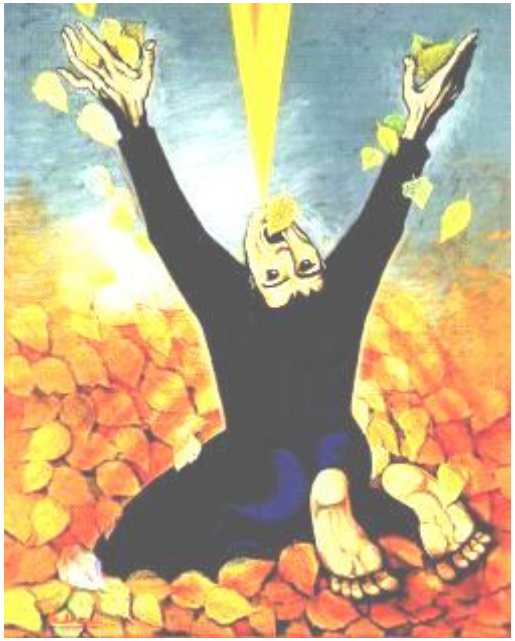
2 % hyper
43 % hypo
55 % zmiešané

Hipokrates /Celsus:
„phrenitis": zmätenosť + nepokoj
„lethargus": zmätenosť + spavosť

Nepokojný pacient

- Bolesť
- Emocionálny distres, anxieta

- Delírium



Hypoaktívne delírium

- Letargia, spavosť; kognitívne poruchy
- Prehliadané
- Horšia prognóza ako pacienti bez delíria

Dôsledky delíria (akútne/dlhodobé)

1. Technické komplikácie: extubácia, iné hadičky
2. Sťažený víning (9 vz. 4); pády
3. Dlhší pobyt na ARO (8 vz. 5), v nemocnici
3. Vyššia mortalita (3x) (aj dlhodobá)
4. Vyššie náklady (dlhší pobyt)
5. Dlhodobá porucha kognície

Záťaž pre pacienta, personál

Klinicky významné

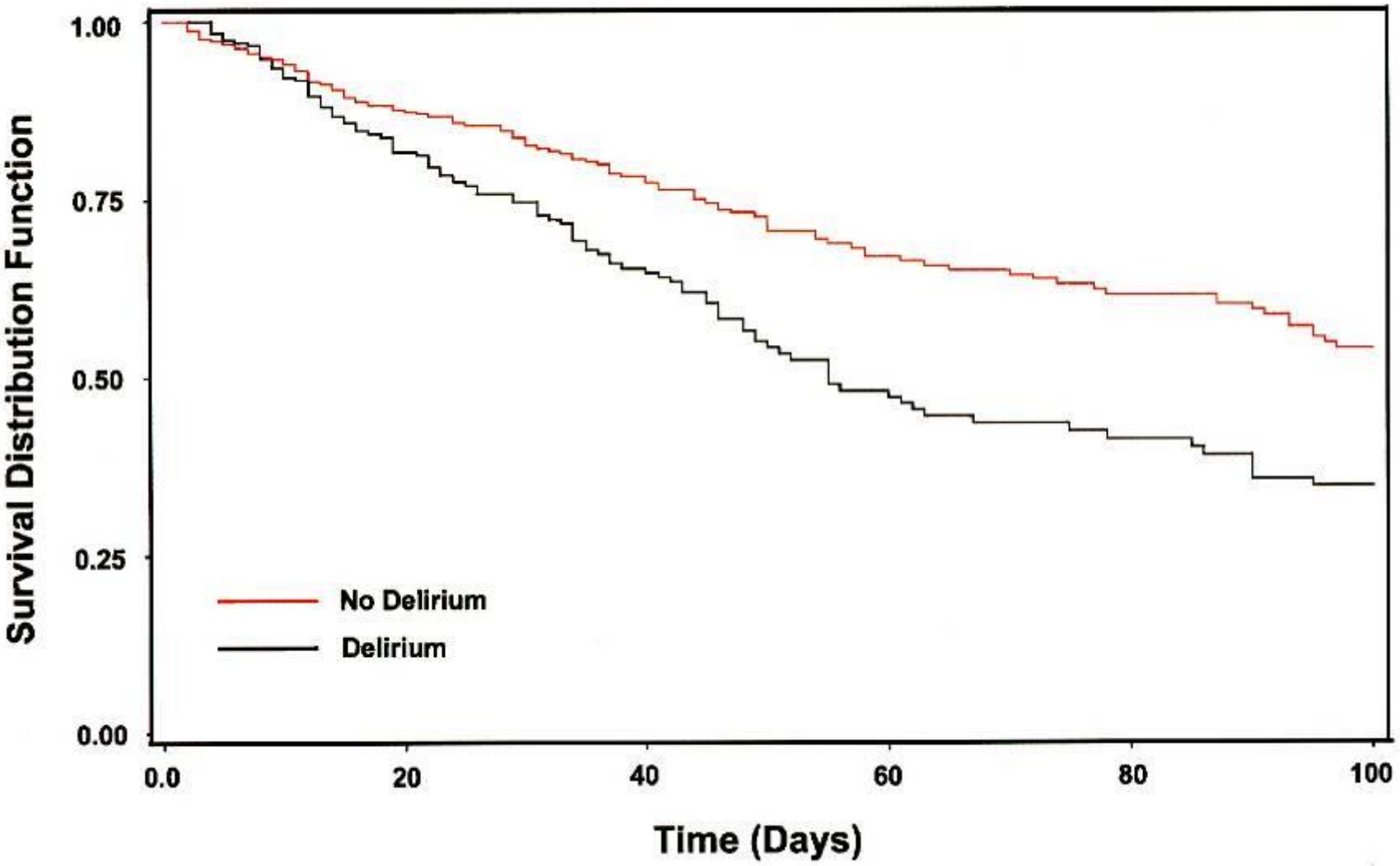
Delírium a LTCI

(long term cognitive impairment)

- Klinicky signifikantný pokles kognitívnych funkcií 78 % pri prepustní, 46 % po roku

(Hopkins Chest 2006)

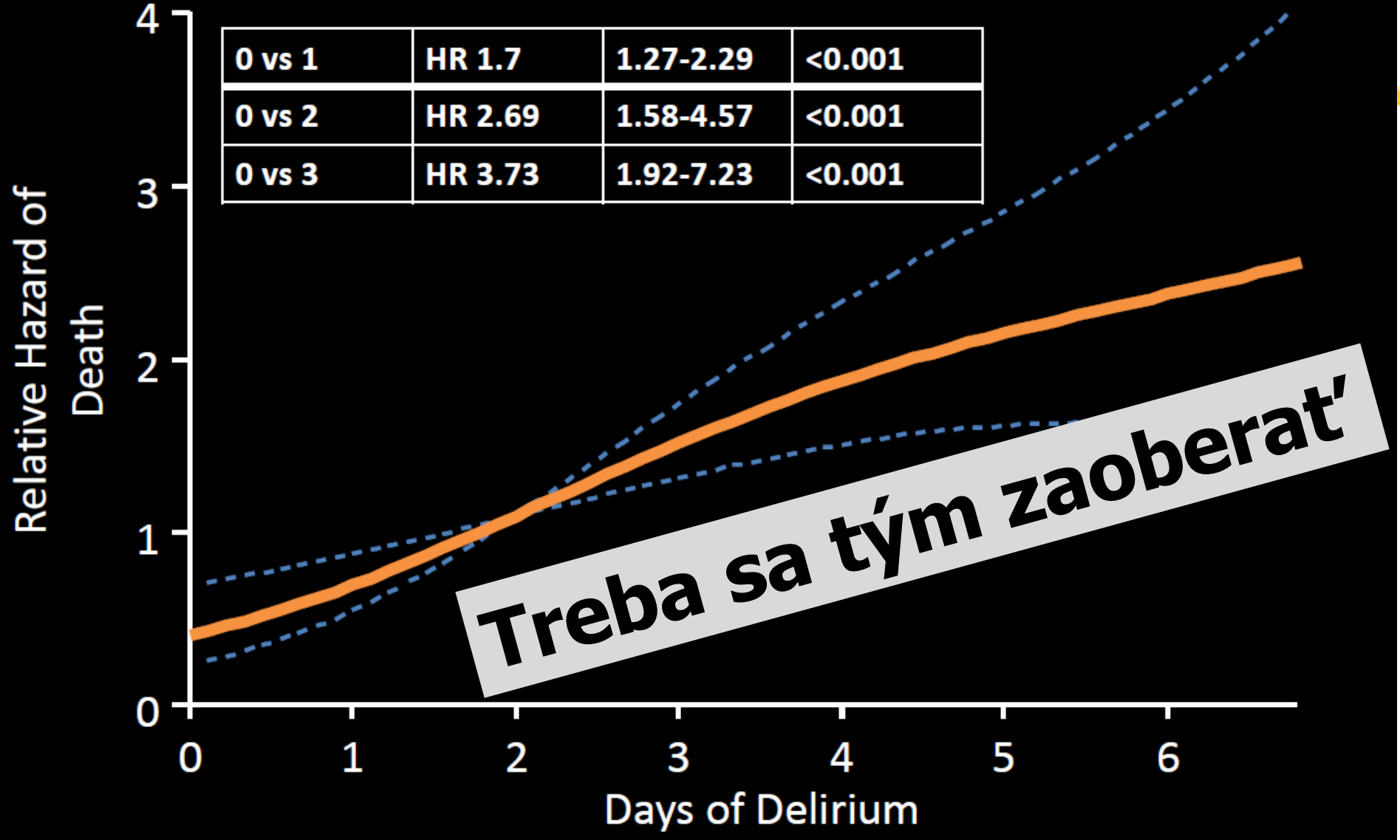
- Delírium je dôležitým rizikovým faktorom pre LTCI (QoL hodnotenia)
- Nie závažnosť ochorenia, vek, MV, pobyt na ICU, dĺžka sedácie
- Starší, predchádzajúce poškodenie (ale aj bez); aj permanentná porucha
- Výskum v spojení s Alzheimerovou chorobou


Survival Distribution Function
1.00
0.75
0.50
0.25
0.00
No Delirium
Delirium
0.0
20
40
60
80
100
Time (Days)

Ouimet 2007

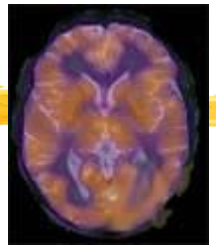
Delirium Duration & Mortality

0 vs 1	HR 1.7	1.27-2.29	<0.001
0 vs 2	HR 2.69	1.58-4.57	<0.001
0 vs 3	HR 3.73	1.92-7.23	<0.001



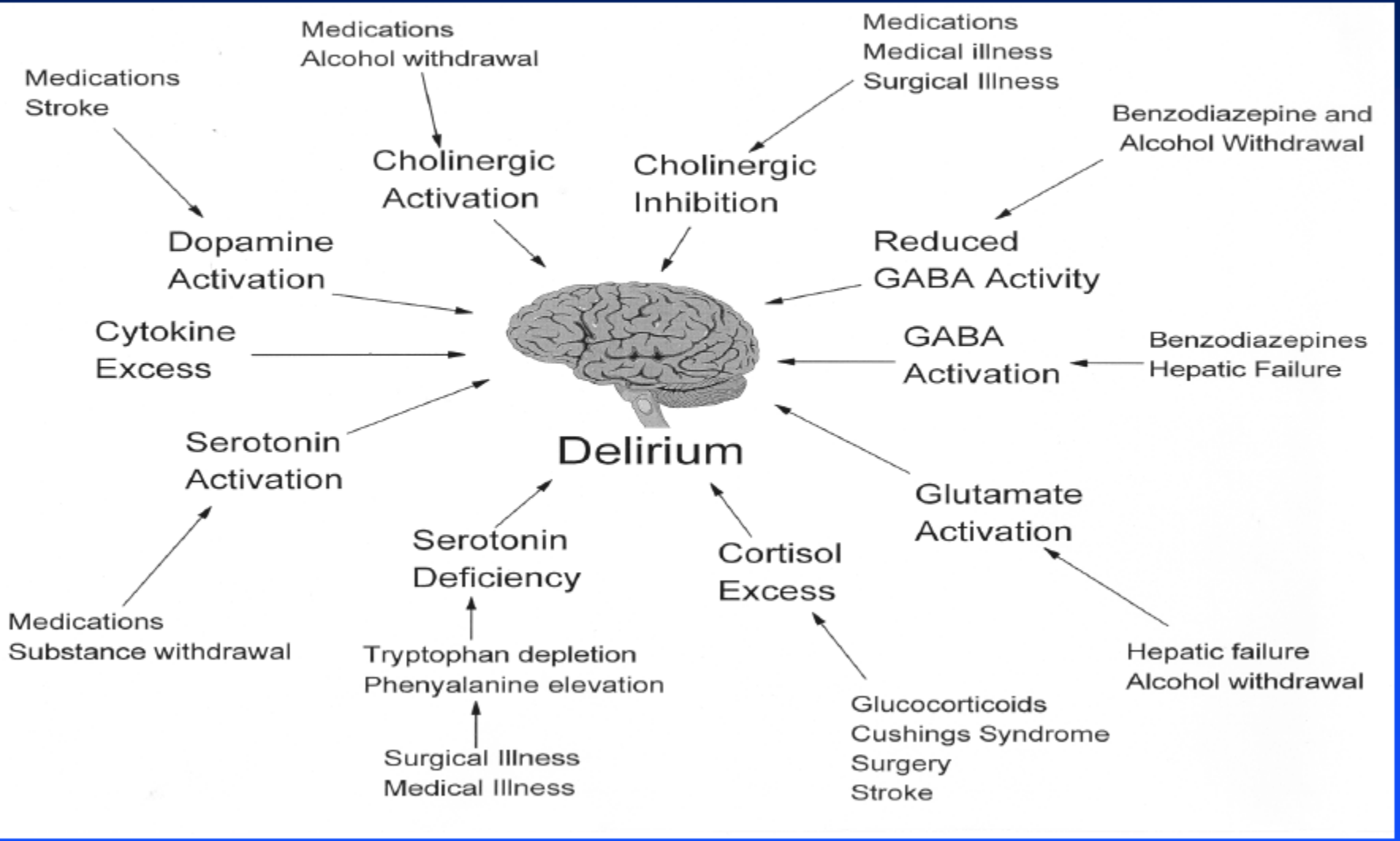
Shehabi Y, et al. CCM 2010; 38:2311–2318

Patofyziológia, etiológia



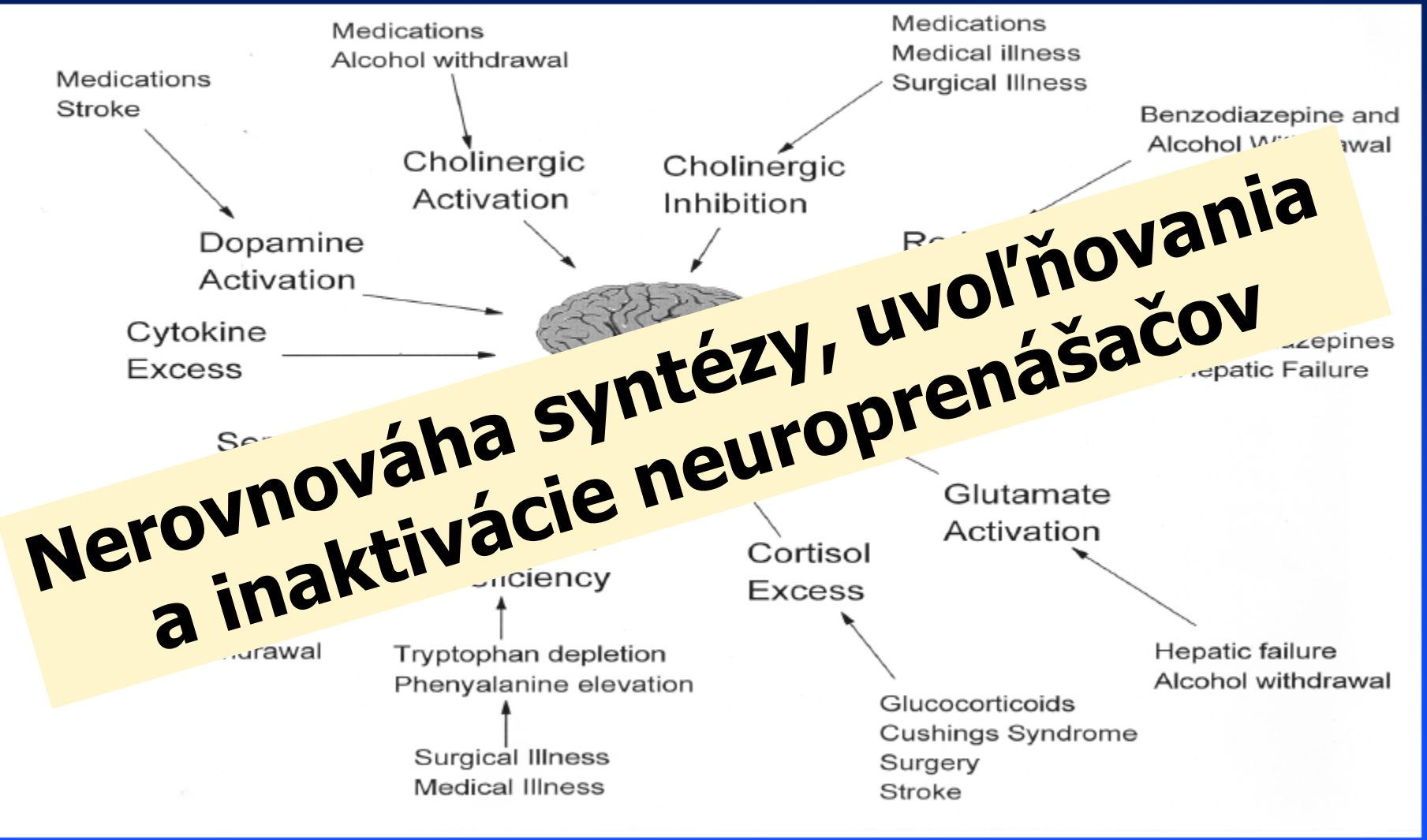
1. porucha oxidatívneho mechanizmu buniek pri hypoperfúzii alebo hypoxii mozgu
2. stresom indukovaná aktivácia osy hypotalamus-hypofýza-nadobličky
3. SIRS
4. priamy toxický vplyv, HEB
5. neuroinflamačná teória

Delirium Pathophysiology



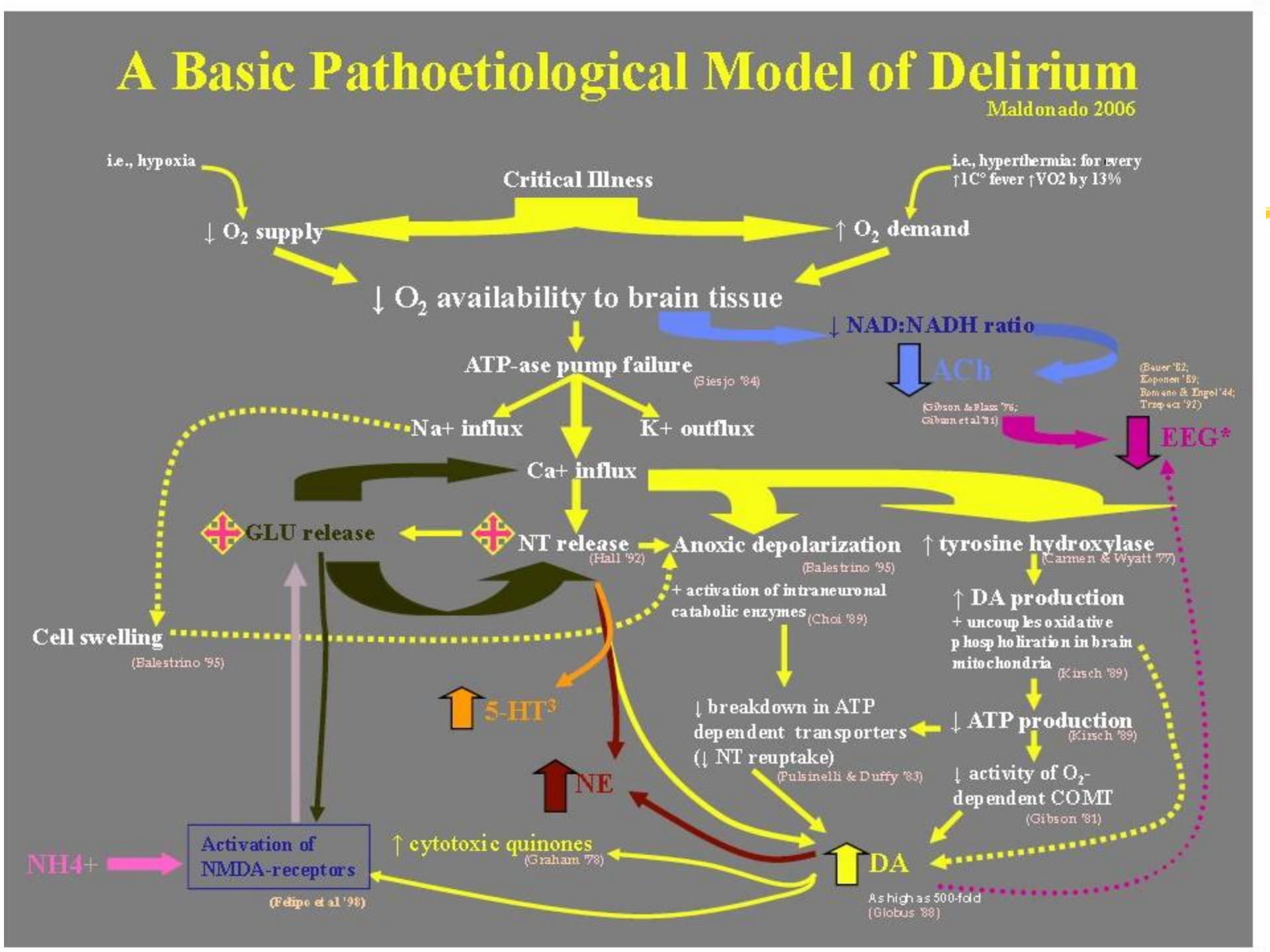
Flacker, et al. *Gerontol. Bio Scie* 1999; 54A: B239-B246

Delirium Pathophysiology



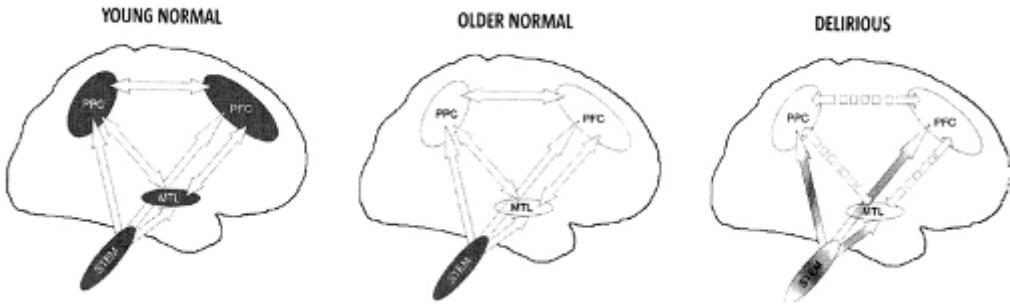
Nerovnováha syntézy, uvoľňovania a inaktivácie neuroprenášačov

Flacker, et al. *Gerontol. Bio Scie* 1999; 54A: B239-B246


A Basic Pathoetiological Model of Delirium
Maldonado 2006
i.e., hypoxia
Critical Illness
i.e., hyperthermia: for every ↑1C° fever ↑VO2 by 13%
↓ O2 supply
↑ O2 demand
↓ O2 availability to brain tissue
↓ NAD:NADH ratio
ATP-ase pump failure
(Siesjo '84)
ACh
(Bauer '82; Koponen '89; Romano & Engel '44; Trzepacz '92)
(Gibson & Blass '76; Gibson et al '81)
EEG*
Na+ influx
K+ outflux
Ca+ influx
GLU release
NT release
(Hall '92)
Anoxic depolarization
(Balestrino '95)
↑ tyrosine hydroxylase
(Carmen & Wyatt '77)
+ activation of intraneuronal catabolic enzymes
(Choi '89)
↑ DA production
+ uncouples oxidative phospholiration in brain mitochondria
(Kirsch '89)
Cell swelling
(Balestrino '95)
5-HT3
↓ breakdown in ATP dependent transporters (↓ NT reuptake)
(Pulsinelli & Duffy '83)
↓ ATP production
(Kirsch '89)
NE
↓ activity of O2-dependent COMT
(Gibson '81)
NH4+
Activation of NMDA-receptors
(Felipo et al '98)
↑ cytotoxic quinones
(Graham '78)
DA
As high as 500-fold
(Globus '88)

Mozgové zmeny pri delíriu

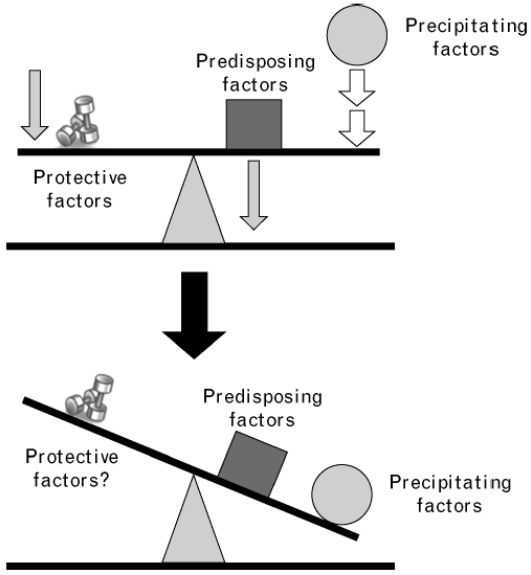
- Neuroanatomické zmeny, atrófia bielej a šedej hmoty,
- Metabolické abnormality
- Prolongované rozpojenie funkčného spojenia medzi
  - zadným parietálnym kortexom
  - prefrontálnym kortexom
  - stredným temporálnym lalokom



Gunther, 2007

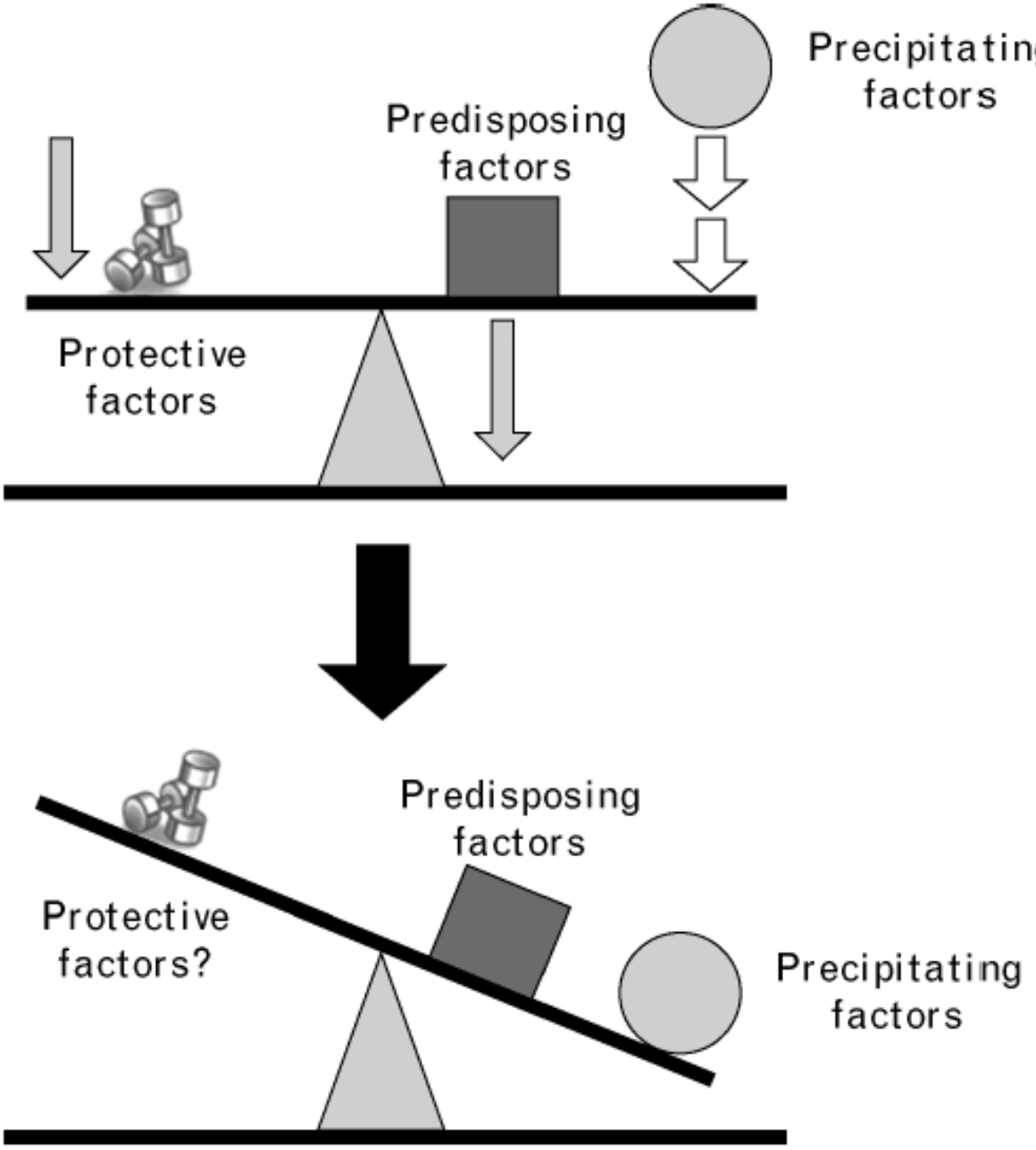
Vznik delíria

1. Predispozícia pacienta – rizikové faktory (vulnerabilita, odolnosť)
2. Akútne spúšťače
   - patologické stavy
   - iatrogénne faktory/faktory prostredia
   - lieky
   - ....



Akumulácia rizikových faktorov v prostredí ICU (3 - 4)

Modifikovateľné faktory


Precipitating factors
Predisposing factors
Protective factors
Predisposing factors
Protective factors?
Precipitating factors

EJA 2011

1. Faktory pacienta

- vek > 65 - 70 rokov (+2 %/rok)
- komorbidity – srdce, pečeň, obličky;
  kognitívna porucha ... neurologické ochorenie, depresia, demencia, epilepsia
- chronická farmakoterapia (**psychoaktívne** látky)
- porucha sluchu a zraku
- porucha elektrolytov, dehydratácia
- abuzus alkoholu, fajčenie (abstinenčné príznaky)
- genetické faktory

2. Faktory choroby; trigery

- závažnosť základného ochorenia
- horúčka, infekcia, sepsa; hypotermia
- hypoperfúzia, hypoxémia
- metabolické (Na, glykémia) a endokrinné poruchy
- rozvrat vnútorného prostredia
- patologický proces v CNS
- bolesť, traumatizmus
- zlyhanie srdca a pľúc, zlyhanie orgánov

3. Iatrogénne faktory, prostredie

- Farmakoterapia
  - opioidy (morfin > fentanyl >remifentanil?
  - sedatíva (lorazepan > midazolam?)
  - anticholinergné látky

- Fyzické obmedzenia
- Nadbytok alebo nedostatok podnetov; nedostatočný spánok
- Katéter - močový, žalúdkový, CV

Lieky a delírium

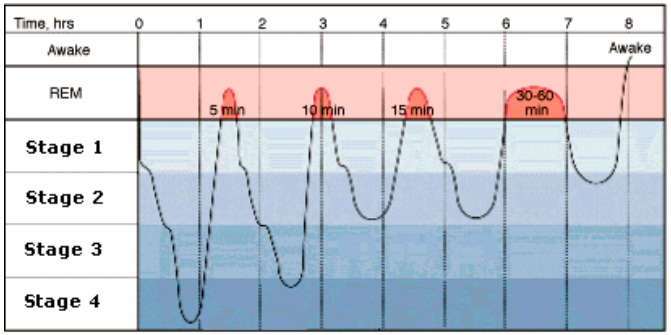
- ✓ kortikoidy
- ✓ analgetiká; NSAID, opioidy
- ✓ sedatíva; benzodiazepíny
- ✓ furosemid; H_2 blokátory; antihistaminiká
- ✓ psychoaktívne látky; antikonvulzíva
- ✓ beta-blokátory; digoxín; teofylín
- ✓ antiparkinsoniká

Sedácia – kóma - delírium

- Kóma je rizikovým faktorom pre delírium iba ak je iatrogénna (sedácia)
- Neplatí pre primárne neurologickú kómu
- Malé dávky sedatív riziko nezvyšujú

Ouimet, ICM 2007

Spánok a delírium



- Spánok: nie je pasívny stav
- REM – nonREM (4 štádia)
- Aktivácia GABA receptorov: benzodiazepíny i propofol
- Hypnotiká rizikom pre delírium
- Deprivácia spánku - faktor delíria
- Sedácia/spánok cez iné receptory? dexmedetomidin
- Štúdie: špecificita receptorov sedácie a kognitívne poruchy

Klinické prejavy I

1. Akútny vznik
2. Somatická vyvolávajúca príčina
3. Kolísanie príznakov v priebehu dňa

Klinické prejavy II

- ✓ Globálna porucha *kognitívnych* funkcií - pozornosť, pamäť, myslenie,
- ✓ Kvalitatívna *porucha vedomia*
- ✓ Dezorientácia
- ✓ Halucinácie (zrakové); paranoja
- ✓ Narušenie spánkového rytmu
- ✓ Vegetatívne zmeny (tachypnoe, tachykardia, zvýšená teplota)
- ✓ Neurologické príznaky (tras, ataxia)

Akútna porucha funkcie mozgu

Norma

↔ subsyndromálne delírium

↔ delírium (hypo/hyper)

↔ stupor

↔ kóma

Neoverené na ARO

Delírium - diagnostika

- Bez väčších problémov mimo ICU
- Problematické v prostredí ICU - komunikácia
- Požiadavky pre ICU:
  - preukázaná validita a spoľahlivosť v ICU
  - vykonať rýchle a jednoducho
  - bez potreby psychiatrického personálu
  - aj u sedovaných a intubovaných pacientov

Skríningové metódy

- CAM (Inouye, 1990)

  Confusion assessment method
- CAM-ICU (Ely, 2001)
- ICDSC (Bergeron, 2001)
- NEECHAM scale (Neelon 1996)
- ....

ICDSC

Bergeron N, Dubois MJ, Dumont M, Dial S, Skrobik Y
Intensive Care Delirium Screening Checklist: evaluation of a new screening tool. Intensive Care Med 2001;27:859-64

PATIENT EVALUATION	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Altered level of consciousness* (A-E)					
If A or B do not complete patient evaluation for the period					
Inattention					
Disorientation					
Hallucination - delusion – psychosis					
Psychomotor agitation or retardation					
Inappropriate speech or mood					
Sleep/wake cycle disturbance					
Symptom fluctuation					
TOTAL SCORE (0-8)					

CAM-ICU

Ely, 2001

1. Akútny nástup zmeny alebo kolísanie stavu

PLUS

2. Nepozornosť

PLUS

3. Neorganizované myslenie

alebo

4. Zmenená hladina vedomia

DELÍRIUM

- senzitivita: 95 – 100 %
- špecificita: 89 – 93 %
- dobrá zhoda medzi pozorovateľmi

(Ely, JAMA 2001, Ely CCM 2001, Lin CCM 2004)

http://www.youtube.com/watch?v=6WyJ0zL7VkI

1. Akútny nástup zmeny, kolísanie

- Údaj od sestry
- Zmena/fluktuácia
  - stavu vedomia
  - mentálneho stavu
  - skóre sedácie

  v uplynulých 24 hod

Richmod agitation-sedation scale (RASS) (Sessler 2002)

+4 Bojovný; násilný
+3 Veľmi agitovaný; odstraňuje hadičky
+2 Agitovaný; bojuje s ventilátorom
+1 Nepokojný; pohyby nie sú agresívne
0 Pokojný a bdelý
-1 Ospalý; očný kontakt >10 s
- 2 Ľahká sedácia; očný kontakt <10 s
- 3 Stredná sedácia; pohne sa, žiadny očný kontakt
- 4 Hlboká sedácia; na fyzickú stimuláciu
- 5 Nezobuditeľný; žiadna odpoveď na stimuláciu

Richmod agitation-sedation scale (RASS) (Sessler 2002)

+4 Bojovný; násilný
+3 Veľmi agitovaný; odstraňuje hadičky
+2 Agitovaný; bojuje s ventilátorom
+1 Nepokojný; pohyby nie sú agresívne
0 Pokojný a bdelý
-1 Ospalý; očný kontakt >10 s
- 2 Ľahká sedácia; očný kontakt <10 s
- 3 Stredná sedácia; pohne sa, žiadny očný kontakt
- 4 Hlboká sedácia; na fyzickú stimuláciu
- 5 Nezobuditeľný; žiadna odpoveď na stimuláciu

2. Nepozornosť

- Pacient ťažko sleduje konverzáciu, pokyny, ľahko rozptýliteľný, nevie sa sústrediť.

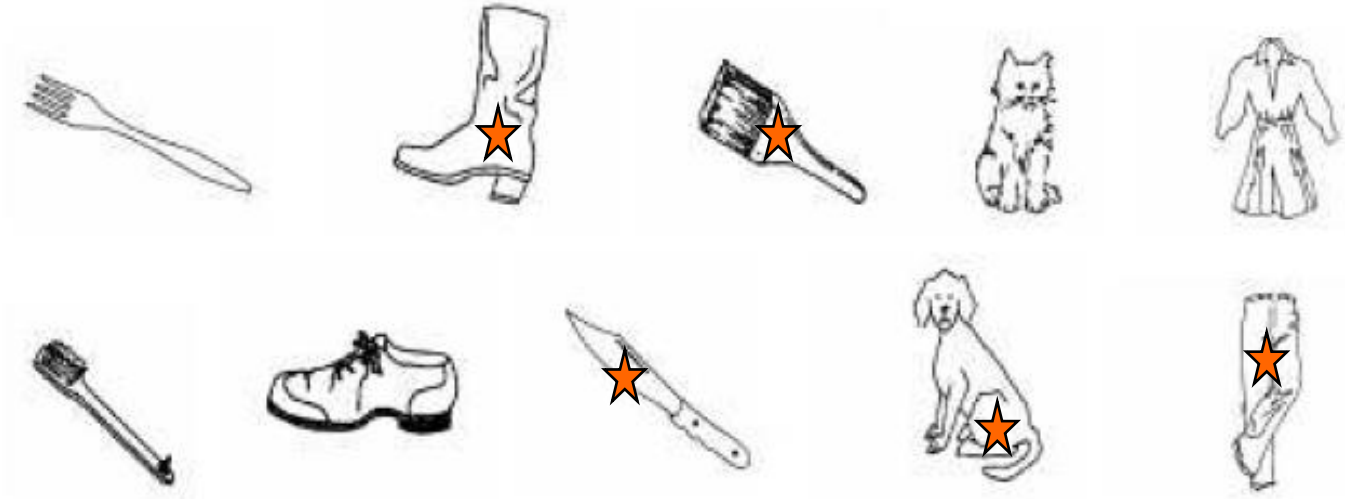
- **Test s písmenami** (stisnúť ruku na „A“)
  - S A V E A H A A R T (10/10, max. 2 chyby)

- **Obrázky**
  - 10 obrázkov, ukázať na 3 min 5 z nich.
  Potom rozpoznať v desiatich (max. 2 chyby)

Test s obrázkami

Ukázať 5 obrázkov na 3 sek

Ukázať 10 obrázkov na 3 sek



3. Neorganizované myslenie

1. Pláva kameň na vode?
2. Žijú v mori ryby?
3. Váži 1 kg viac ako 2 kg?
4. Dá sa kladivom zatlsť klinec?

1. Pláva list na vode?
2. Žijú v mori slony?
3. Vážia 2 kg viac ako 1 kg?
4. Dá sa kladivom sekať drevo?

Najviac 1 chyba

Pokyn: Ukážte 2 prsty
Požiadajte ukázať rovnako druhou rukou
Alebo pridať 1 prst.

4. Zmenená hladina vedomia

- Aktuálny stav
- RASS ≠ 0

Richmod agitation-sedation scale (RASS) (Sessler 2002)

+4 Bojovný; násilný
+3 Veľmi agitovaný; odstraňuje hadičky
+2 Agitovaný; bojuje s ventilátorom
+1 Nepokojný; pohyby nie sú agresívne
0 Pokojný a bdelý
-1 Ospalý; očný kontakt >10 s
- 2 Ľahká sedácia; očný kontakt <10 s
- 3 Stredná sedácia; pohne sa, žiadny očný kontakt
- 4 Hlboká sedácia; na fyzickú stimuláciu
- 5 Nezobuditeľný; žiadna odpoveď na stimuláciu

CAM-ICU

Ely, 2001

1. Akútny nástup zmeny alebo kolísanie stavu

PLUS

2. Nepozornosť

PLUS

3. Neorganizované myslenie

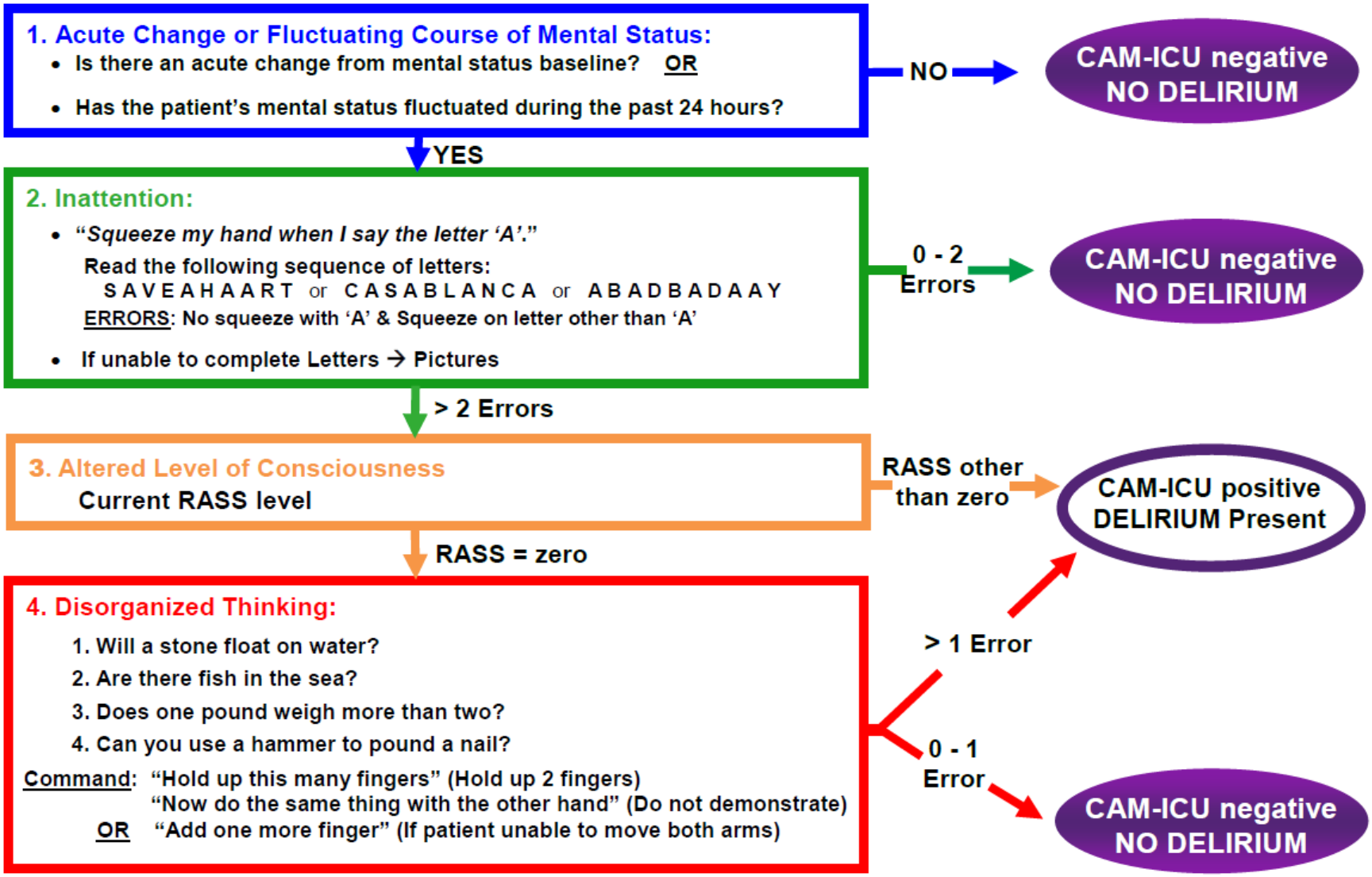
ALEBO

4. Zmenená hladina vedomia RASS ≠ 0

DELÍRIUM

http://www.youtube.com/watch?v=6WyJ0zL7VkI

Confusion Assessment Method for the ICU (CAM-ICU) Flowsheet



STEP 1 - RASS

What is her current RASS Score? ____

Proceed with Step 2 – CAM-ICU assessment?

☐ **Yes** (it is possible to assess delirium at this level)
☐ **No** (the patient is comatose and cannot be assessed for delirium)

STEP 2 - CAM - ICU

Feature 1: Acute Change or Fluctuating Course of Mental Status

Is there an acute change from mental status baseline? Yes ☐ No ☐

Has mental status fluctuated during the past 24 hours? Yes ☐ No ☐

Feature 1: **Present** ☐ **Absent** ☐

Proceed with Feature 2? **Yes** ☐ **No** ☐

Feature 2: Inattention

Letters > 2 Errors: Yes ☐ No ☐

Pictures > 2 Errors: Yes ☐ No ☐

Yes ☐ **No** ☐

Feature 3 Level of Consciousness

Current RASS (Think back to level of consciousness assessment in Step 1)

Feature 3: **Present** ☐ **Absent** ☐

Proceed with Feature 4? **Yes** ☐ **No** ☐

Feature 4: Disorganized Thinking

Combined number of Errors > 1 Yes ☐ No ☐

Feature 4: **Present** ☐ **Absent** ☐

Overall CAM-ICU:

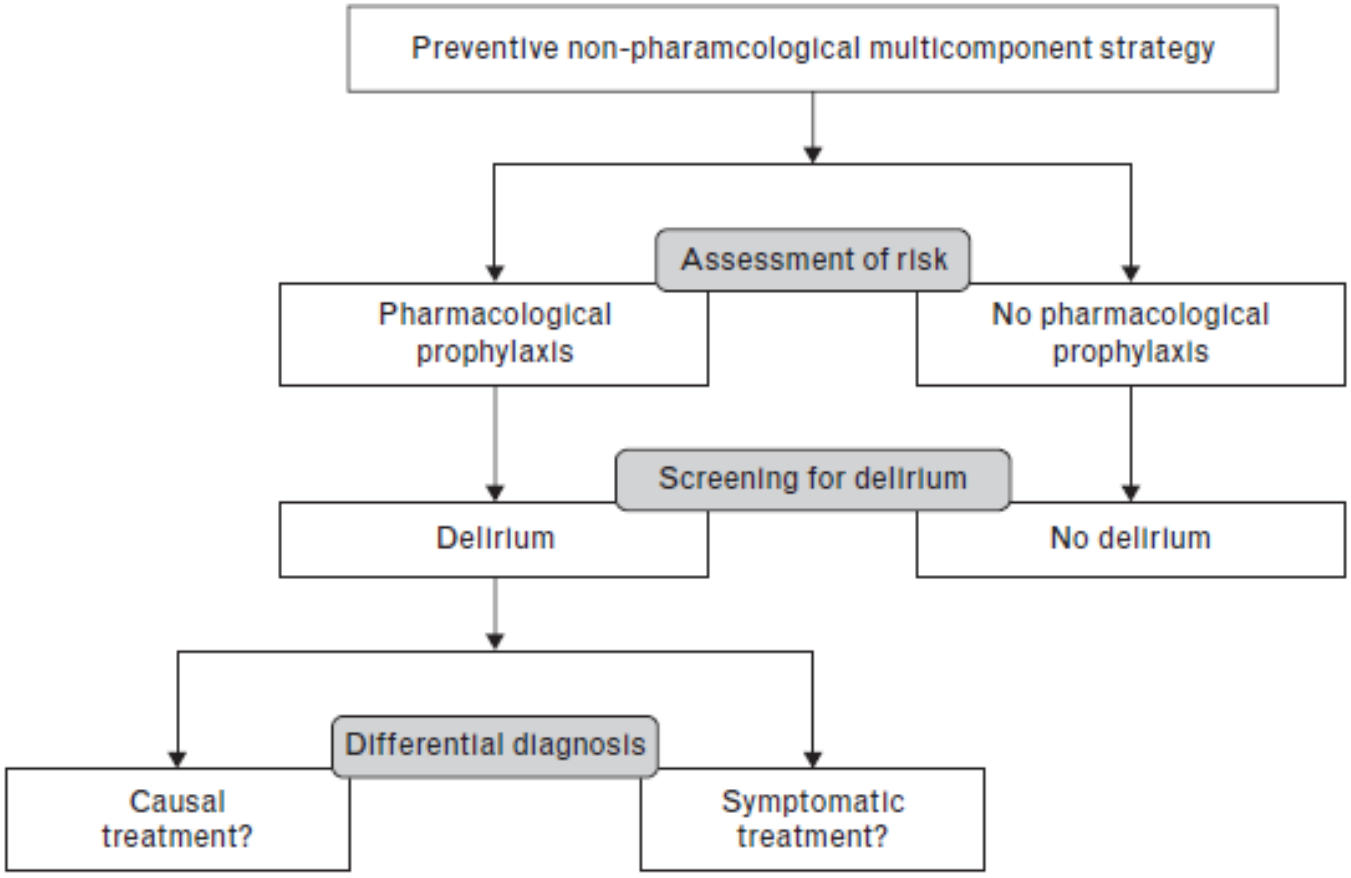
☐ **Positive** (Feature 1 **and** 2 **and** either 3 **or** 4 present)
☐ **Negative**

Skríning je možný

Manažment pacienta

- Multidisciplinárny prístup
- V rámci iných všeobecných opatrení

1. Včasné rozpoznanie, skríning
2. Cielené preventívne stratégie
3. Farmakologický prístup
4. Nefarmakologický prístup



Generic clinical algorithm showing the typical three-step approach: non-pharmacological multicomponent strategies for primary prevention, pharmacological prophylaxis and symptomatic and causal treatment of delirium.

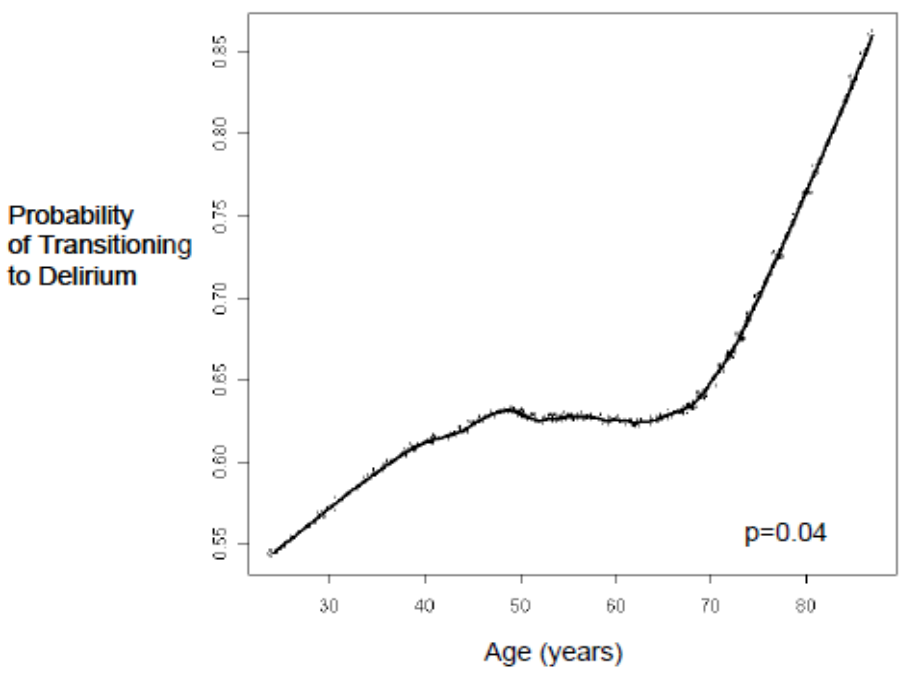
Faktory

- Ciele
  - zlepšenie kognitívnych funkcií
  - zníženie rizika nežiaducich následkov
- Stanovenie etiológie; hľadanie rizikových fakt
- Protokol
- Mini predisponujúcich a spúšťacích fakto
- Zhodnotenie farmakologickej liečby
  - sedatíva, opioidy, antipsychotiká
  - minimálna dávka, trvanie; protokol
- Sedovanie pacienta s bolesťou – riziko delíria

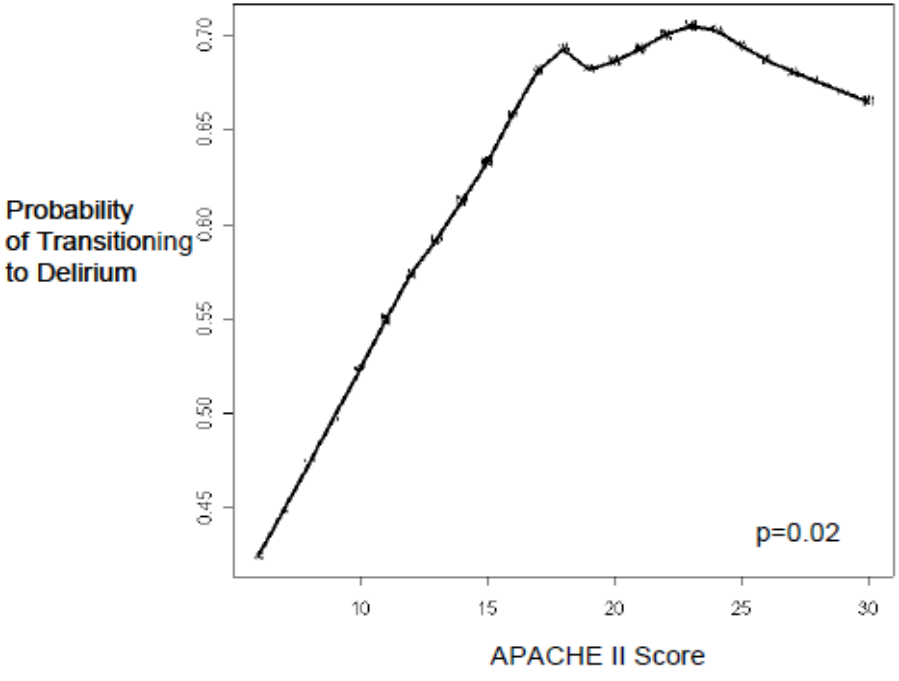
Lieky, lieky, lieky... minimalizovať

Risk factors you can't control...

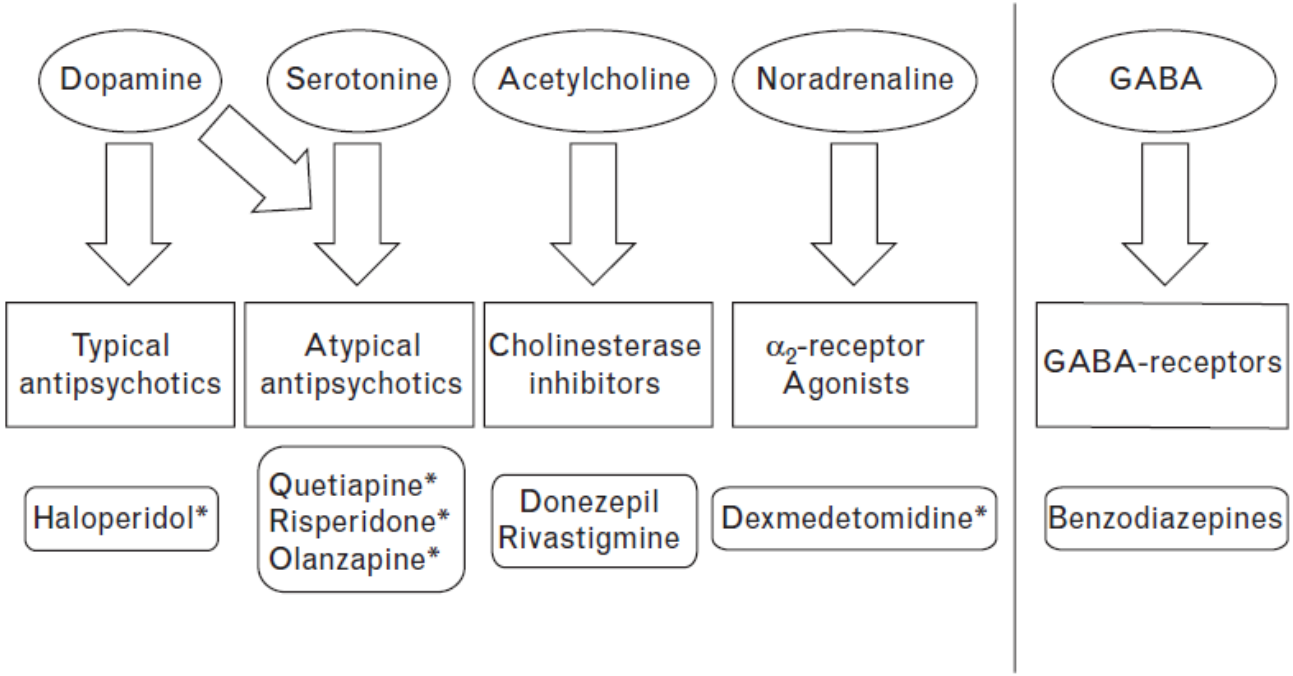
Age
Each year ↑ risk by 2%



Illness Severity
each APACHE point ↑ risk by 6%

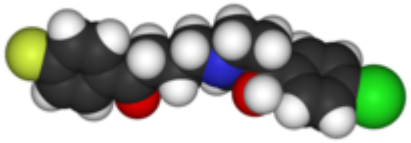


Pandharipande, Anesthesiology 2006;104:21-26

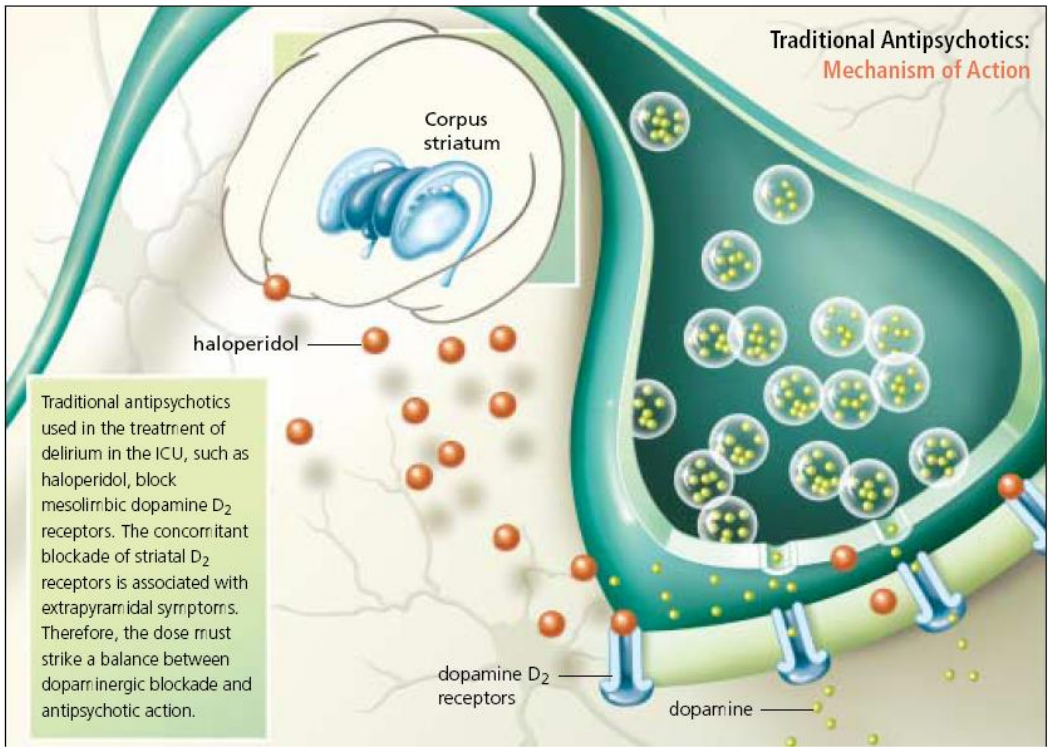


Pharmacological approaches to delirium. *Effectiveness for prophylactic or therapeutic administration in patients with delirium demonstrated in randomised controlled trials.

Haloperidol



- Blokáda mezolimbických D_2 receptorov
- Blokáda v striatum – EP príznaky



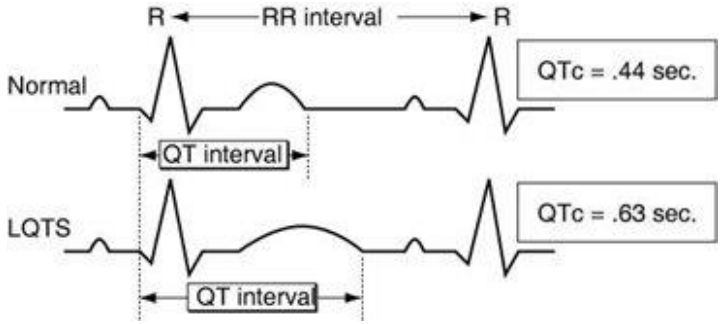
Haloperidol

- Optimálne dávkovanie: *blokovanie 60 % D_2 receptorov*
- 2 - 5 mg i.v. každých 20 - 30 minút; eskalácia dávky; 6 hod interval
- Max. denná dávka: 2 - 20 mg
- Rezistentní pacienti?
- Polčas 20 hod!
- Preventívne nízke dávky?

Nežiaduce účinky

- extrapyramidové príznaky, dyskinézie
- hypotenzia
- predĺženie QT intervalu s hroziacim torsade de pointes (> 450 msec/+25 %)

- U vybraných pacientov monitorovať EKG zmeny, zvlášť pri súčasnom podávaní antiarytmík



Tiapridal

- Ampulky po 100 mg/2 ml
- Atypické neuroleptikum, benzamid
- Selektívne na D_2 a D_3 receptory
- Bez sedácie a kognitívneho zhoršenia
- Bežná dávka je 200 – 800 - 1200 mg/deň
- Maximálne 1800 mg im./iv. na deň

Atypické antipsychotiká

- Risperidon, Olanzapin, Klozapin (nie i.v.)
- pri hypoaktívnom/zmiešanom delíriu
- dopaminergné a ďalšie neuroprenášače, vrátane serotonínu, (5-HT_2), acetylcholínu a noradrenalínu
- Risperidon účinný

Ďalšie lieky

- Benzodiazepíny
  - v kombinácii s haloperidolom
  - alkoholické delírium (dlhší polčas)
  - kŕče
  - pri agitácii napriek antipsychotikám
  - nie pacientom nad 70 rokov

- Clonidín


DELIRIUM
tremens
Elected as best beer in the world!

Antipsychotiká v liečbe delíria

- 4 štúdie (30, 24, 73, 31 pacientov)
  - haloperidol
  - chlorpromazín
  - lorazepam
  - risperidon, olanzapín, amisulprid, kvetiapin
- Malý počet pacientov, monocentrické, rôzne populácie
- Neboli študované subpopulácie pacientov
- Antipsychotické lieky (klasické, atypické) sú účinné
- Skutočný účinok antipsychotík v porovnaní s inými metódami ale nie je známy
- Záver: Nemožno dať odporúčania čo do dávky a spôsobu podania

Lacasse, H, Williamson DR.: Systematic review of antipsychotics for the treatment of delirium. Ann Pharmacother 2006;40:1966-73

Cochrane Library

Cochrane Database of Systematic Reviews

Interventions for preventing intensive care unit delirium in adults (Review)

Herling SF, Greve IE, Vasilevskis EE, Egerod I, Bekker Mortensen C, Møller AM, Svenningsen H, Thomsen T

Herling SF, Greve IE, Vasilevskis EE, Egerod I, Bekker Mortensen C, Møller AM, Svenningsen H, Thomsen T.
Interventions for preventing intensive care unit delirium in adults.
Cochrane Database of Systematic Reviews 2018, Issue 11. Art. No.: CD009783.
DOI: 10.1002/14651858.CD009783.pub2.

Authors' conclusions

There is probably little or no difference between haloperidol and placebo for preventing ICU delirium but further studies are needed to increase our confidence in the findings. There is insufficient evidence to determine the effects of physical and cognitive intervention on delirium. The effects of other pharmacological interventions, sedation, environmental, and preventive nursing interventions are unclear and warrant further investigation in large multicentre studies. Five studies are awaiting classification and we identified 15 ongoing studies, evaluating pharmacological interventions, sedation regimens, physical and occupational therapy combined or separately, and environmental interventions, that may alter the conclusions of the review in future.

Published in final edited form as:
N Engl J Med. 2018 December 27; 379(26): 2506–2516. doi:10.1056/NEJMoa1808217.

Haloperidol and Ziprasidone for Treatment of Delirium in Critical Illness

METHODS—In a randomized, double-blind, placebo-controlled trial, we assigned patients with acute respiratory failure or shock and hypoactive or hyperactive delirium to receive intravenous boluses of haloperidol (maximum dose, 20 mg daily), ziprasidone (maximum dose, 40 mg daily), or placebo. The volume and dose of a trial drug or placebo was halved or doubled at 12-hour

RESULTS—Written informed consent was obtained from 1183 patients or their authorized representatives. Delirium developed in 566 patients (48%), of whom 89% had hypoactive delirium and 11% had hyperactive delirium. Of the 566 patients, 184 were randomly assigned to receive

CONCLUSIONS—The use of haloperidol or ziprasidone, as compared with placebo, in patients with acute respiratory failure or shock and hypoactive or hyperactive delirium in the ICU did not significantly alter the duration of delirium. (Funded by the National Institutes of Health and the

Nefarmakologické prostriedky

- Existujúce 2 štúdie viaczložkovej nefarmakologickej intervencie
  - nie v prostredí ARO
  - iba skromná účinnosť
- Prínos nemožno vylúčiť

Prevencia I (akútna, chronická)

1. Stanovenie **rizika** (skóre), cielená multifaktoriálna prevencia
2. Kompetentný ošetrovateľský **tím**
3. Normovolémia, normotenzia, normoxémia, vnútorné prostredie
4. ↓ počet **liekov**: psychofarmaká, benzodiazepíny, opioidy, anticholinergiká
5. Včasná **mobilizácia**, odstránenie drénov, močový katéter; zapojenie pacienta do aktivít
6. Podpora **kogníciu** stimulujúcich aktivít
7. Pravidelná verbálna komunikácia s opakovanou **reorientáciou**; pomôcky na zrak a sluch; kalendár, hodiny (24), rodinné artefakty, hudba

Prevencia II

9. Liečba infekcie
10. Nefarmakologická podpora spánku
11. Nutričná podpora vrátane vitamínov (B)
12. Protokol na fyzické pripútanie
13. Včasná liečba abstinenčných príznakov
14. Dostatočný personál
15. Využitie dobrovoľníkov a spolupráca s príbuznými
16. Čo najmenšie presuny medzi oddeleniami


FAKULTNÁ NEMOCNICA
J. A. REIMANA - P R E Š O V
U NÁS AJ
TICHO LIEČI
Nutrison
G-40
G-40

The multi-factorial program for patients in the intervention group ($n = 131$) undergoing surgery for hip fracture, starting pre-hospitally.

1. *Supplemental oxygen 3–4 l/min*: in the ambulance and continually (including transfers between wards/departments) until day 2 post-operatively, the patient is mobilized, or the patient's oxygen saturation is $\geq$ 95% without oxygen in order to increase oxygen delivery into the tissues[6,13,40]

2. *Intravenous (i.v.) fluid supplementation and extra nutrition*: fructose/glucose 1.0 l in the ambulance or immediately after admittance to the A&E for improvement of fluid balance and tissue perfusion. Additional i.v. supplementation in case of increased fasting. Extra oral multi-nutrient drinks daily post-operatively for improvement of nutritional balance[30,41–43]

3. *Increased monitoring of vital physiological parameters*: especially oxygen saturation (a pulse-oximeter should be kept adherent to every patient) starting at the place of injury until post-operatively, day 5. Systolic blood pressure should be maintained $\geq$ 90–100 mmHg. Red blood cell transfusion should be considered if hemoglobin $<$100 g/l. Body temperature should be kept normal; avoid hypo-/hyperthermia[13,30,31,44]

4. *Adequate pain relief*: immediately after admittance at the A&E with a combination of opioids i.v. and paracetamol. Pain should be measured several times on a daily basis $\geq$ day 5 as pain: yes/no, and as intensity of pain: 1–10. Patient should be kept continually pain-relieved[27,28]

5. *Avoid delay in transfer logistics*: nurse assessment (RN) of patient immediately ($\leq$ 5 min) after admittance to the A&E. Assessment by the orthopedic surgeon ($\leq$ 30 min) before referral to the X-ray department. After X-ray directly to the orthopedic ward without a second visit to the A&E (routine before the intervention) with the purpose of decreasing the waiting time and an overload of staff–patient interactions[13,33,34]

6. *Screen for delirium through daily testing with the OBS scale*: one researcher is always available day and night. All staff is educated and instructed to pay increased attention to symptoms of delirium[6,22]

7. *Avoid polypharmacia*: sedatives/hypnotics and drugs with anticholinergic properties should be administered with restriction[6,29]

8. *Perioperative/Anesthetic period*: for pre-medication paracetamol is recommended as a first choice. Propofol and/or alfentanil i.v. is recommended at arrival at the operating department before transfer to the operation table. Spinal anesthesia with bupivacain is recommended as a first choice. I.v. saline-acetate 0.5 l should be administered before application. Systolic blood pressure should be maintained at $>$2/3 of baseline or $>$90 mmHg. Red blood cell transfusion should be administered if there is a tendency toward increased blood loss ($>$0.3 l) or hemoglobin $<$100 g/l. For sedation, propofol is recommended. Give adequate post-operative analgesia with paracetamol as a first choice or in combination with an opioid[13,28,31,32,45]

Bjorkelund 2010

Reducing delirium in elderly patients with hip fracture: a multi-factorial intervention study

K. B. Björkelund[1,2], A. Hommel[2,3], K.-G. Thorngren[3], L. Gustafson[4], S. Larsson[5] and D. Lundberg[1]
Departments of [1]Anesthesiology and Intensive Care, Clinical Sciences, [2]Health Sciences, [3]Orthopedics, Clinical Sciences, [4]Psychogeriatrics, Clinical Sciences, Lund University, Lund, Sweden and [5]Department of Cardiothoracic Surgery, Lund University Hospital, Lund, Sweden

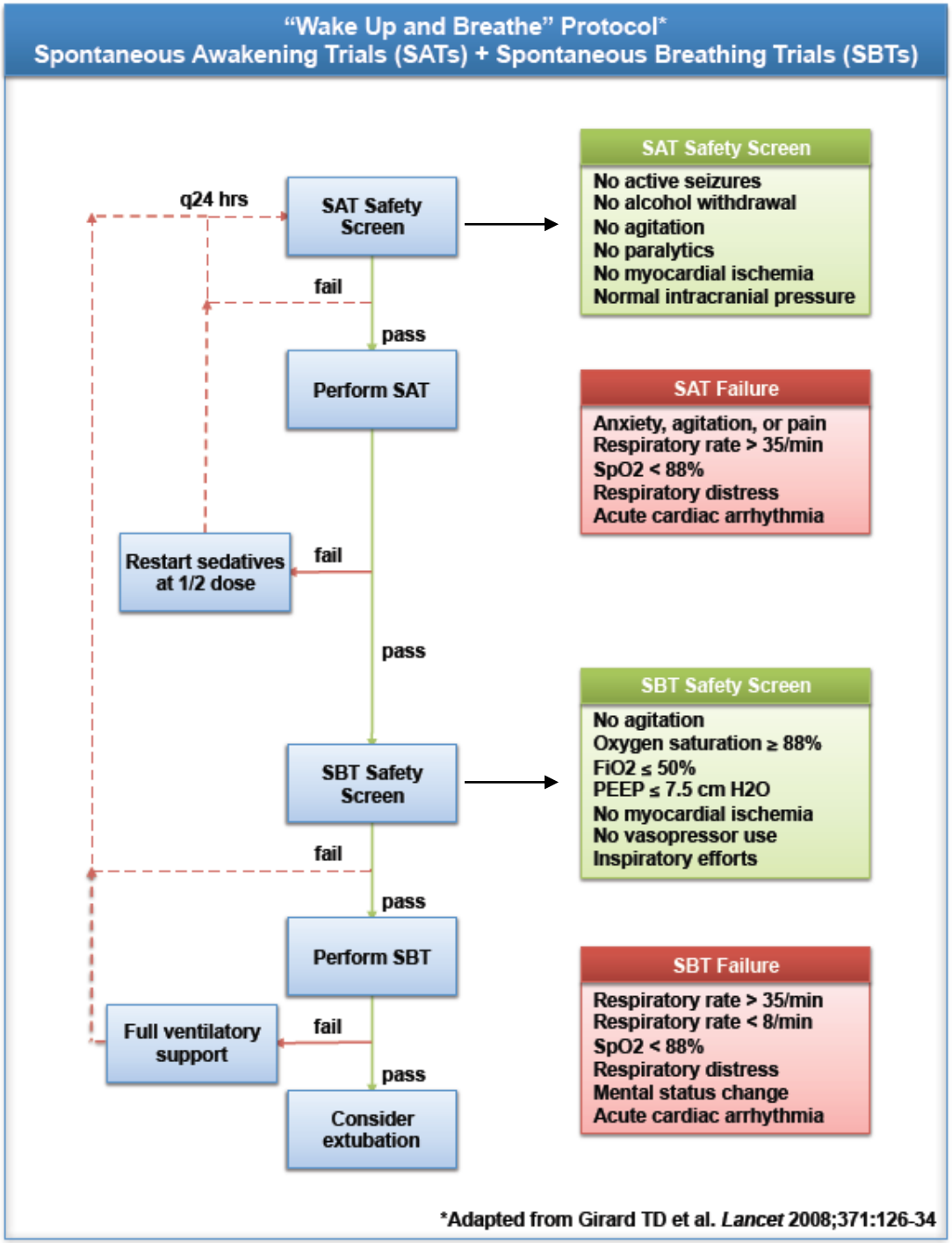
Background: There is an evident need for improved management of elderly patients with trauma in order to avoid common and troublesome complications such as delirium. The aim of this study was to investigate whether an implementation of a multi-factorial program including intensified pre-hospital and perioperative treatment and care could reduce the incidence of delirium in elderly patients with hip fracture, cognitively intact at admission to the hospital. In addition, we explored the factors that charact
delirium.

Methods: A prospective,
used. A total of 263 patien
cognitively intact at adm
cluded between April 200
2003, a new program was introduced. All patients were screened for cognitive impairment within 30 min after admission to the emergency department using The Short Portable Mental Status Questionnaire (SPMSQ). To screen for delirium, patients were tested within 4 h of admission and thereafter daily, using the Organic Brain Syndrome scale.

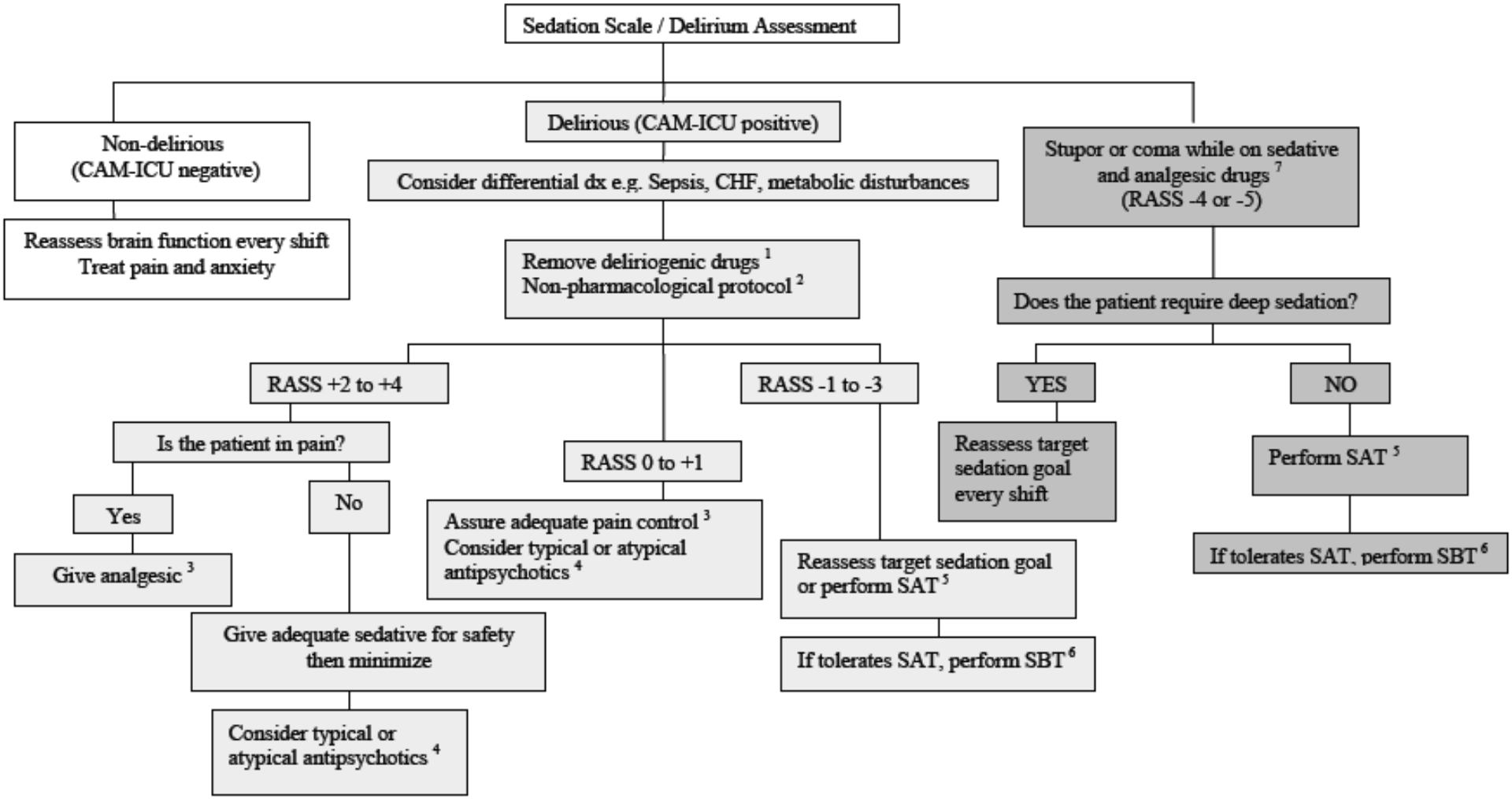
Results: The number of patients who developed delirium during hospitalization was 74 (28.1%), with a decrease from 34% (45 of 132) in the control group to 22% (29 of 131) in the intervention group ($P = 0.031$). Patients who developed delirium were statistically older, more often had >4 prescribed drugs at admission and scored less

Conclusion: The use of a multi-factorial intervention program in elderly hip fracture patients, lucid at admission, reduced the incidence of delirium during hospitalization by 35%.

Accepted for publication 12 February 2010


"Wake Up and Breathe" Protocol*
Spontaneous Awakening Trials (SATs) + Spontaneous Breathing Trials (SBTs)
q24 hrs
SAT Safety Screen
fail
pass
Perform SAT
Restart sedatives at 1/2 dose
fail
pass
SBT Safety Screen
fail
pass
Perform SBT
Full ventilatory support
fail
pass
Consider extubation
SAT Safety Screen
No active seizures
No alcohol withdrawal
No agitation
No paralytics
No myocardial ischemia
Normal intracranial pressure
SAT Failure
Anxiety, agitation, or pain
Respiratory rate > 35/min
SpO2 < 88%
Respiratory distress
Acute cardiac arrhythmia
SBT Safety Screen
No agitation
Oxygen saturation ≥ 88%
FiO2 ≤ 50%
PEEP ≤ 7.5 cm H2O
No myocardial ischemia
No vasopressor use
Inspiratory efforts
SBT Failure
Respiratory rate > 35/min
Respiratory rate < 8/min
SpO2 < 88%
Respiratory distress
Mental status change
Acute cardiac arrhythmia
*Adapted from Girard TD et al. Lancet 2008;371:126-34

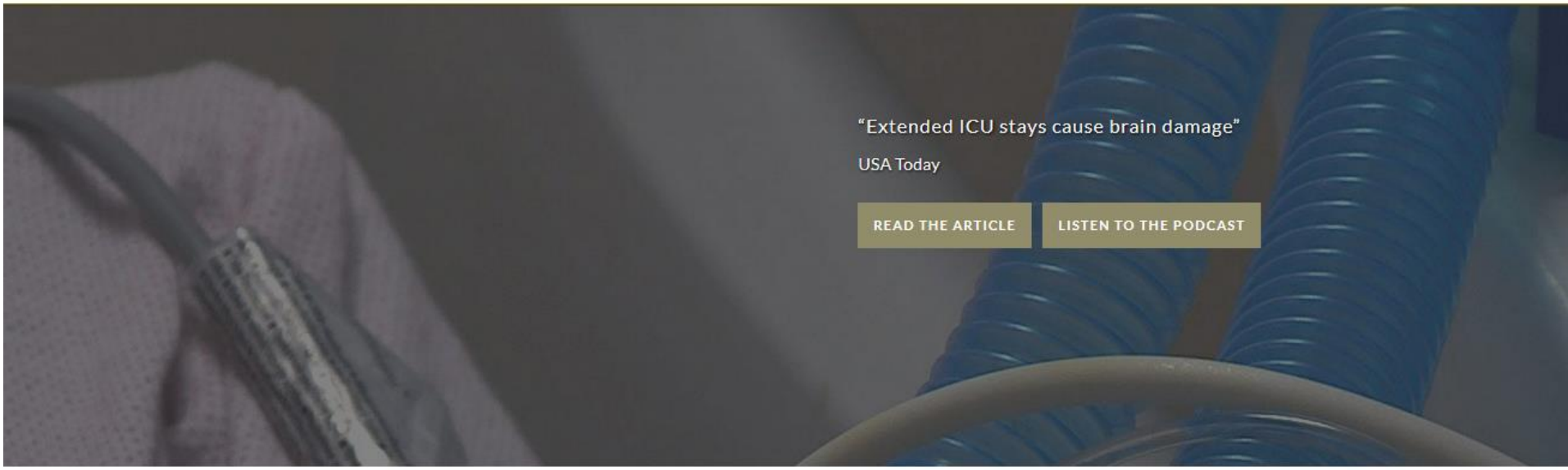
DELIRIUM PROTOCOL



www.icudelirium.org

ICU Delirium
and Cognitive Impairment Study Group

Vanderbilt University Medical Center | Monroe Carell Jr. Children's Hospital at Vanderbilt | Department of Veterans Affairs



ABCDEFs *of* Prevention and Safety

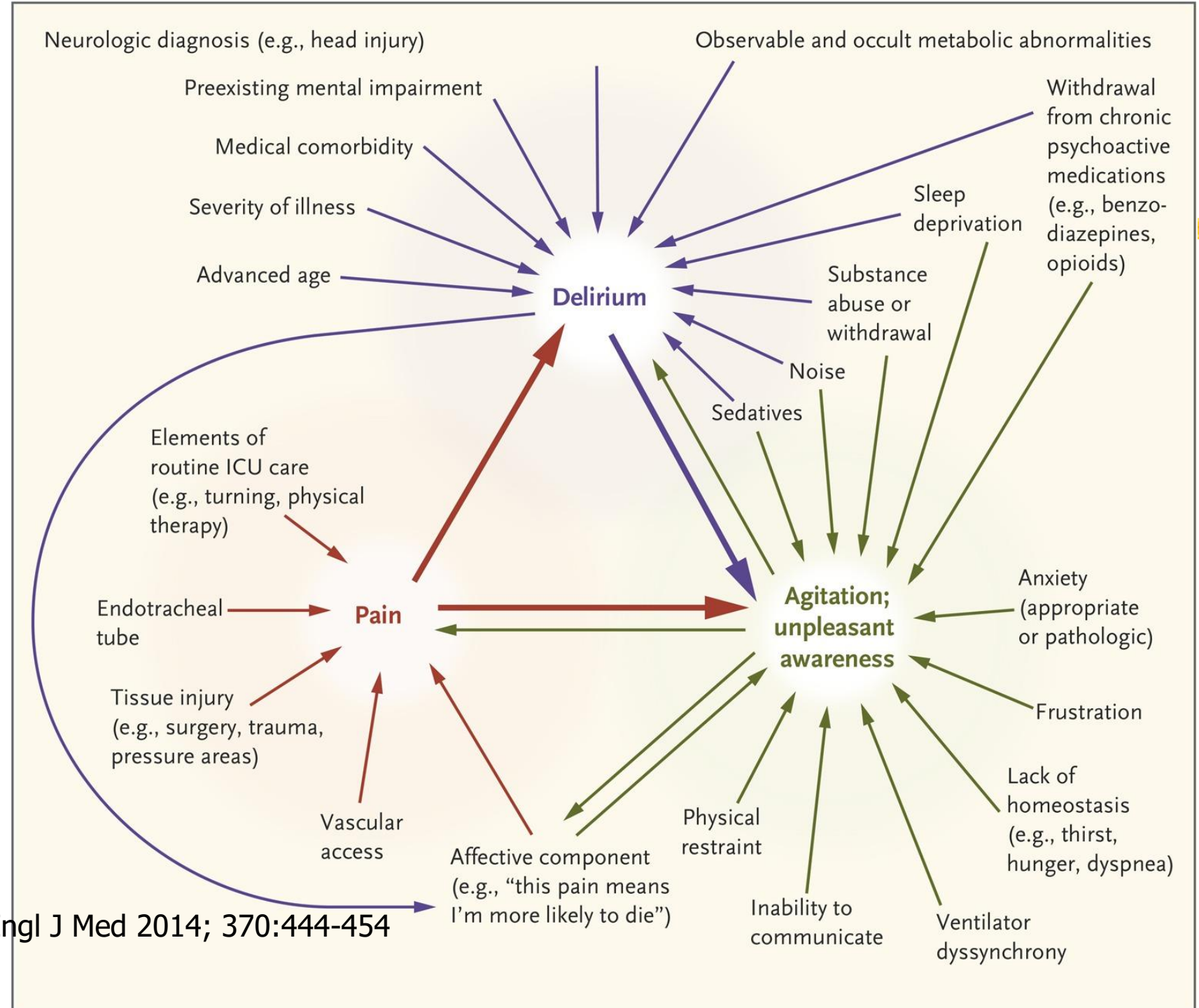
ABCDEF is a standard bundle of ICU measures that includes spontaneous Assess for and manage pain, Both Spontaneous Awakening Trials (SAT) & Spontaneous Breathing Trials (SBT), attention to the Choice of sedation and analgesia, Delirium monitoring and management, Early mobility, and Family engagement. All individual components of this bundle are evidence based and can help standardize communication, improve interdisciplinary patient care, reduce mortality, and improve long-term cognitive and functional outcomes. This bundle helps to keep patients and families as the center and focus of care.

SUPPORT THE RESEARCH

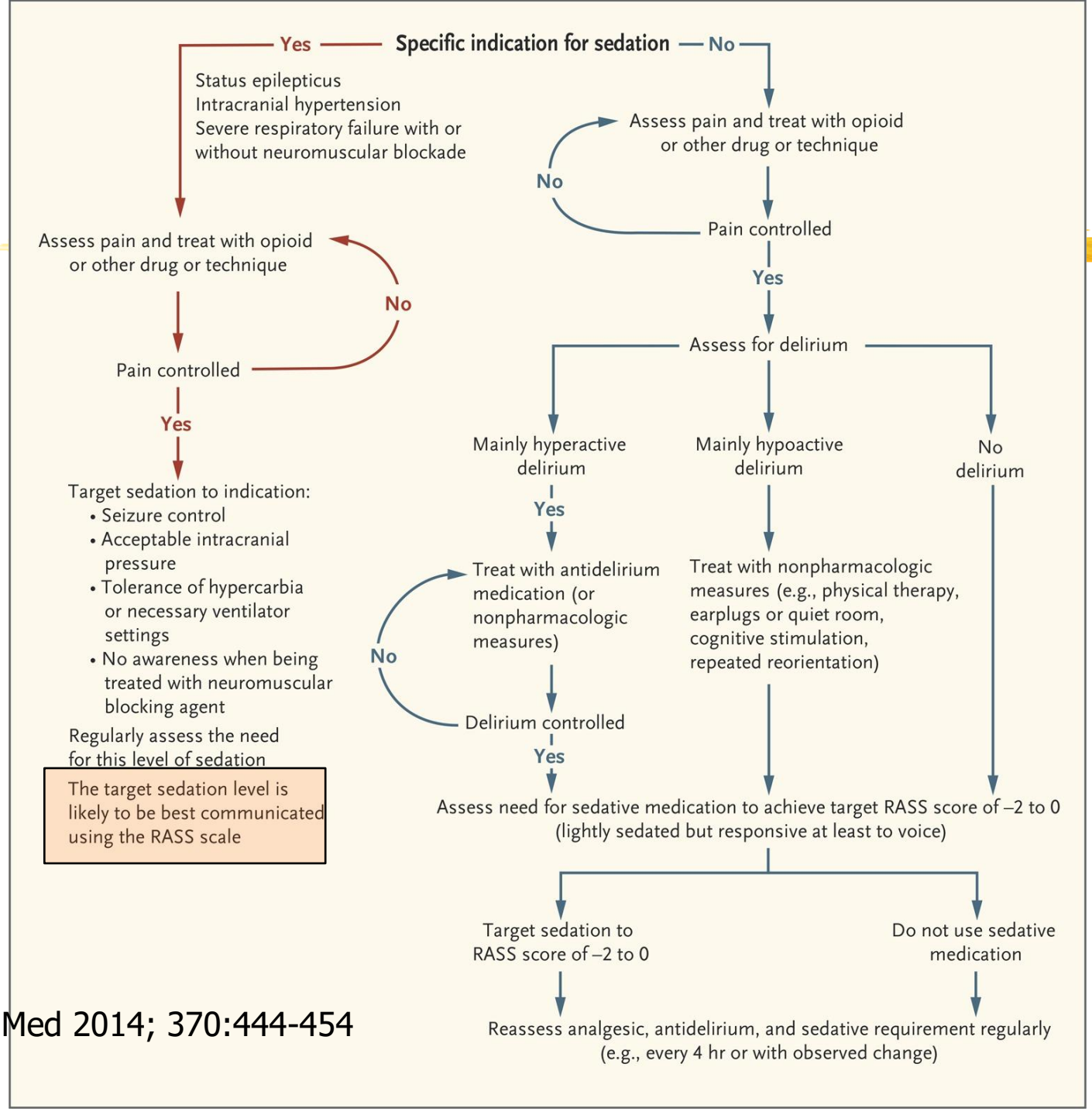
what is Delirium?

Delirium is basically inattention and confusion that represents the brain temporarily failing. A person who is delirious is unable to think clearly and can't make sense of what is going on around him.

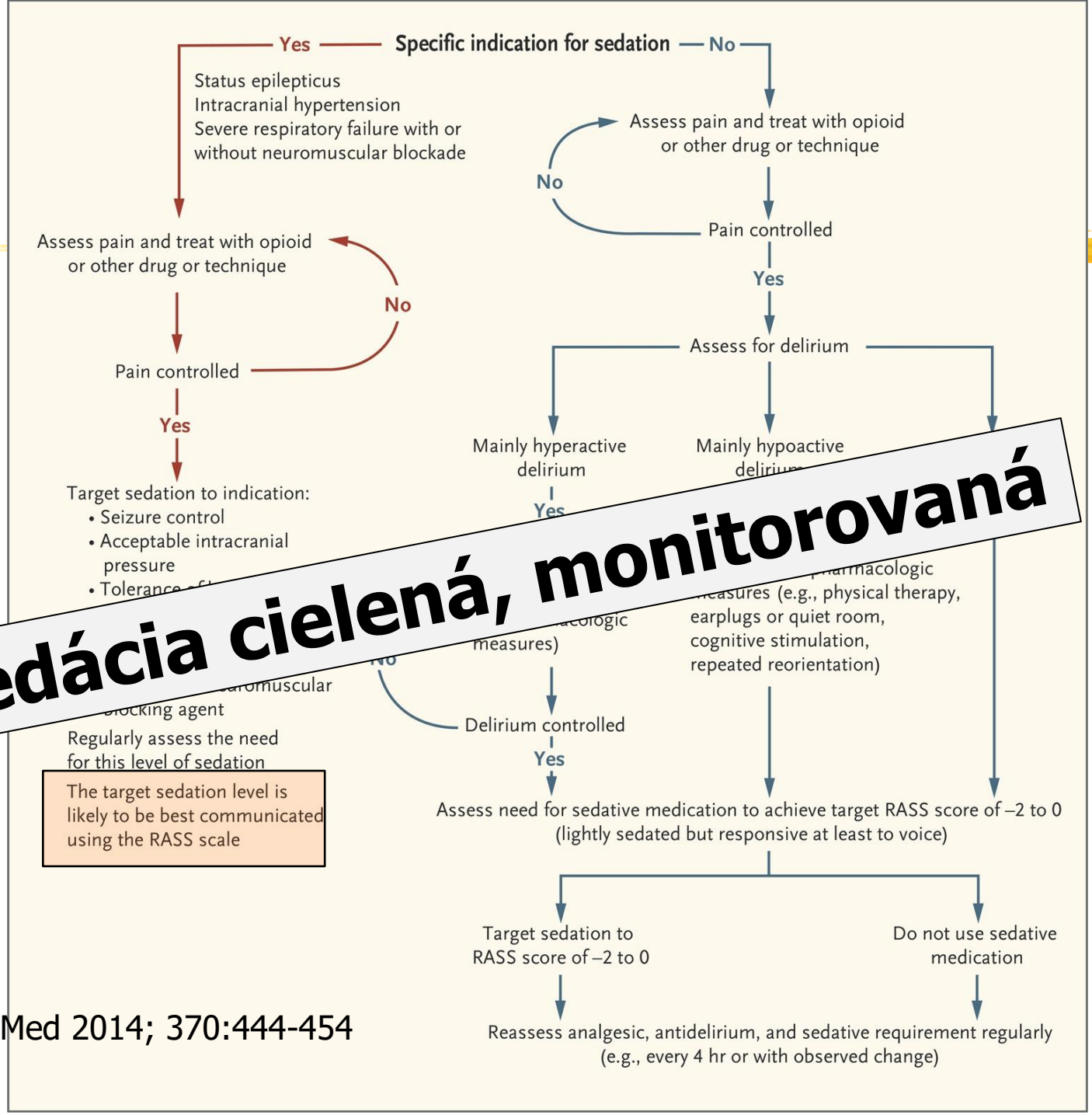
Delirium increases the risk of



N Engl J Med 2014; 370:444-454



N Engl J Med 2014; 370:444-454



Sedácia cielená, monitorovaná

N Engl J Med 2014; 370:444-454

Bedside Checklist for ABCDE Protocol

DATE:_____/_____/_____

Awakening and Breathing Coordination

	Check if yes or indicate reasons
SAT screen passed? If not, why?	
SAT done? If not, why not?	
SBT screen passed? If not, why?	
SBT done? If not, why not?	
SAT & SBT Coordinated/Paired?	

Delirium Nonpharmacologic Interventions

Intervention	Check if done
Pain assessment/management	
Orientation	
Sensory (eyes/ears)	
Sleep (nonpharm)	
Check any intervention that was performed during your shift (including night shift).	

Early Exercise and Mobility

Intervention	Check if done
Active ROM	
Sitting up on side of bed	
Standing	
Walking	
Check any level of activity the patient performed during your shift (including night shift).	

Table 1. Sedatives and Analgesics in Common Use in the ICU.*

Drug (Brand Name)	Mechanism of Action	Typical Adult Dose	Pharmacokinetic Properties	Adverse Effects
Midazolam (Versed)	$GABA_A$ agonist	Bolus, 1 to 5 mg; infusion, 1 to 5 mg/hr	Half-life, 3 to 11 hr; active metabolite accumulates with prolonged infusion; metabolized by hepatic oxidation, with renal excretion of active metabolite	Possibly a higher risk of delirium and tolerance than with certain other sedatives
Lorazepam (Ativan)	$GABA_A$ agonist	Bolus, 1 to 4 mg; infusion, 1 to 5 mg/hr	Slower onset (5 to 20 min) than that of midazolam or diazepam (2 to 5 min); half-life, 8 to 15 hr; metabolized by hepatic glucuronidation, with no active metabolites, so offset may be more predictable than that of midazolam in critical illness	Possibly a higher risk of delirium and tolerance than with certain other sedatives
Diazepam (Valium; Diazemuls)	$GABA_A$ agonist	Bolus, 1 to 5 mg	Half-life, 20 to 120 hr; metabolized by hepatic desmethylation and hydroxylation; active metabolite accumulates in renal failure	Poorly soluble in water, so prolonged peripheral intravenous infusion may cause phlebitis; possibly a higher risk of delirium and tolerance than certain other sedatives
Propofol (Diprivan)	$GABA_A$ agonist, with other effects, including on glutamate and cannabinoid receptors	50 to 200 mg/hr or 1 to 3 mg/kg/hr	Half-life, 30 to 60 min after infusion; longer after prolonged infusion because of redistribution from fat stores; metabolized by hepatic glucuronidation and hydroxylation	Vasodilatation or negative inotropy causing hypotension or bradycardia; propofol infusion syndrome (lactic acidosis, arrhythmia, and cardiac arrest), mostly associated with prolonged infusion rates of >4 to 5 mg/kg/hr; hypertriglyceridemia; pancreatitis
Dexmedetomidine (Precedex)	α_2-Agonist	0.2 to 1.5 μg/kg/hr	Half-life, 2 hr; does not accumulate with prolonged infusion; metabolized by hepatic glucuronidation and oxidation, with no active metabolites	Transient hypertension, then hypotension; bradycardia, dry mouth, nausea
Remifentanil (Ultiva)	μ-Opioid agonist (also with κ-opioid agonist effects)	0.5 to 2 μg/kg/min; loading dose of 0.4 to 0.8 μg/kg may be considered	Half-life, 3 to 4 min; does not accumulate with prolonged infusion; metabolized by plasma esterases and so is unaffected by organ function	Nausea, constipation, respiratory depression, bradycardia
Fentanyl (Sublimaze)	μ-Opioid agonist (also with κ-opioid agonist effects)	20 to 100 μg/hr; loading dose of 50 to 100 μg may be considered	Half-life, 1.5 to 6 hr; highly fat soluble, so rapid onset but accumulates with prolonged infusion; metabolized by hepatic oxidation; no active metabolites	Nausea, constipation, respiratory depression, skeletal-muscle rigidity with high bolus doses
Morphine (Roxanol; Duramorph)	μ-Opioid agonist (also with κ-opioid and δ-opioid agonist effects)	1 to 5 mg/hr; loading dose of 2 to 5 mg may be considered	Half-life, 3 to 7 hr; more water soluble, so slower onset than fentanyl with less accumulation; metabolized by hepatic glucuronidation to morphine-6-glucuronide (10%) (20 times as active as parent drug) and morphine-3-glucuronide (90%) (inactive as an analgesic but causes neuroexcitation, at least in animal models), both with renal excretion	Nausea, constipation, respiratory depression, histamine release and consequent vasodilatation and hypotension, itch

N Engl J Med 2014; 370:444-454

Testované hypotézy

- Používať štandardné analgetiká a sedatíva, zmeniť spôsob podania
- Používať analgetiká a sedatíva s iným mechanizmom (dexmedetomidin)
- Pôsobiť na iné neuroprenášače (antipsychotiká)

Campbell et al. Trials 2011, 12:139
http://www.trialsjournal.com/content/12/1/139

TRIALS

STUDY PROTOCOL Open Access

Improving delirium care in the intensive care unit: The design of a pragmatic study

Noll L Campbell[1,2,3,4,7*], Babar A Khan[5], Mark Farber[5,6], Tiffany Campbell[3], Anthony J Perkins[3], Siu L Hui[2,3,5], Greg Abernathy[3,5], John Buckley[5], Regg Sing[5], Jason Tricker[4], Mohammad Zawahiri[3] and Malaz A Boustani[2,3,5]

Abstract

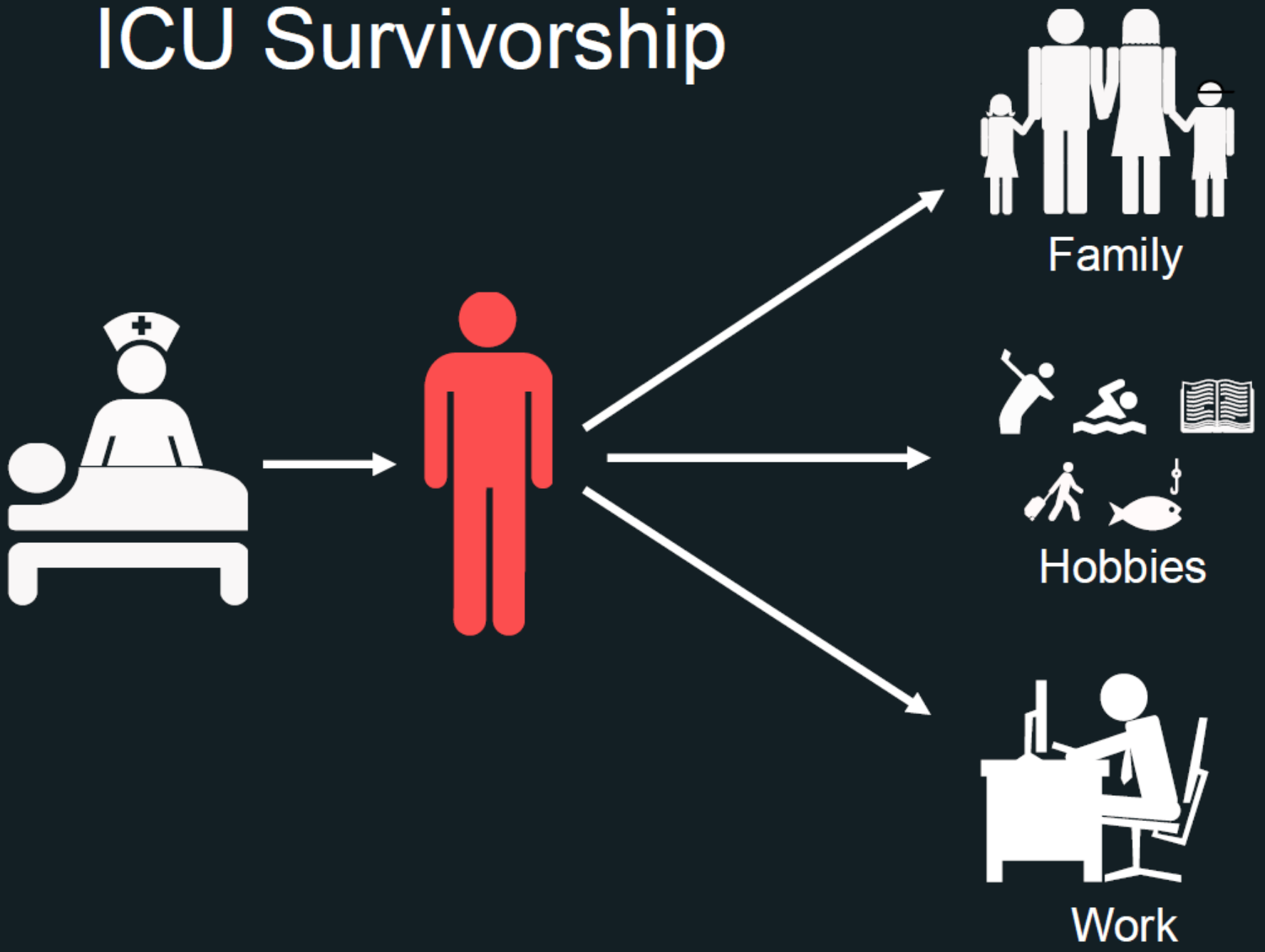
Background: Delirium prevalence in the intensive care unit (ICU) is high. Numerous psychotropic agents are used to manage delirium in the ICU with limited data regarding their efficacy or harms.

Methods/Design: This is a randomized controlled trial of 428 patients aged 18 and older suffering from delirium and admitted to the ICU of Wishard Memorial Hospital in Indianapolis. Subjects assigned to the intervention group will receive a multicomponent pharmacological management protocol for delirium (PMD) and those assigned to the control group will receive no change in their usual ICU care. The primary outcomes of the trial are (1) delirium severity as measured by the Delirium Rating Scale revised-98 (DRS-R-98) and (2) delirium duration as determined by the Confusion Assessment Method for the ICU (CAM-ICU). The PMD protocol targets the three neurotransmitter systems thought to be compromised in delirious patients: dopamine, acetylcholine, and gamma-aminobutyric acid. The PMD protocol will target the reduction of anticholinergic medications and benzodiazepines, and introduce a low-dose of haloperidol at 0.5-1 mg for 7 days. The protocol will be delivered by a combination of computer (artificial intelligence) and pharmacist (human intelligence) decision support system to increase adherence to the PMD protocol.

Discussion: The proposed study will evaluate the content and the delivery process of a multicomponent pharmacological management program for delirium in the ICU.

Trial Registration: ClinicalTrials.gov: NCT00842608

ICU Survivorship



Iwashyna *Annals of Int Med* 2010; 153:204-5

Devlin JW, et al. Executive Summary: Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU. Crit Care Med 2018;46:1532-1548.

Society of Critical Care Medicine

The Intensive Care Professionals

Barr J, et al. *Crit Care Med.* 2013;41:263-306.

CCM: PAD - pain, agitation/sedation, delirium

- **Bolesť**
- Liečba bolesti má predchádzať sedáciu.
- Vychádza z rutinného *monitorovania* bolesti (VAS, CPOT), na základe protokolu, krokovým, multimodálnym postupom.
- Odporúča sa *rutinne* podávať acetaminophen (paralen), nefopam, nízku dávku ketamínu, na zníženie dávky opioidov. Cox-1 inhibítory a lidokain sa neodporúčajú.
- Na procedurálnu bolesť *najnižšia možná dávka opioidu*. Na občasnú krátkodobú analgéziu je NSAID.
- Ako doplnok sa odporúča masáž, počúvanie hudby, chlad, relaxačné techniky.

Devlin JW, et al. Executive Summary: Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU. Crit Care Med 2018;46:1532-1548.

PAD

- **Agitácia/sedácia**
- U ventilovaných pacientov sa odporúča zásadne **ľahká** sedácia podľa protokolu a s monitorovaním, RASS skóre 1, 0, -1, -2.
- Namiesto benzodiazepínov treba používať *propofol* a *dexmedetomidín*.

☐ **DEXMEDETOMIDINE (PRECEDEX®)** (Consider in patients failing spontaneous breathing trials secondary to agitation)

☐ Loading dose _____ mcg (1 mcg/kg) over 20 min (**not recommended** due to risk of hypotension).

- Start dexmedetomidine infusion at _____ mcg/kg/hr (e.g., 0.2 – 0.7 mcg/kg/hr).
- Titrate dexmedetomidine by _____mcg/kg/hr (e.g., 0.1 – 0.2 mcg/kg/hr) every hour until target sedation score achieved.
- **Maximum rate = _____ mcg/kg/hr** (e.g., 1 – 1.5 mcg/kg/hr).
- Notify physician if patient has hemodynamic instability or if target sedation score not achieved at maximum dosages.

Prescriber / PID: _____ **Date/Time:** _____ **Nurse:** _____ **Date/Time:** _____

PAD

- **Delírium**
- U kriticky chorých pacientov pravidelne vykonávať **skríning** na delírium s použitím validovaných postupov.
- *Rutinná prevencia* delíria s použitím haloperidolu, atypických antipsychotík, dexmedetomidínu, statínov alebo ketamínu sa *neodporúča*. Ani na liečbu subklinického delíria.
- V liečbe sa *neodporúča* haloperidol, statíny a atypické antipsychotiká, v prípade excitácie, ktorá bráni víningu, sa odporúča *dexmedetomidín*.

PAD

- **Nefarmakologická prevencia**
- Odporúčajú sa cielené *viaczložkové* intervencie, zamerané na modifikovateľné faktory, zlepšenie - kognície, - spánku, - mobility, - sluchu a vízu.
- Odporúča sa *mobilizácia* a rehabilitácia pacienta.
- Na zlepšenie **spánku** sa odporúčajú *viaczložkové* intervencie, nočná asistovaná/kontrolovaná ventilácia.
- Nie sú odporúčania ohľadom *melatonínu*.

Pooperačné delírium

- Porucha kognitívnych funkcií
- Po „nenápadnej" operácii
- SIRS + anticholinergná liečba
- 10 – 60 % pacientov po veľkej operácii
- Faktory: vek (10-70 % > 65r.), bolesť, stres (krvné straty, KV instabilita), immobilita, poruchy spánku, lieky (opioidy, BD), dehydratácia
- Vek - ↑ citlivosť mikroglie na periférny cytokíny = produkcia zápalových faktorov = *neuroinflamácia*
- Včasné (emergence delírum) – neskoré (1 - 4 dni)

EJA

Eur J Anaesthesiol 2019; **36:**683–687

ORIGINAL ARTICLE

Validation of 3-minute diagnostic interview for CAM-defined Delirium to detect postoperative delirium in the recovery room

A prospective diagnostic study

Maria Olbert, Sophie Eckert, Rudolf Mörgeli, Jochen Kruppa and Claudia D. Spies

EJA

Eur J Anaesthesiol 2017; **34:**192–214

GUIDELINES

European Society of Anaesthesiology evidence-based and consensus-based guideline on postoperative delirium

César Aldecoa, Gabriella Bettelli, Federico Bilotta, Robert D. Sanders, Riccardo Audisio, Anastasia Borozdina, Antonio Cherubini[1], Christina Jones, Henrik Kehlet, Alasdair MacLullich, Finn Radtke, Florian Riese, Arjen J.C. Slooter, Francis Veyckemans, Sylvia Kramer, Bruno Neuner, Bjoern Weiss and Claudia D. Spies[2]

We suggest evaluating the following preoperative risk factors for POD

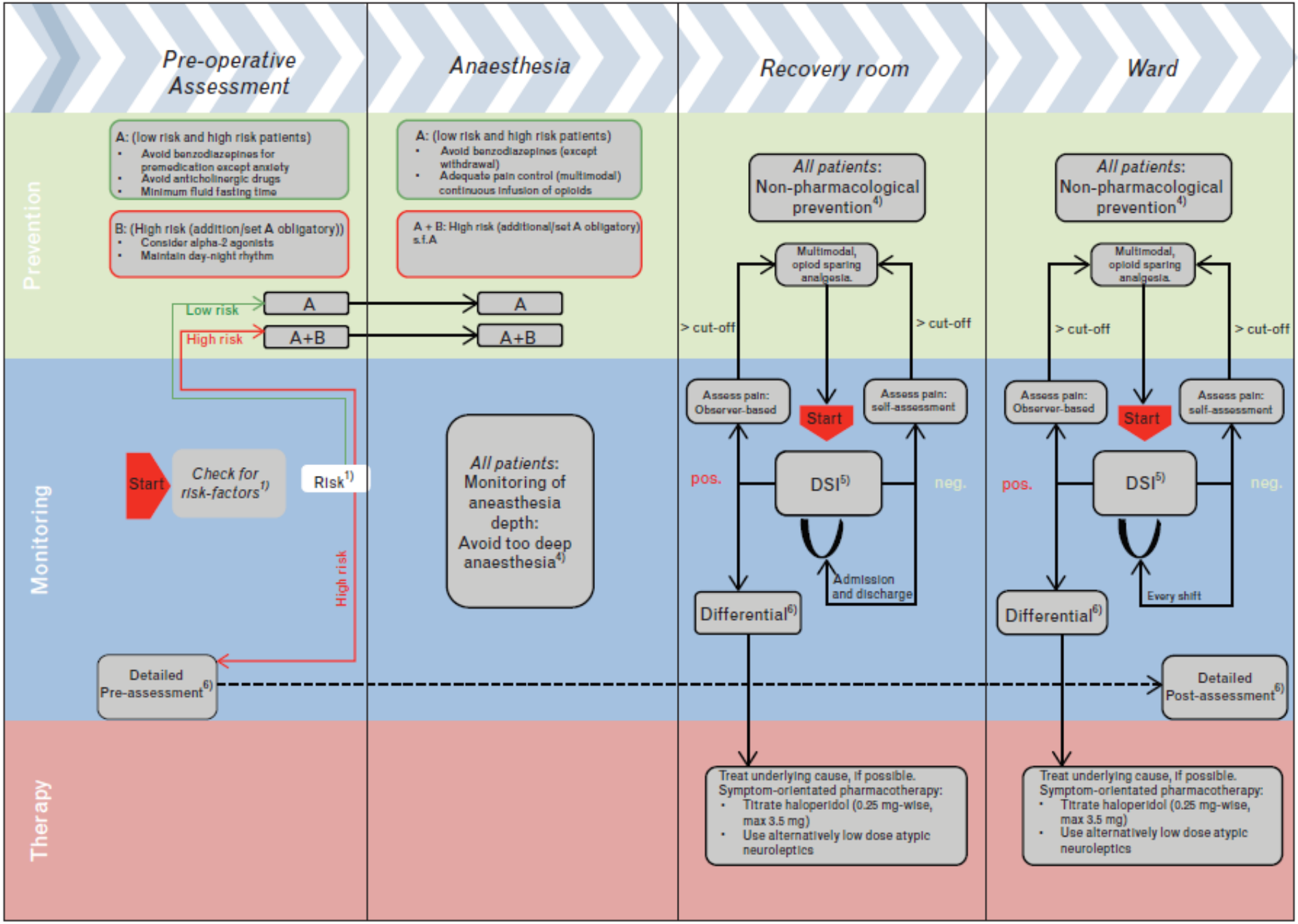
• Advanced age	[10], 1b; [14], 2b; [17], 4; [18], 2b; [20], 2b; [34], 2b; [35], 2b; [76], 2b; [105], 5 [107], 2b; [108], 2b [109], 2b; [110], 2b [111], 2b; [112], 2b [113], 2b; [114], 2b [115], 2b; [116], 2b [117], 2b; [118], 2b [119], 2b	[10,14,17,20, 34,107,108,112, 113,116,118]	[18,35,76,105,111–113, 114,117,119,119]	B
• Comorbidities (e.g. cerebrovascular including stroke, cardiovascular, peripheral vascular diseases, diabetes, anaemia, Parkinson's disease, depression, chronic pain and anxiety disorders)	[17], 4; [20], 2b; [21], 2b; [71], 4; [103], 2b [108], 1b; [112], 2b [121], 2b; [122], 1b [123], 2b; [124], 3b [125], 2b; [126], 4 [127], 2b; [128], 2b [130], 1b; [131], 2b [132], 2b	[17,20,110,112, 121,124,127,128]	[21,103,123,125,126,130,132]	B
• The results of comorbidity scores such as the American Society of Anesthesiologists' physical status classification system (ASA-PS) or the Charlson Comorbidity Index (CCI) or the Clinical Impairment Assessment Score (CIAS) before surgery	[28], 2b; [34], 2b; [89], 2b; [96], 4; [122], 4; [133], 2b; [134], 4; [135], 4	[28,34,135]	[89,94,122,133,134]	B
• Preoperative fluid fasting and dehydration	[13], 2b; [112], 2b	[13]	[112], Incl. ≥18 years, obsvd. 66 ± 11 years, range 58 to 72 years	B
• Hyponatraemia or hypernatraemia	[34], 2b; [110], 1b [135], 4; [136], 4	[34,135,136]	[110], Incl. ≥60 years, obsvd. 75 years	B
• Drugs with anticholinergic effects (e.g. measured by an anticholinergic drug scale)	[92], 4; [109], 2b [113], 2b; [117], 2b [137], 4; [138], 4 [139], 4; [140], 4	[137,139,140]	[92,109,113], Incl. ≥50 years, obsvd. 67 ± 9 years; [115,138], Incl. ≥18 years, obsvd. 68 ± 8 years, range 46 to 88 years	B

EJA 2017

We recommend evaluating alcohol-related disorders (ICD-10)/alcohol use disorders (DSM-5) as a further preoperative risk factor	[20], 2b; [23], 2b; [34], 2b; [71], 4; [105], 5; [116], 2b; [139], 2b; [141], 2b	[20,34,116], Incl. none, mean 63 years, range 24 to 90 years	[23], Incl. ≥50 years, obsvd. 64 ± 9 years, POD+, 69 ± 9 years, POD−, 61 ± 6 years; [71,105,139,141], Incl. ≥18 years, obsvd. 69 ± 9 years, range 46 to 89 years	A
	[142], no full text			
We suggest considering the following intraoperative risk factors for POD				
• Site of surgery (abdominal and cardiothoracic)	[13], 2b; [23], 2b; [34], 2b	[13,34]	[23], Incl. none, obsvd. POD+, 69 years, POD−, 61 years	B
• Intraoperative bleeding	[42], 2b; [128], 2b	[128,143–145]	[42], Incl. none, obsvd. POD+71 years, POD−, 61 years	B
	[143], 2b; [144], 2b			
	[145], 4			
We recommend considering duration of surgery as a further intraoperative risk factor	[16], 2b; [116], 2b	[16,116,136,149]	[147], Incl. ≥60 years, obsvd. 72 years; [148], Incl. >60 years, obsvd. POD+, 76.1 ± 6.1 years, POD−, 69.9 ± 6.0 years; [144], Incl. ≥60 years, obsvd. 72 years	A
	[136], 4; [146], 4			
	[147], 2b; [149], 2b			
	[149], 2b			
We recommend evaluating pain as a postoperative risk factor for POD	[13], 2b; [49], 2b; [93], 2b; [103], 2b; [129], 2b	[13,49]	[93], Incl. ≥60 years, obsvd. 72 years; [103,129,150], Incl. ≥60 years, obsvd. 75 years; [152], Incl. ≥50 years, obsvd. 66 years; [153]; [154]	A
	[150], 4; [151], no full text; [152], 2b; [153], 1b; [154], 2b			

Data presented as reference number, GoR, grade of recommendation (strong – A, conditional – B); LoE, level of evidence; Incl., inclusion criterion; obsvd., observed; POD, postoperative delirium.

EJA 2017


Pre-operative Assessment
Anaesthesia
Recovery room
Ward
Prevention
Monitoring
Therapy
A: (low risk and high risk patients)
Avoid benzodiazepines for premedication except anxiety
Avoid anticholinergic drugs
Minimum fluid fasting time
B: (High risk (addition/set A obligatory))
Consider alpha-2 agonists
Maintain day-night rhythm
A: (low risk and high risk patients)
Avoid benzodiazepines (except withdrawal)
Adequate pain control (multimodal) continuous infusion of opioids
A + B: High risk (additional/set A obligatory) s.t.A
All patients: Non-pharmacological prevention 4)
Multimodal, opiod sparing analgesia.
> cut-off
> cut-off
Assess pain: Observer-based
Start
Assess pain: self-assessment
pos.
DSI 5)
neg.
Admission and discharge
Differential 6)
Low risk
High risk
A
A+B
A
A+B
Start
Check for risk-factors 1)
Risk 1)
High risk
All patients: Monitoring of anaesthesia depth: Avoid too deep anaesthesia 4)
Detailed Pre-assessment 6)
Every shift
Detailed Post-assessment 6)
Treat underlying cause, if possible.
Symptom-orientated pharmacotherapy:
Titrate haloperidol (0.25 mg-wise, max 3.5 mg)
Use alternatively low dose atypic neuroleptics

EJA 2017

Table 8 Evidence-based and consensus-based statements regarding prevention and treatment

Statement	LoE	Age group (inclusion criteria)		GoR
		All adults	≥65 years	
We suggest implementing fast-track surgery to prevent POD	[158], 1b; [159], 2b; [193], 2b; [193], 2b	[159,193]	[158,194]	B
We suggest avoiding routine premedication with benzodiazepines except for patients with severe anxiety	[10], 2b; [105], 5; [195], 2b; [196], 3b; [197], NR; [198], 2b; [204], 2b		[10], Incl. none, POD+, 67.7 years, POD−, 50 years; [105,195,196], >60% were ≥65 years; [197]; [199] mean age 66.8 years and range 43–87 years	B
We recommend monitoring depth of anaesthesia	[105], 5; [199], 1b; [200], 1b; [201], 1b; [202], 1b	[199–201]	[105,202]	A
We recommend adequate pain assessment and treatment	[103], 2b; [153], 1b; [197], NR; [203], 4; [205], 2b; [206], (SR)	[202]	[103,153,197,199,205]	A
We suggest using a continuous intraoperative analgesia regimen (e.g. with remifentanil)	[13], 2b; [207], 2b	[13,207]		B
We recommend promptly diagnosing POD, establishing a differential diagnosis, and instituting treatment	[37], 2b; [38], 2b; [179], 2b; [208], Consensus review	[37]	[38,179,208]	A
We suggest using low-dose haloperidol[a] or low-dose atypical neuroleptics to treat POD	[208], 5; [209], SR; [210], 2b; [211], 2b	[208,209]	[211,212]	B

Data presented as reference number, LoE. Incl. inclusion criteria; obsvd., observed; LoE, level of evidence; GoR, grade of recommendation (strong = A, conditional = B); POD, postoperative delirium. [a] Low-dose haloperidol means 0.25 mg stepwise titrated up to maximum of 3.5 mg.[213] An excessive dose of haloperidol of more than 6 mg a day should not be used.[214] Long-term use in dementia patients may increase harm.[215]

Covid-19 a delírium

- Mozog môže byť atakovaný siedmymi spôsobmi:
  1. priamy účinok na CNS
  2. neurozápal
  3. nepriamo cez zlyhanie iných orgánov
  4. sedácia
  5. prolongovaná ventilácia
  6. imobilizácia
  7. faktory prostredia
- Sociálna izolácia
- Personál zaťažený inými problémami
- Ale – delírium a nepriaznivá prognóza

Kotfis K, et al. COVID-19: ICU delirium management during SARS-CoV-2 pandemic. Critical Care 2020;24:176

Záver

- Delírium má vysokú prevalenciu u (starších) ICU pacientov
- Delírium ma krátko- i dlhodobo nepriaznivé dôsledky
- Existujú modifikovateľné faktory (analgosedácia)
- **Rutinne vyhľadávať pacientov s delíriom v každej zmene**; úloha sestry? Súčasť kvality
- Prijať preventívne opatrenia; balíček ABCDEF
- Šetrne narábať so sedáciou; targed based sedation
- V liečbe „zmätenosti" používať psychofarmaká
- Intenzívna medicína - základné postupy 24/7/256
- Je potrebný ďalší výskum s použitím skríningu

Záver

- Delírium má vysokú prevalenciu u (starších) ICU pacientov
- Delírium ma krátko- i dlhodobo nepriaznivé dôsledky
- Existujú modifikovateľné faktory (analgosedácia)
- **Rutinne vyhľadávať [illegible] ríom v každej [illegible]** súčasť kvality
- Prija[illegible] opatrenia; balíček ABCDEF
- Šetrne narábať so sedáciou; targed based sedation
- V liečbe „zmätenosti" používať psychofarmaká
- Intenzívna medicína - základné postupy 24/7/256
- Je potrebný ďalší výskum s použitím skríningu

Referenčné centrum

VANDERBILT UNIVERSITY MEDICAL CENTER

UNITED STATES DEPARTMENT OF VETERANS AFFAIRS

icudelirium.org

RESEARCH DESIGNED TO TURN MIRRORS INTO WINDOWS

HOME | DELIRIUM | SEDATION | OUTCOMES | REFERENCES | OUR GROUP

ICU DELIRIUM AND COGNITIVE IMPAIRMENT STUDY GROUP

delirium overview *and how to diagnose it*

Delirium is confusion that comes on very fast, sometimes in just a few hours. When someone becomes delirious, it means that they can not think clearly, have trouble paying attention and are not aware of what is going on around them. Sometimes they may even see or hear things that are not really there but seem very real to them.

Risk Factors Study | Terminology and Mnemonics | Assessment | Implementation of CAM-ICU | FAQ | Patients and Family

Video: Some common sedatives could negatively affect the brain

Video: Dr. Valerie Page - Delirium in ICU

Video: 10 Key Points Tutorial

Video: Using the CAM-ICU

Search

ABCDEs *of Preventi*

ABCDE is a standard bundle of ICU m
spontaneous **A**wakening and Breathi
to the **C**hoice of Sedation, **D**elirium m
and exercise. All individual componen
evidence based and can help standar
improve interdisciplinary patient care,
improve long-term cognitive and funct

ABCDE Chest Article
ABCDE Crit Care Med Article
WALL STREET JOURNAL covers ABCDE
ABCDE Protocol Teaching Sheet

www.icudelirium.org

assessment *resources for ICU Delirium*

sedation

stefan.trenkler@upjs.sk

Ďakujem za pozornosť