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Department of Intensive Care Medicine

Comment éviter les benzodiazépines dans la sédation des patients choqués ?

Matthias Hänggi

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COI statement: none, unfortunately

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Comment éviter les benzodiazépines dans la sédation des patients choqués ?

Matthias Hänggi

Secret, dirty confession:

I USE BENZODIAZEPINES,

SOMETIMES

Background

Recommendation of the PADIS Guidelines:

We ***suggest*** using either propofol or dexmedetomidine over benzodiazepines for sedation in critically ill, mechanically ventilated adults (***conditional*** recommendation, ***low quality*** of evidence).

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Delirium

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Delirium - have I seen it?

3 core domains of delirium phenomenology

Cognition

Higher level thinking processes

Circadian rhythm

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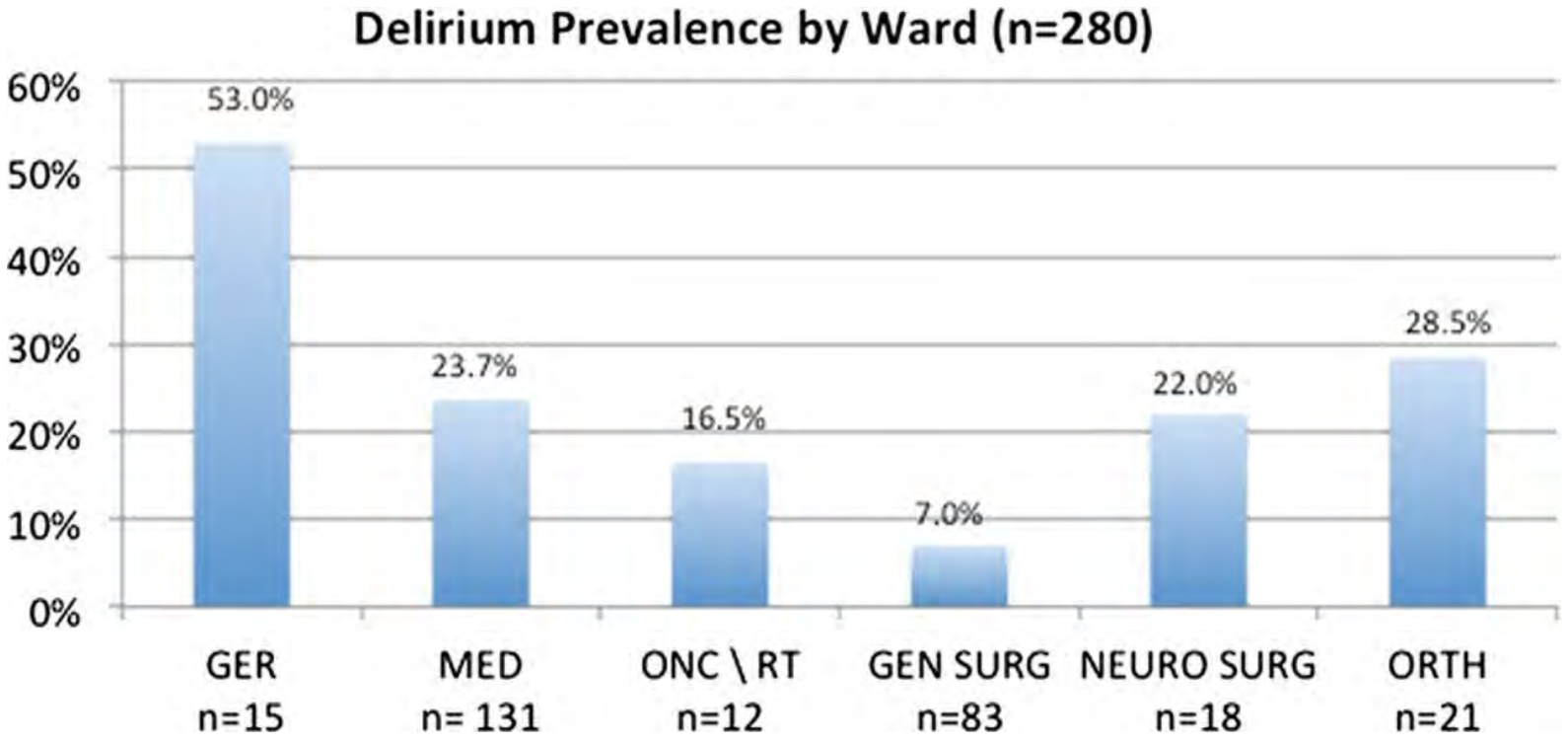
Prevalence of delirium on each unit



Daniel James Ryan et al. BMJ Open 2013;3:e001772

BMJ Open

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Delirium prevalence in adult ICUs

32.3% Delirium epidemiology in critical care (DECCA): an international study.

Crit Care. 2010; 14(6):R210

77% Prevalence and risk factors for development of delirium in burn intensive care unit patients.

J Burn Care Res. 2010;31(5)

83% Delirium in mechanically ventilated patients: validity and reliability of the confusion assessment method for the intensive care unit (CAM-ICU)

JAMA. 2001;286(21)

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Quietly delirious: “hypoactive” delirium

Table 1 Reported proportions of delirious patients with the hypoactive subtype[1]

10

Setting or patient group	Proportion with hypoactive subtype
Consultation liaison psychiatry referrals	6-32%
Intensive care units	36-100%
Elderly patients	13-46%
Hip fractures	12-41%
Palliative care	20-53%

BMJ 2017;357:j2047

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Assessment of delirium: ICDSC

Intensive Care Med (2001) 27: 859–864
DOI 10.1007/s001340100909

ORIGINAL

N. Bergeron
M.-J. Dubois
M. Dumont
S. Dial
Y. Skrobik

Intensive Care Delirium Screening Checklist: evaluation of a new screening tool

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Assessment of delirium: ICDSC

1. Altered Level of Consciousness
2. Inattention
3. Disorientation
4. Hallucination, delusion, or psychosis
5. Psychomotor agitation or retardation
6. Inappropriate speech or mood
7. Sleep-wake cycle disturbance
8. Symptom Fluctuation

Score Classification:
0 Normal
1-3 Subsyndromal Delirium
4-8 Delirium

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Assessment of delirium: CAM-ICU

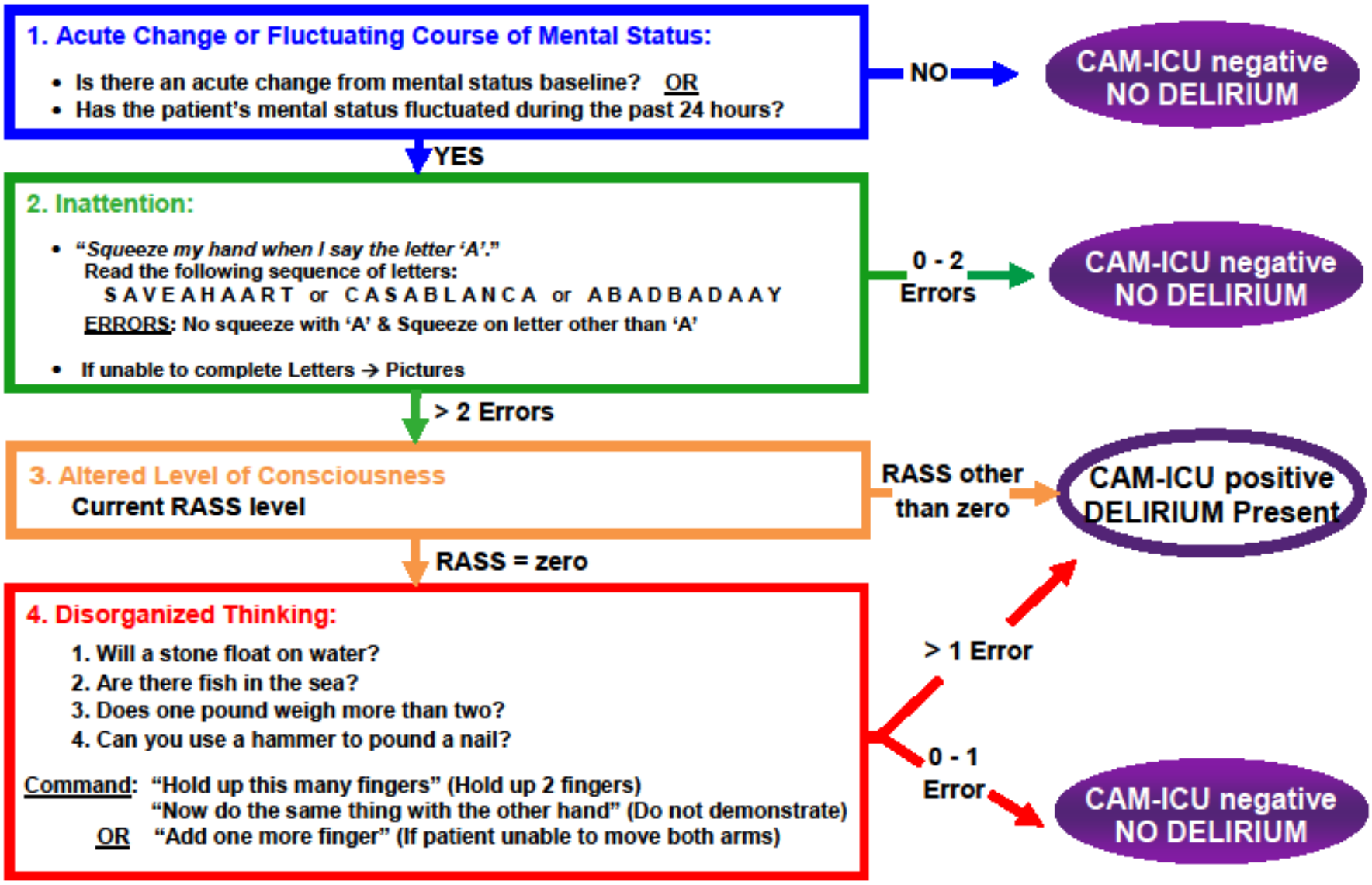
Delirium in Mechanically Ventilated Patients

Validity and Reliability of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)

E. Wesley Ely, MD, MPH
Sharon K. Inouye, MD, MPH
Gordon R. Bernard, MD
Sharon Gordon, PsyD
Joseph Francis, MD, MPH
Lisa May, RN, BSN
Brenda Truman, RN, MSN
Theodore Speroff, PhD
Shiva Gautam, PhD
Richard Margolin, MD
Robert P. Hart, PhD
Robert Dittus, MD, MPH

JAMA, December 5, 2001—Vol 286, No. 21

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



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Bad things happen – the problems

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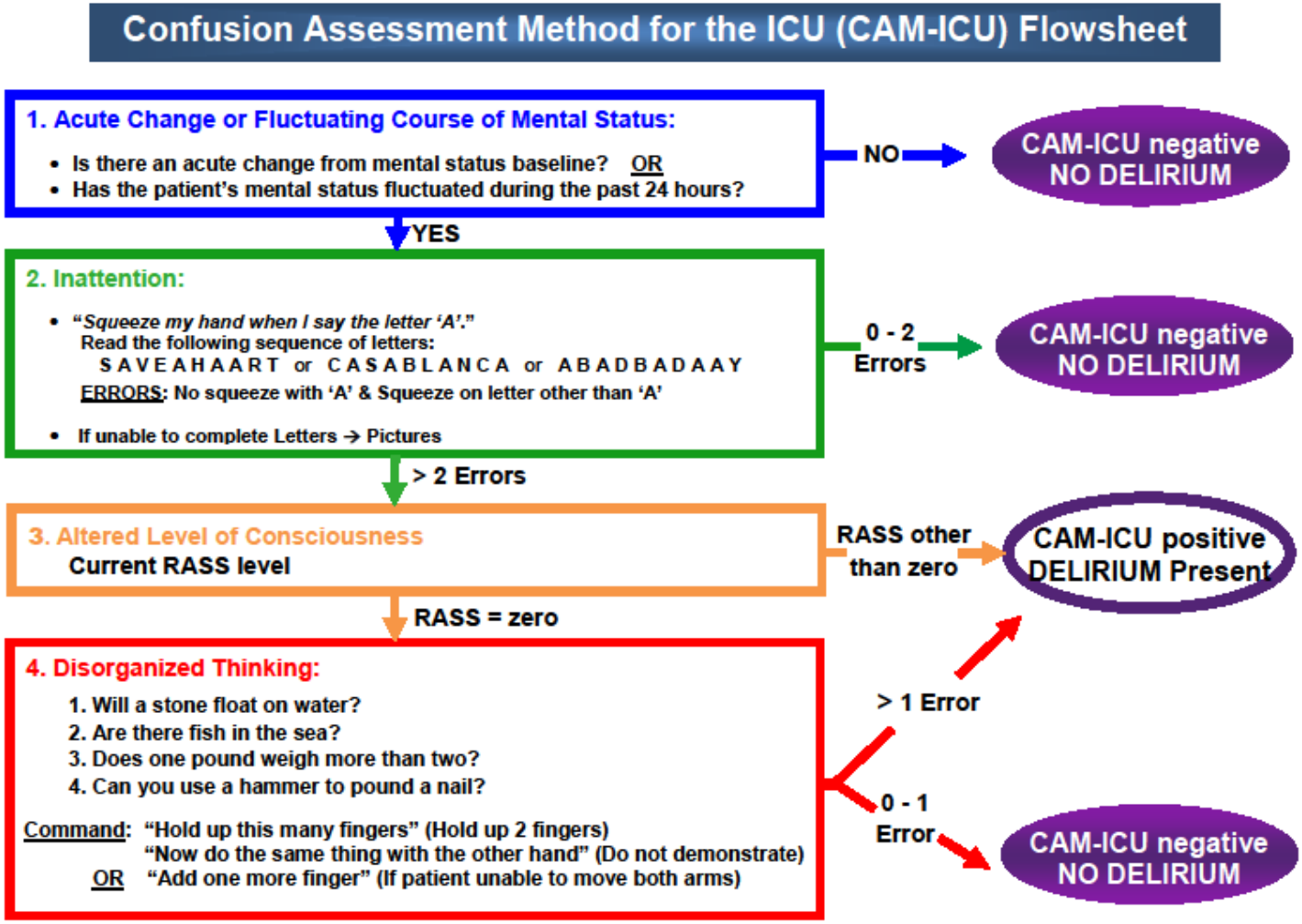
(S)CAM or CAM?



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(S)CAM or CAM?

1916 BRITISH MEDICAL JOURNAL VOLUME 287 24-31 DECEMBER 1983

Dreaming during scientific papers: effects of added extrinsic material

RICHARD F HARVEY, MELVIN B SCHULLINGER, ALEXIS STASSINOPOULOS, ERICA WINKLE

FIG 1—Typical audience sample (infrared picture) to show eye signs. Of 14 members of the audience in view, eyes are "normal" in three, "moving inappropriately" in one, "fixed and glassy" in two, "ptosis" in two, and "closed" in six.

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(S)CAM or CAM?

Incidence of and risk factors for nodding off at scientific sessions

Kenneth Rockwood, David B. Hogan, Christopher J. Patterson; for the Nodding at Presentations (NAP) Investigators

CMAJ • DEC. 7, 2004; 171 (12)

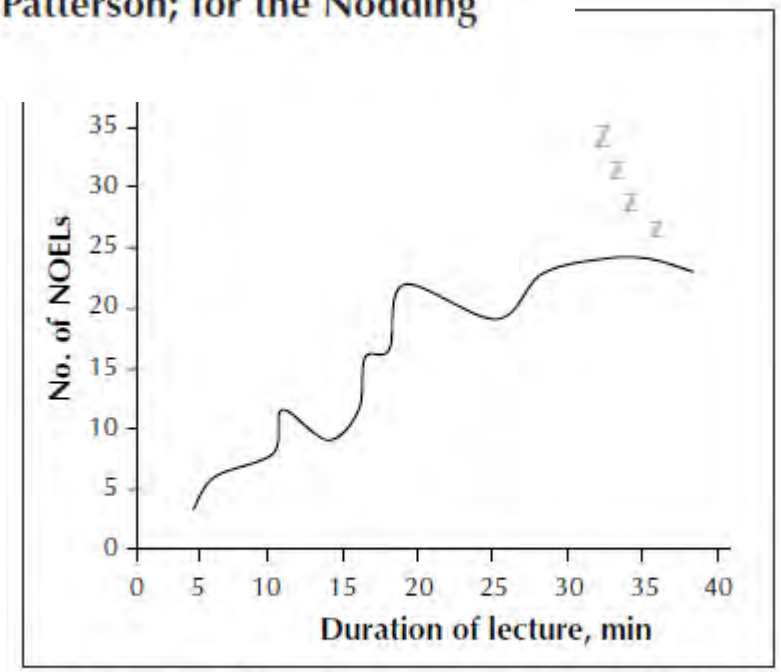

Fig. 1: Special incidence density curve, showing number of nodding-off events per lecture (NOELs) per 100 attendees over length of time of presentation.

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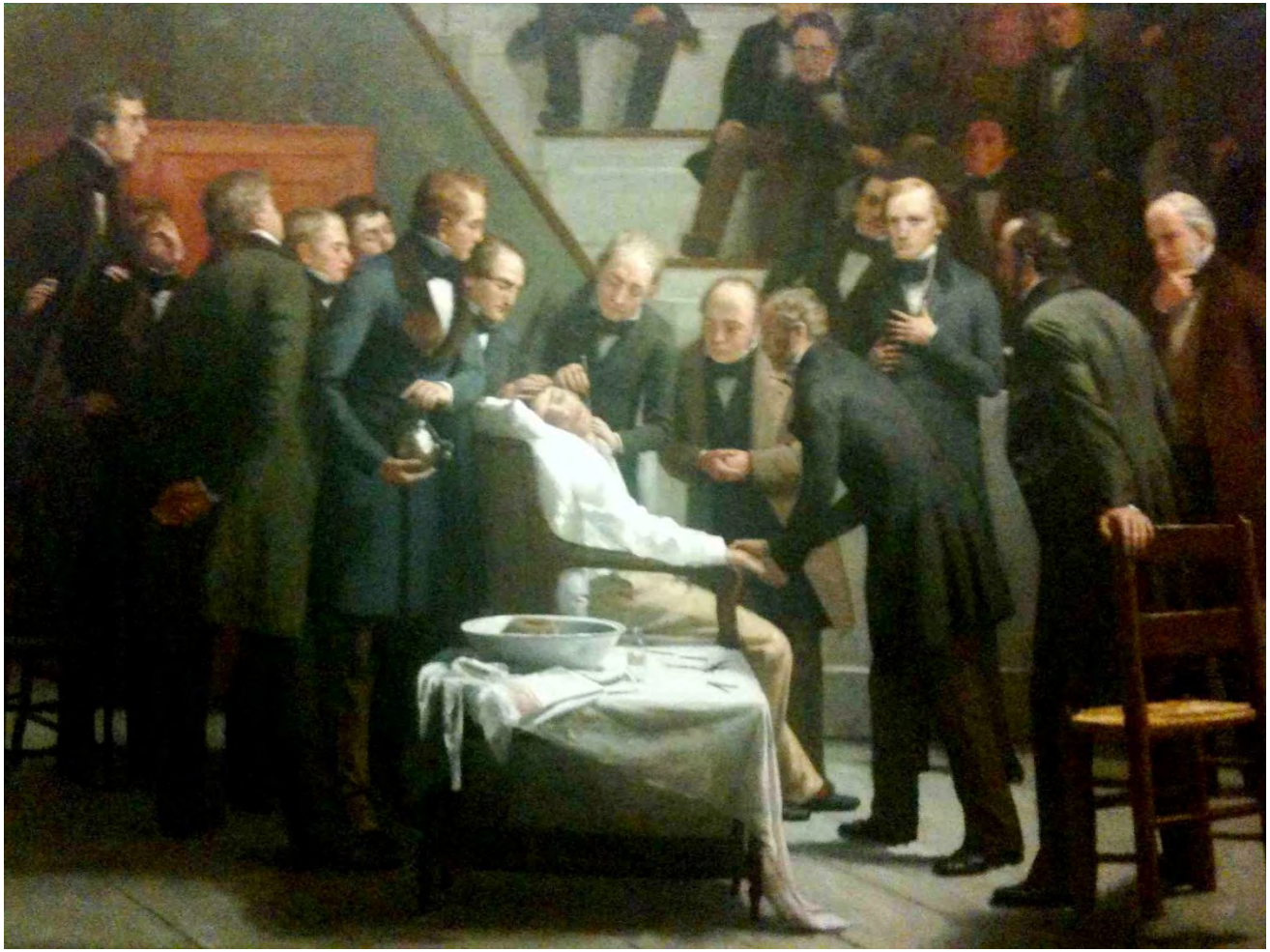
October 16, 1846: «birth» of anaesthesia



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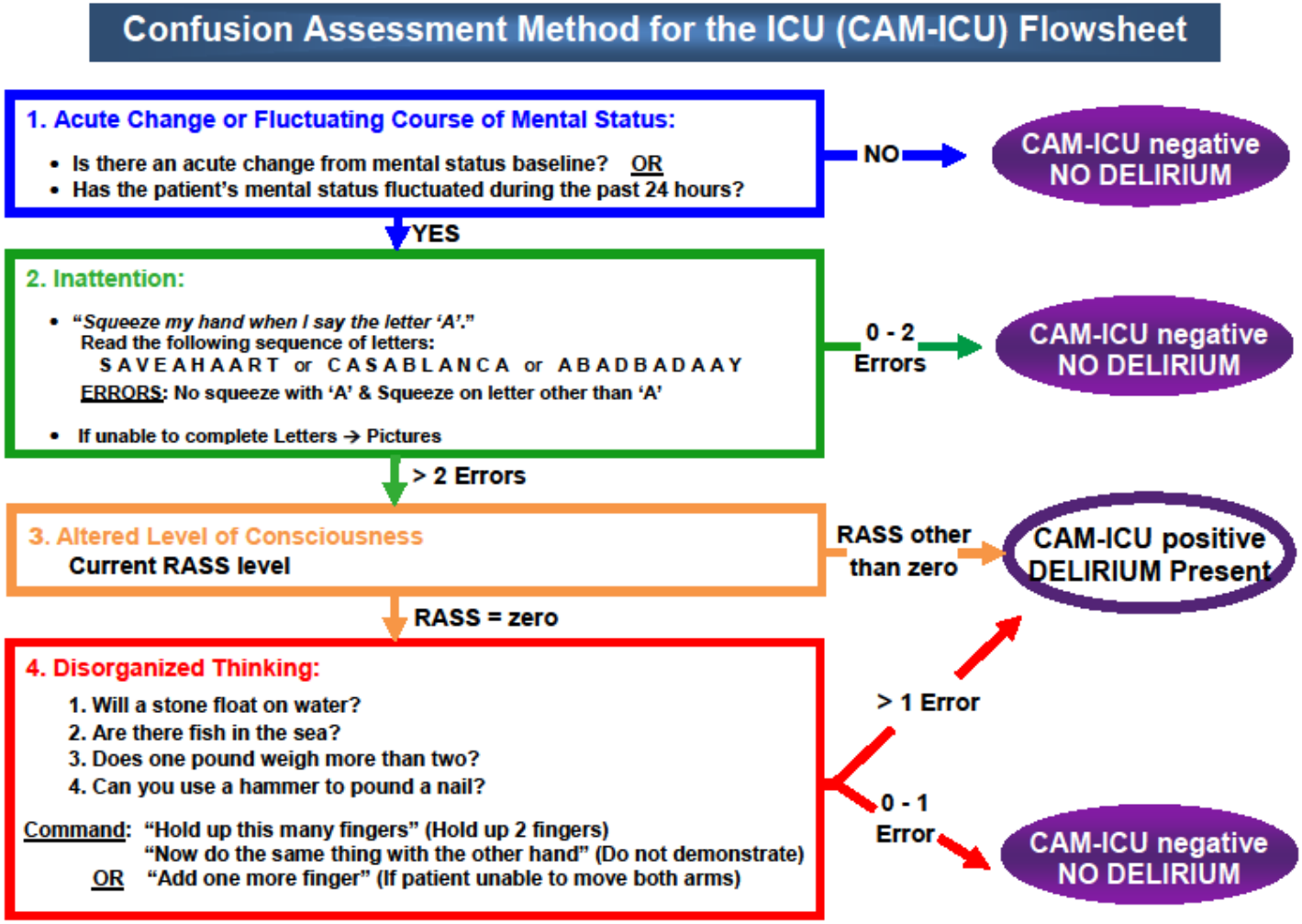
(S)CAM or CAM?



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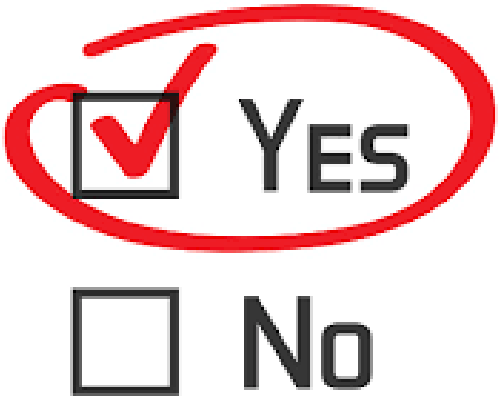
Do we have a problem with benzodiazepines?



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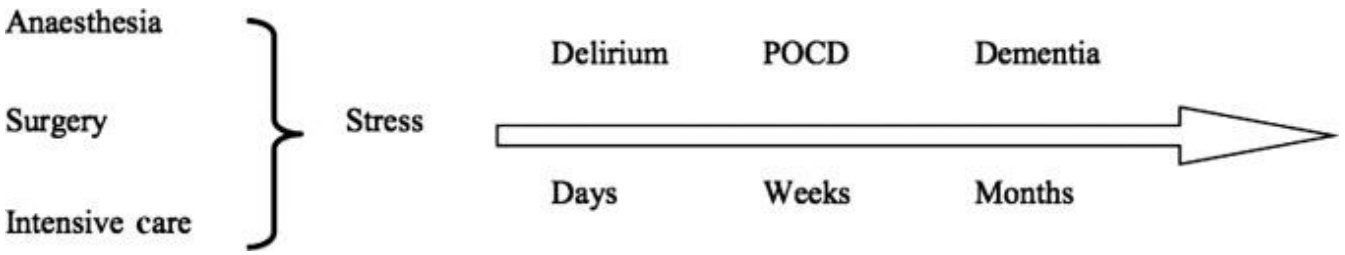
Cognitive decline after anaesthesia and critical care



Dafydd Gwilym Lloyd
Continuing Education in Anaesthesia, Critical Care and Pain
Volume 12 Issue 3 Pages 105-109 (June 2012)

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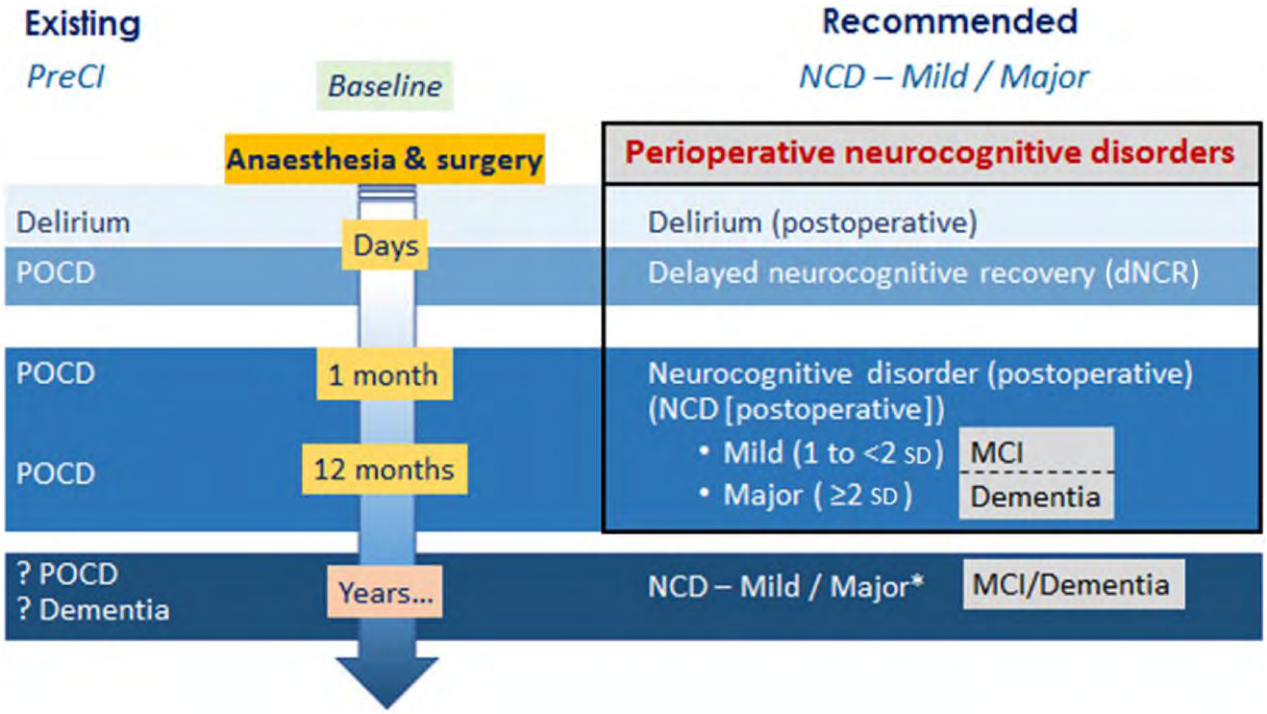
Cognitive decline after anaesthesia and critical care



British Journal of Anaesthesia,
Volume 123, Issue 4,
2019,
Pages 464-478

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Cognitive decline after anaesthesia and critical care

JAMA Insights

Cognitive Decline Associated With Anesthesia and Surgery in Older Patients

Susana Vacas, MD, PhD; Daniel J. Cole, MD; Maxime Cannesson, MD, PhD

Delirium and POCD previously were considered distinct entities, but recent data suggest an underlying relationship between them for the patient whose brain may be vulnerable to Cognitive decline after the stressors of surgery and anesthesia.

JAMA September 7, 2021 Volume 326, Number 9

Background

Recommendation of the PADIS Guidelines:

We ***suggest*** using either propofol or dexmedetomidine over benzodiazepines for sedation in critically ill, mechanically ventilated adults (***conditional*** recommendation, ***low quality*** of evidence).

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Alternatives to sedation with benzodiazepines

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Nonsedation or Light Sedation in Critically Ill, Mechanically Ventilated Patients

Hanne T. Olsen, M.D., Helene K. Nedergaard, M.D., Ph.D., Thomas Strøm, M.D., Ph.D., Jakob Oxlund, M.D., Karl-Andre Wian, M.D., Lars M. Ytrebø, M.D., Ph.D., Bjørn A. Kroken, M.D., Michelle Chew, M.D., Ph.D., Serkan Korkmaz, Jørgen T. Lauridsen, M.Sc., and Palle Toft, M.D., D.M.Sc.

N ENGL J MED 382;12 NEJM.ORG MARCH 19, 2020

Nonsedation or Light Sedation in Critically Ill, Mechanically Ventilated Patients

Trial Interventions:

Both trial groups received a **basic analgesic regimen** that included paracetamol and **opioids** as bolus doses in order to keep the patients free from pain. **Epidural anesthesia** was used to control pain when appropriate

…nonsedation group did not receive any sedatives but could receive bolus doses of **morphine for analgesia**

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Alternatives to sedation with benzodiazepines

1. “analgesia-first sedation» (fentanyl, remifentanil, hydromorphone)

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Alternatives to sedation with benzodiazepines

What about propofol?

Hemodynamic effects of propofol: data from over 25,000 patients.

Hug CC Jr[1], McLeskey CH, Nahrwold ML, Roizen MF, Stanley TH, Thisted RA, Walawander CA, White PF, Apfelbaum JL, Grasela TH

Author information

Anesthesia and Analgesia, 01 Oct 1993, 77(4 Suppl):S21-9

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Alternatives to sedation with benzodiazepines

What about propofol?

=> Severe hypotension occurs frequently!

(Especially in the very sick patients)

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Alternatives to sedation with benzodiazepines

What about dexmedetomidine?

Intensive Care Med (2022) 48:811–840
https://doi.org/10.1007/s00134-022-06712-2

SYSTEMATIC REVIEW

Dexmedetomidine vs other sedatives in critically ill mechanically ventilated adults: a systematic review and meta-analysis of randomized trials

Kimberley Lewis[1,2*], Fayez Alshamsi[3], Kallirroi Laiya Carayannopoulos[1], Anders Granholm[4], Joshua Piticaru[1], Zainab Al Duhailib[5], Dipayan Chaudhuri[1,2], Laura Spatafora[1], Yuhong Yuan[6], John Centofanti[1,7], Jessica Spence[1,2,7,8], Bram Rochwerg[1,2], Dan Perri[1,9], Dale M. Needham[10,11,12,13], Anne Holbrook[2,9], John W. Devlin[14], Osamu Nishida[15], Kimia Honarmand[16], Begüm Ergan[17], Eugenia Khorochkov[18], Pratik Pandharipande[19], Mohammed Alshahrani[20], Tim Karachi[1], Mark Soth[1], Yahya Shehabi[21], Morten Hylander Møller[4] and Waleed Alhazzani[1,2] on behalf of the GUIDE group

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Alternatives to sedation with benzodiazepines

What about dexmedetomidine?

77 randomized trials
compared with other medications
dexmedetomidine reduced the rate (or incidence) of delirium (RR 0.67, 95% CI 0.55-0.81; moderate certainty)

increased the risk of bradycardia by 6 percent and hypotension by 4 percent

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Alternatives to sedation with benzodiazepines

What about dexmedetomidine?

Février 2022

Dexmédétomidine (Dexdor®): preuves d'une hausse du risque de mortalité chez les patients en soins intensifs ≤ 65 ans en cas d'utilisation de la dexmédétomidine pour une sédation profonde

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Alternatives to sedation with benzodiazepines

1. “analgesia-first sedation» (fentanyl, remifentanil, hydromorphone)

2. Addition of very low dose propofol or dexmedetomidine, if possible (hypotension!)

3. If 2 impossible => low dose midazolam

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Alternatives to sedation with benzodiazepines

What about ketamine?

«Patients remain conscious with spontaneous breathing and intact brain stem reflexes. By stimulating the sympathetic nervous system, there is **less cardiovascular depression**; this preserves and sometimes **increases blood pressure**”

“Ketamine has mild bronchodilatory activity”

The use of ketamine is limited by its psychoactive effects (vivid hallucinations, confusion, and delirium).

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3. If 2 impossible => low dose midazolam

or, (if patient is really bad)

Ketamin based sedation (with paralysis), later + midazolam

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Alternatives to sedation with benzodiazepines

What about antipsychotics/haloperidol?

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Haloperidol for the Treatment of Delirium in ICU Patients

N.C. Andersen-Ranberg, L.M. Poulsen, A. Perner, J. Wetterslev, S. Estrup, J. Hästbacka, M. Morgan, G. Citerio, J. Caballero, T. Lange, M.-B.N. Kjær, B.H. Ebdrup, J. Engstrøm, M.H. Olsen, M. Oxenbøll Collet, C.B. Mortensen, S.-O. Weber, A.S. Andreasen, M.H. Bestle, B. Uslu, H. Scharling Pedersen, L. Gramstrup Nielsen, H.C. Toft Boesen, J.V. Jensen, L. Nebrich, K. La Cour, J. Laigaard, C. Haurum, M.W. Olesen, C. Overgaard-Steensen, B. Westergaard, B.A. Brand, G. Kingo Vesterlund, P. Thornberg Kyhnauv, V.S. Mikkelsen, S. Hyttel-Sørensen, I. de Haas, S.R. Aagaard, L.O. Nielsen, A.S. Eriksen, B.S. Rasmussen, H. Brix, T. Hildebrandt, M. Schønemann-Lund, H. Fjeldsøe-Nielsen, A.-M. Kuivalainen, and O. Mathiesen, for the AID-ICU Trial Group*

October 26, 2022
DOI: 10.1056/NEJMoa2211868

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Alternatives to sedation with benzodiazepines

What about antipsychotics/haloperidol?

…. suggest **no mortality benefit** when haloperidol is used

Haloperidol-associated polymorphic ventricular tachycardia (including torsades de pointes) is an uncommon but severe adverse reaction. It is primarily associated with intermittent high dose intravenous administration and prolonged QTc interval.

ALERT: US Boxed Warning:
Increased mortality in elderly patients with dementia-related psychosis

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3. If 2 impossible => add low dose midazolam

or, (if patient is really bad)

Ketamin based sedation (with paralysis), later + midazolam

No place for haloperidol/antipsychotic

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Alternatives to sedation with benzodiazepines

What about sevoflurane?

⇒ No studies in severly shocked patients in ICU,
from anesthesiology experience: hypotension!

What about barbiturates?

⇒ Only if you intend to kill your patient!!!!!!

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No place for haloperidol/antipsychotic (or barbiturate)

Stay tuned for new ultra-short acting benzodiazepines

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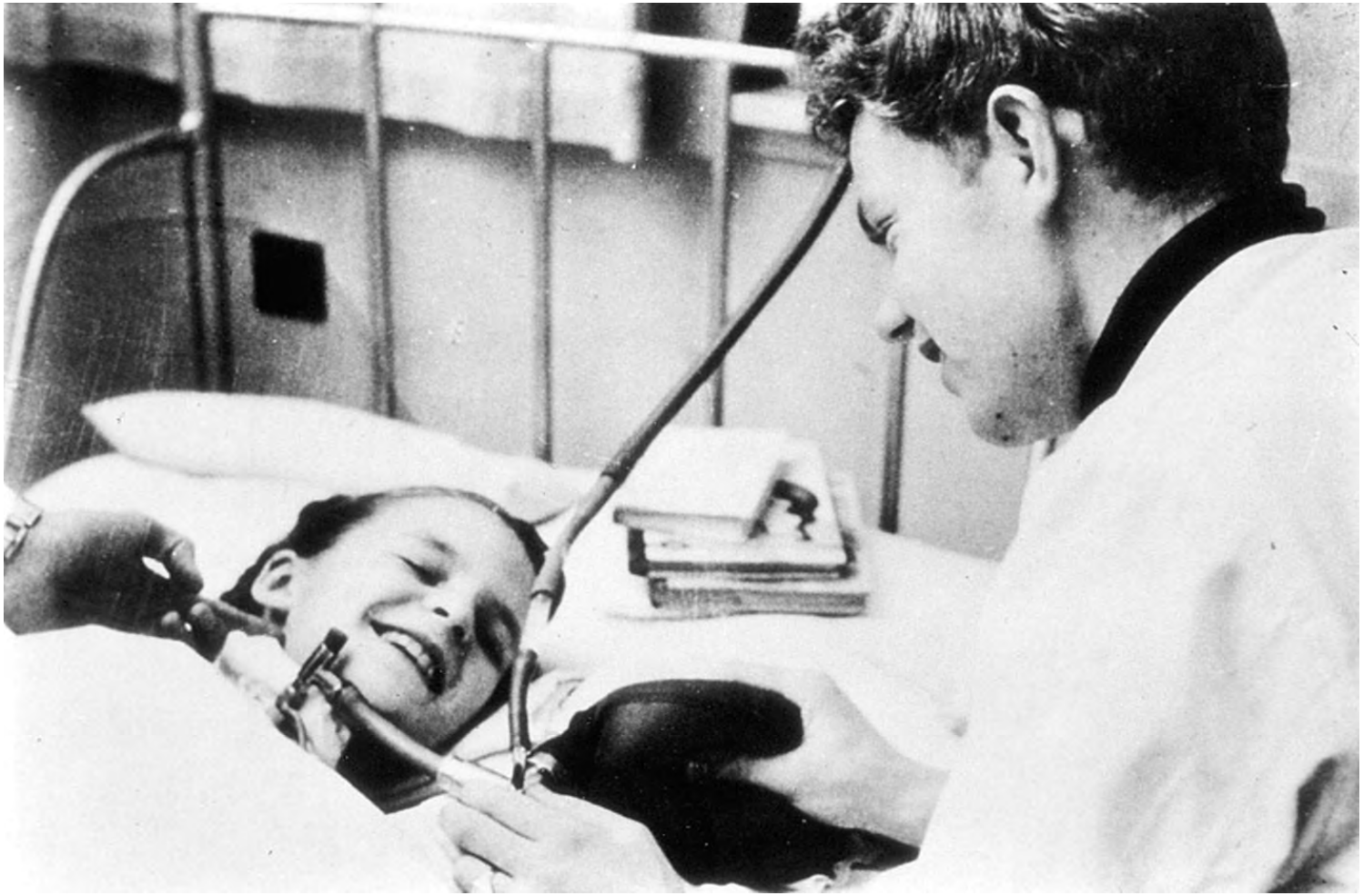
“Birth” of intensive care medicine during polio



THANK YOU

Questions?

matthias.haenggi@insel.ch