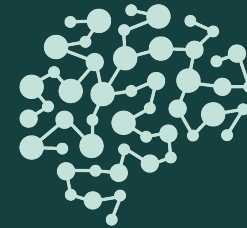


European Society of
Anaesthesiology and
Intensive Care



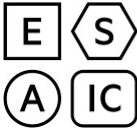
Safe Brain
Initiative

*An European Society of Anaesthesiology
and Intensive Care Research Group*

-A network-based approach to precision anaesthesia-

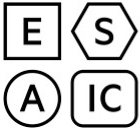
Postoperative Delirium

- evidence and strategies for prevention



What is the most common complications after surgery?

- Postoperative Delirium (POD) is one of the most common complications after surgery ¹
- POD can be prevented in more than 40% of cases ¹
- goals are to decrease delirium IN THE DAILY CLINICAL ROUTINE
 - In regard to incidence, severity and duration,
 - ensure patient safety and improve outcomes
- Reduce or avoid the cascade of deleterious clinical events such as:
 - Prolonged hospitalisation
 - Loss of functional independence
 - Reduced cognitive function
 - Death



Incidence of Delirium:

cardiac surgery: 13-42%

Koster et al. Thorac Surg 2008
Brown CH; Curr Opin Anaesthesiol. 2014

older patients (>60J): 14-56%

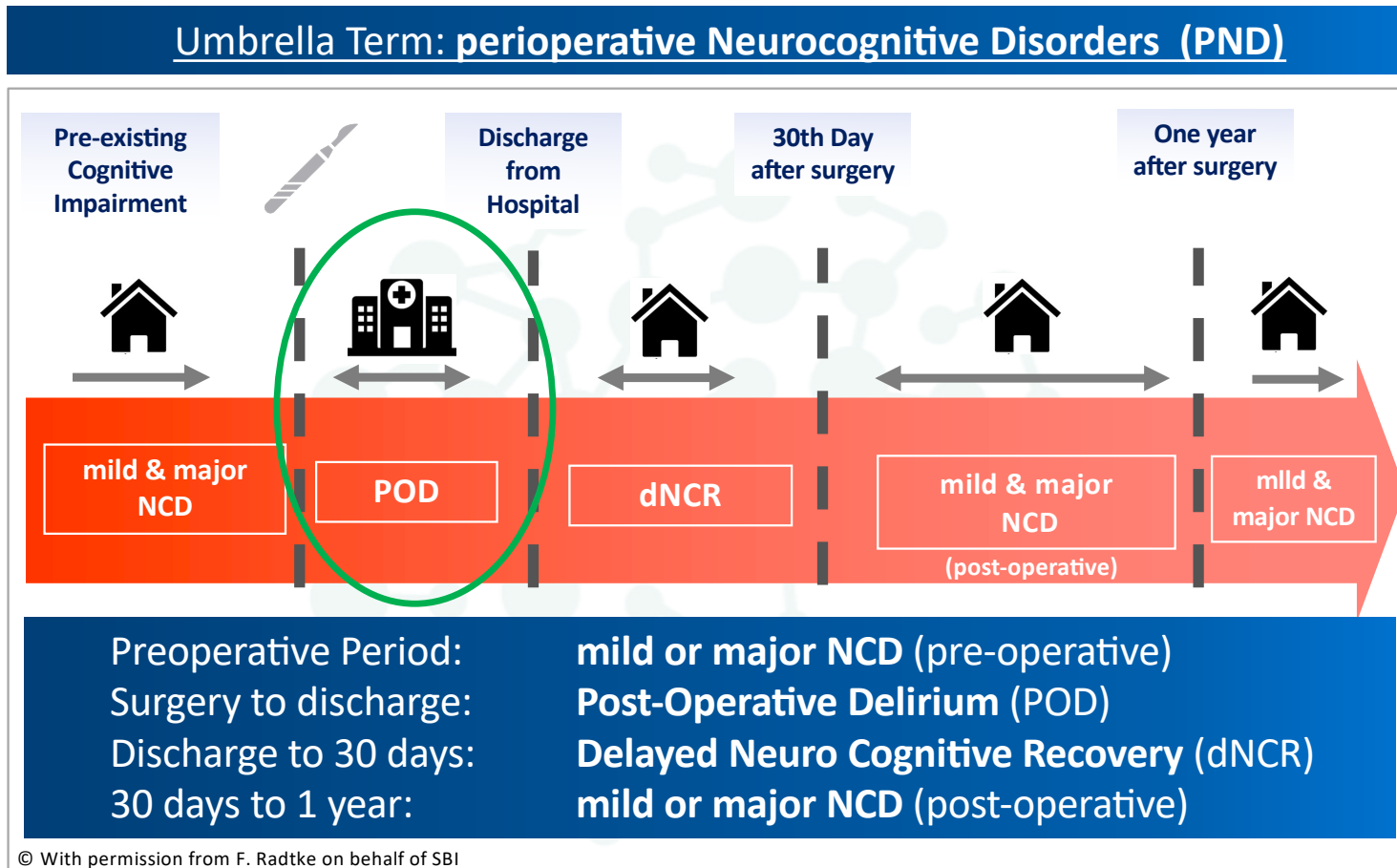
Inouye et al JAMA 1996
Iamaroon et al. BMC Geriatrics (2020)
Bellelli et al J Am Ger Soc 2006

orthopedic surgery : 35-65%
(hip replacement)

Kalisvaart et al JAGS 2005
Kontinen et al Acta Anaesthesiol Scand 2006
Marcantonio et al JAGS 2001

Patients on ICU : 19-82%

Ely et al. JAMA 2004
Martin et al. Anaesth Intensiv 2005
Pun B et al.; Lancet 2021



What is Delirium

-A pathophysiological definition-

Delirium is a partial breakdown of brain function

Through impairments in:

- ***brain connectivity and***
- ***brain plasticity***

...which are exposed to a stressor

Vulnerability

(Predisposing Factors)

&

Stressors

(Precipitating Factors)

EJA

Eur J Anaesthesiol 2023; **40**:1 – 28

OPEN

GUIDELINES

Update of the European Society of Anaesthesiology and Intensive Care Medicine evidence-based and consensus-based guideline on postoperative delirium in adult patients

Task Force: César Aldecoa, Gabriella Bettelli, Federico Bilotta, Robert D. Sanders, Claudia D. Spies,
Advisory Board: Paola Aceto, Riccardo Audisio, Antonio Cherubini, Colm Cunningham,
Wojciech Dabrowski, Ali Forookhi, Nicola Gitti, Kaisa Immonen, Henrik Kehlet, Susanne Koch,
Katarzyna Kotfis, Nicola Latronico, Alasdair M.J. MacLulich, Lior Mevorach, Anika Mueller,
Bruno Neuner, Simone Piva, Finn Radtke, Annika Reintam Blaser, Stefania Renzi,
Stefano Romagnoli, Maria Schubert, Arjen J.C. Slooter, Concezione Tommasino, Lisa Vasiljewa,
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A topic of important medical and public health relevance

- with impact on patient`s health & life perspective
- severe consequences for the families,
- healthcare system and the society as a whole.

I. "Treatment of POD"**II. prevention of POD**

GUIDELINES

Update of the European Society of Anaesthesiology and Intensive Care Medicine evidence-based and consensus-based guideline on postoperative delirium in adult patients

summarised evidence: **“Treatment of POD”**

I. **“Treatment of POD”**

Haloperidol

Recommendation 6.1	Quality of the evidence	Strength of recommendation
We suggest using low-dose haloperidol for the treatment of POD if nonpharmacological measures fail. We advise a short-term, symptom-oriented therapy. The application should be bolus-wise and with the lowest dose possible. Use antipsychotic drugs with caution or not at all for people with preexisting neurologic conditions, such as Parkinson's disease or Lewy body's dementia.	Very low	Weak



Suggest:
low-dose haloperidol

(if nonpharmacological measures fail)

Benzodiazepines

Recommendation 6.2	Quality of the evidence	Strength of recommendation
The use of benzodiazepines for the treatment of delirium in postoperative patients is not suggested. The evidence for the benefits of benzodiazepine therapy for treating POD symptoms or the underlying causes is very low to nonexistent. This recommendation is not to be confused with delirium in the context of alcohol withdrawal, where benzodiazepines are recommended symptom orientated as the first-line medication (in a bolus-titrated dose, lowest as possible).	Very low	Weak



Benzo`s for treatment of POD is not suggested.

(cave: alcohol withdrawal -> benzo`s first-line medication!)

Dexmedetomidine

Recommendation 6.3	Quality of the evidence	Strength of recommendation
We suggest using dexmedetomidine for the treatment of POD in cardiac surgery.	Very low	Weak



Suggest:
Dex. for treatment POD in cardiac surgery

Update of the European Society of Anaesthesiology and Intensive Care Medicine evidence-based and consensus-based guideline on postoperative delirium in adult patients

summarised evidence prevention of POD

drug as a prophylaxis for POD?

Recommendation 3.1	Quality of the evidence	Strength of recommendation
In patients undergoing surgery, we do not suggest the use of any drug as a prophylactic measure to reduce the incidence of POD.	Low	Weak



do **not** suggest any drug as prophylaxis for POD.

Dex. as prophylaxis for POD?

Recommendation 3.2	Quality of the evidence	Strength of recommendation
When dexmedetomidine is used intra-operatively or postoperatively with the aim to prevent POD, we recommend balancing the expected benefits against the most important side effects (bradycardia and hypotension).	Moderate	Strong



recommend to balance benefits vs side effects (bradycardia, hypotension)

surgery or Anaesthesia to prevent POD?

Recommendation 3.3	Quality of the evidence	Strength of recommendation
In patients undergoing surgery, we do not suggest any specific type of surgery or type of anaesthesia to reduce the incidence of POD.	Low	Weak



do **not** suggest any specific type of:

- **surgery** or
- **type of anaesthesia** to reduce POD.

GUIDELINES

Update of the European Society of Anaesthesiology and Intensive Care Medicine evidence-based and consensus-based guideline on postoperative delirium in adult patients

II. prevention of POD

summarised evidence: Prevention: **EEG & Index based EEG monitoring**

Recommendation 5.2	Quality of the evidence	Strength of recommendation
We suggest multiparameter, intraoperative EEG monitoring (burst suppression, density spectral array, DSA) during anaesthesia to decrease the risk of POD.	Low	Weak



**suggest multiparameter EEG monitoring:
Burst suppression & DSA**

Recommendation 5.1	Quality of the evidence	Strength of recommendation
We suggest Index-based EEG-monitoring depth of anaesthesia guidance to decrease the risk of POD.	Low	Weak



suggest index-based monitoring

GUIDELINES

Update of the European Society of Anaesthesiology and Intensive Care Medicine evidence-based and consensus-based guideline on postoperative delirium in adult patients

summarised evidence

prevention of POD

II. prevention of POD

Pre op consultation in older adults

Recommendation 4.1	Quality of the evidence	Strength of recommendation
We recommend that preoperative anaesthesia consultation in older adults includes the screening for risk factors for POD and addresses patients' needs to optimise their preoperative status.	Low	Strong



recommend in older adults: screening for risk factors & optimise preoperative status.

screening for POD risk factors

Recommendation 4.2	Quality of the evidence	Strength of recommendation
We recommend that the results of the screening for POD risk factors are shared among the care team and the preventive strategies discussed and registered in the medical records.	Low	Strong



POD risk factors are shared among the care team & strategies discussed and registered in the medical records

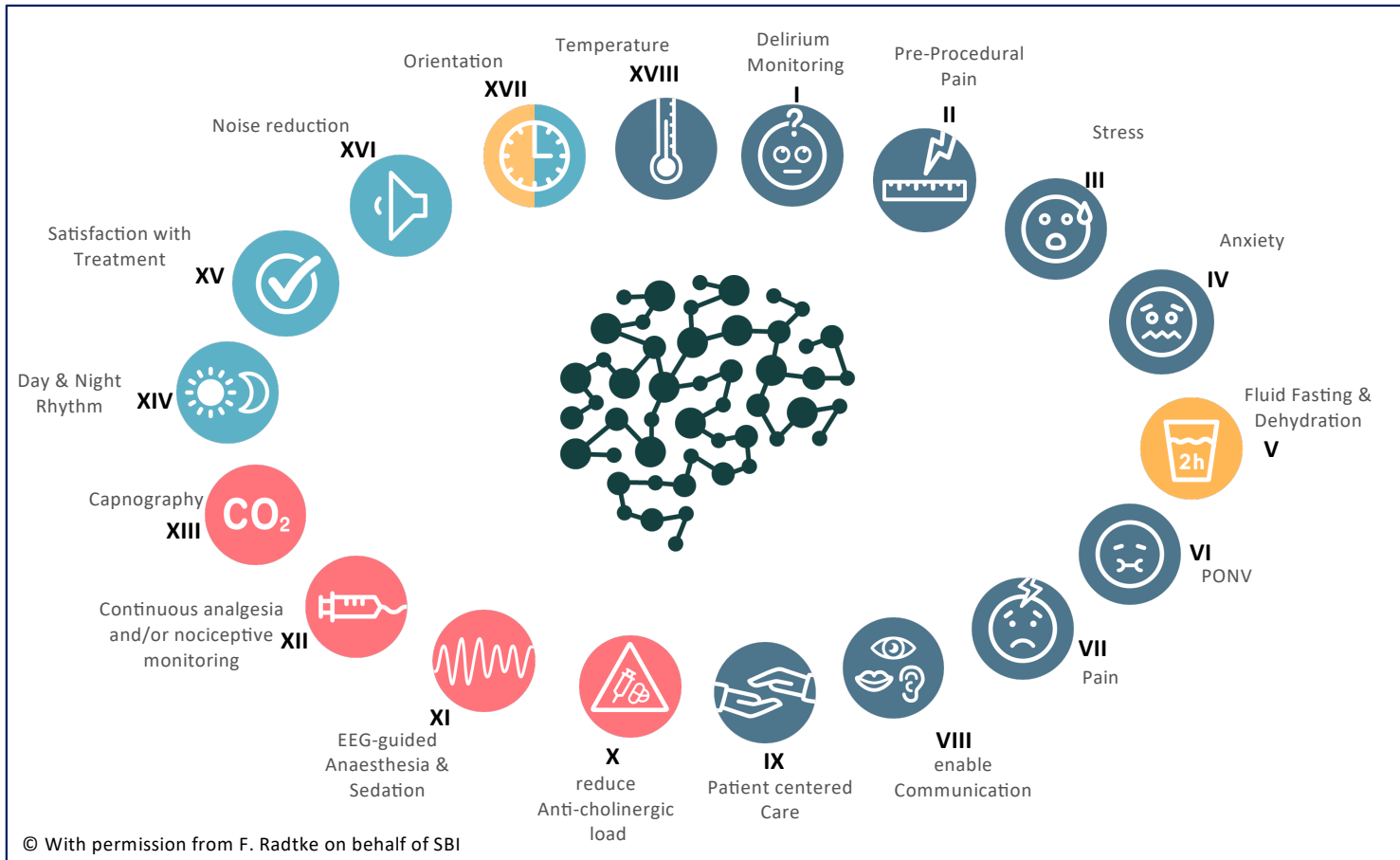
Multicomponent nonpharm. interventions

Recommendation 4.3	Quality of the evidence	Strength of recommendation
We recommend multicomponent nonpharmacological interventions in all patients at risk of POD.	Moderate	Strong

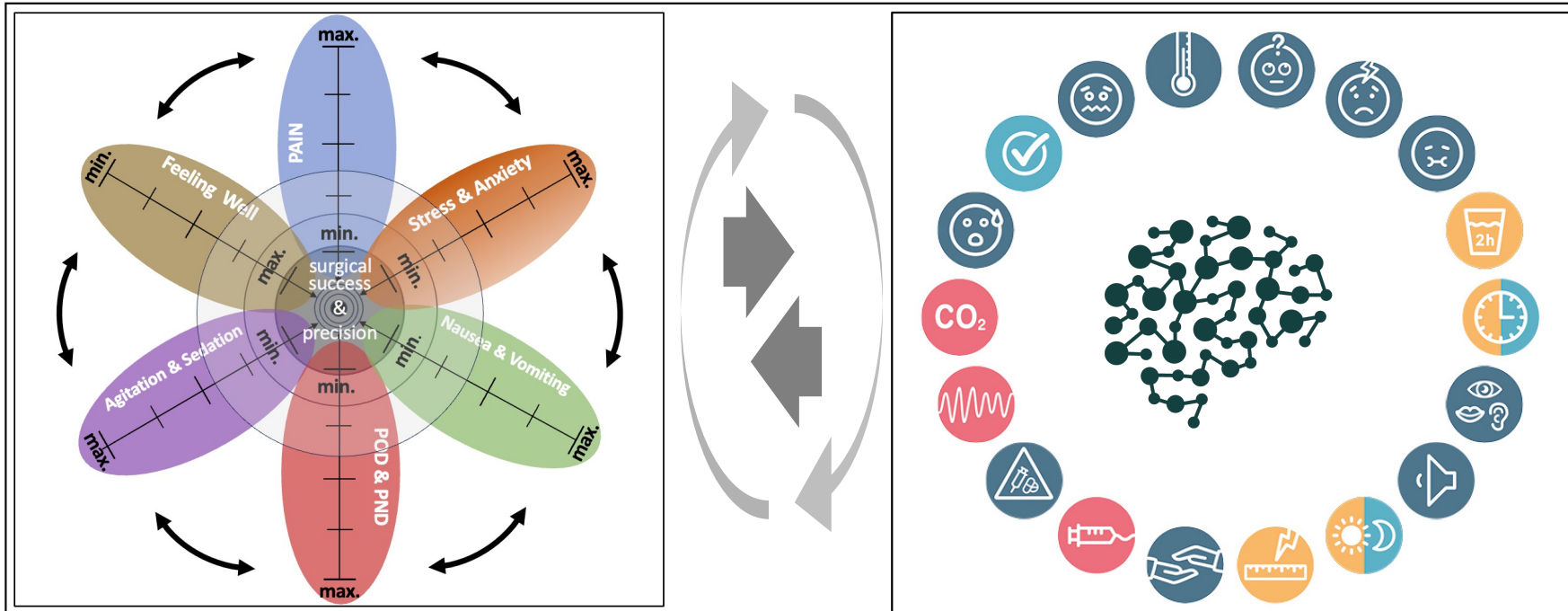


Recommend:
Multicomponent Nonpharmacological interventions

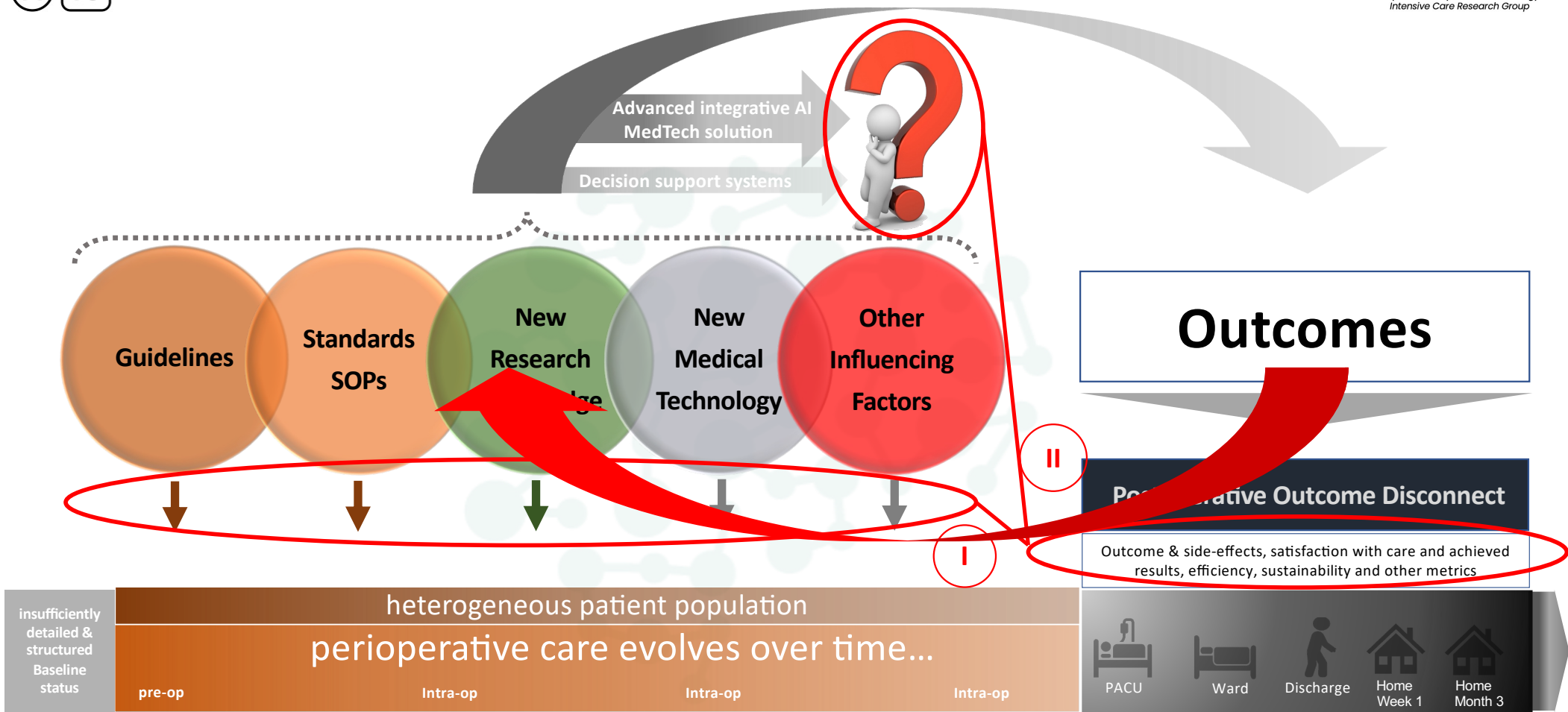
A multicomponent evidence based approach: 18 core recommendation's

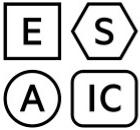


Postoperative Outcomes & side-effects are interdependent and complex



To achieve best possible Outcomes in a constantly developing system, a multifactorial approach is essential - including monitoring and improving of undesired side-effects in a continuous cycle.





European Society of Anaesthesiology and Intensive Care

SBI's precision Anaesthesia & periop. approach



Personalized Anaesthesia
Targeting Physiological Systems for Optimal effect

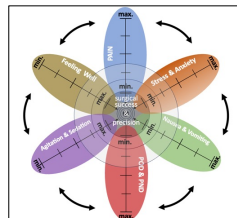
Precision Anaesthesia and periop. care:
Targeting physiological systems for optimal effect & minimize side effects

I.

II.

Precision Outcomes:
reliable, standardized real- world outcome evidence

- PRO's, POD/PND, adverse events & more
- Patient & Staff satisfaction w/ provided care
- Cost effect & efficiency metrics, LOS, re-admission
- sustainability metrics



Precision Delivery:
of interventions & applied care

- Sedatives, Analgesics, other Meds, Airway, MedTech, etc.
- Training & effect of training metrics
- SOP's, Pathways, bootcamp...



The SBI flow now...

SBI core data:

PROs & PND

SBI us:

Satisfaction w/
treatment
(patients & employees)

SBI muda:

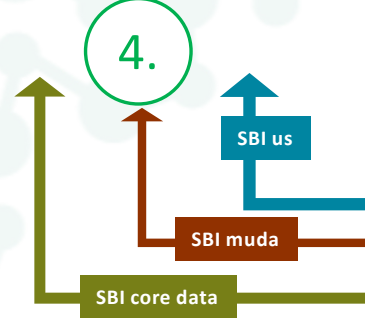
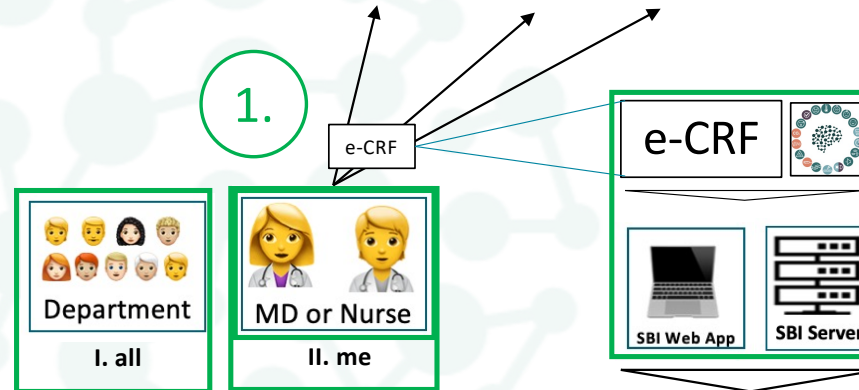
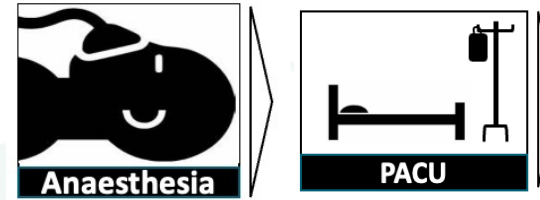
Patient centred
efficiency

SBI green:

Personalized and
departmental sustainability
index

SBI me:

All outcomes (us; muda; core; green) broken down to the individual service provider (fully anonymous w/ 2 factor authentication)



SBI flow soon...



SBI core data:

PROs & PND

SBI us:

Satisfaction w/
treatment
(patients & employees)

SBI muda:

Patient centred
efficiency

SBI green:

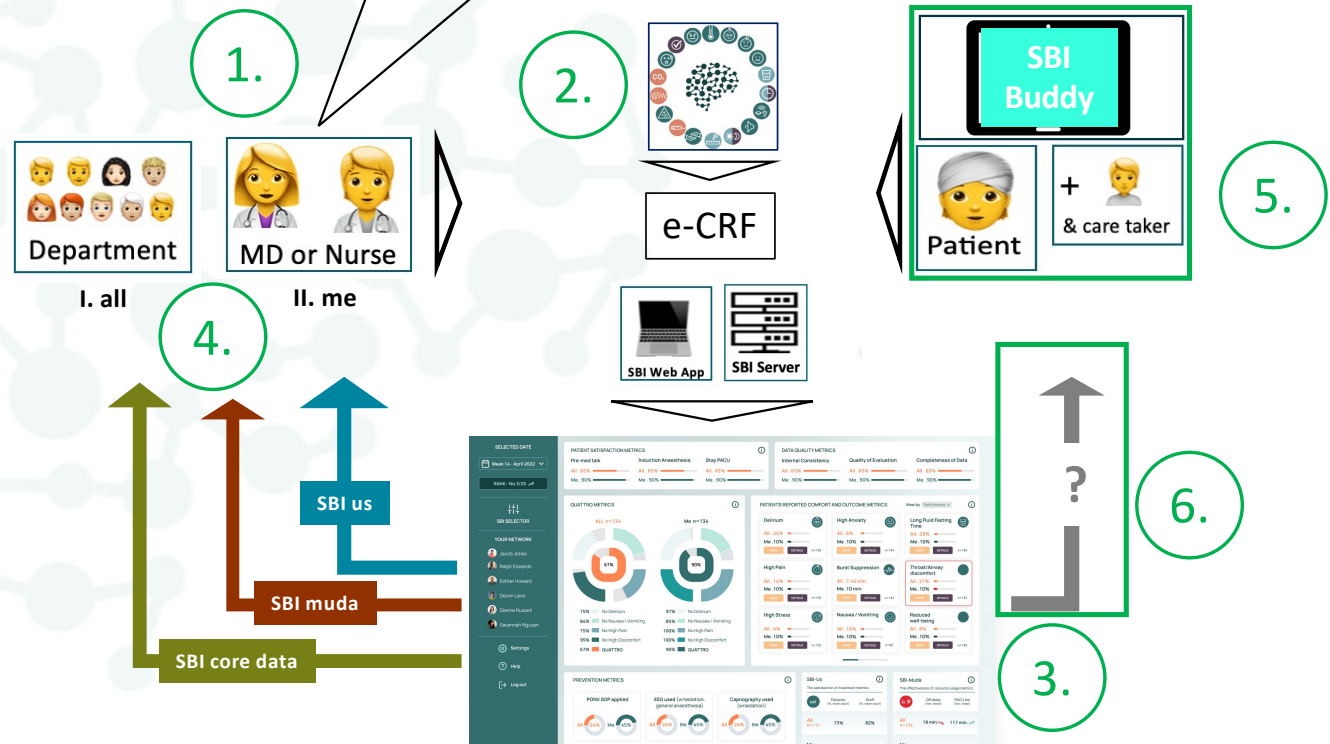
Personalized and
departmental sustainability
index

SBI me:

All outcomes (us; muda; core; green) broken down to the individual service provider (fully anonymous w/ 2 factor authentication)

SBI buddy:

Patient Interface for
simplified Data collection



I. Precision Outcomes



Hi Karina
Nice to have you back!


Please choose your access

ACCESS DASHBOARD

ADD PARTICIPANT

ACCESS DOCUMENTS

Edit account 

Log out 

I. Precision Outcomes

SELECTED DATE

Week 14 - April 2022

RANK - No. 3/25



SBI SELECTOR

YOUR NETWORK

- Jacob Jones
- Ralph Edwards
- Esther Howard
- Devon Lane
- Dianne Russell
- Savannah Nguyen

Settings

Help

Log out

PATIENT SATISFACTION METRICS



DATA QUALITY METRICS



SBI SELECTORS

Patients characteristics

ASAPS

III

Gender

Female

Age Groups

71 - 80

Surgery characteristics

Setting

Elective

Surgical Time

{>} 1hr

Surgical Specialty

Trauma/Orth.

Anaesthesia characteristics

Anaesthesia

General Anaesthesia

Airway

Tube

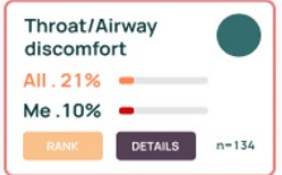
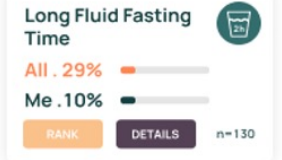
Regional Anaesthesia

Any

Nerve Blocks

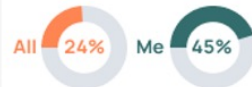
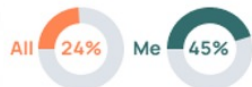
Any

View by Performance



Reset Selectors

Set Selectors



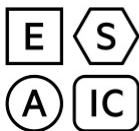
All n=111 73% 82%

SBI-Muda

The effectiveness of resource usage metrics

OR delay (min, mean) PACU los (min, mean)

All n=134 18 min. 117 min.

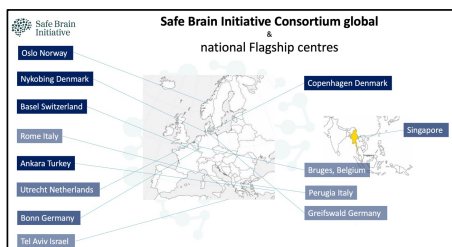


European Society of Anaesthesiology and Intensive Care

Short introduction:



The ESAIC Safe Brain Initiative (SBI) Research Group is a:



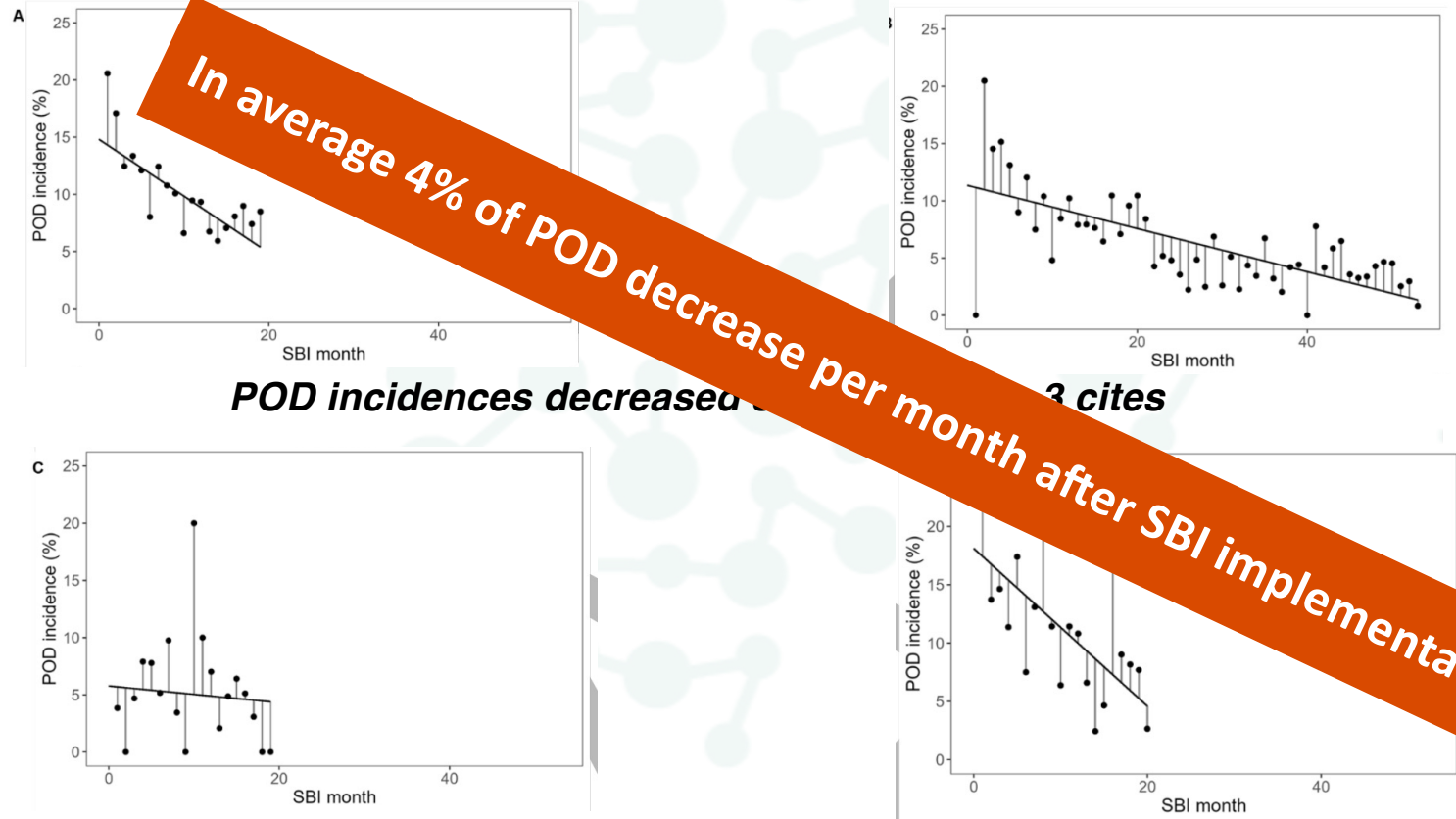
- *research driven continuous quality improvement Project w/ an international matrix partner structure*
- *w/ the primary aim to fast track towards patient centred precision anaesthesia & perioperative care*
- *based on monitoring & improving patient reported outcomes (PROMs) and postoperative cognitive disorders (PNDs) while optimizing Pat. Satisfaction (PREMs) and overall periop. efficiency*
- *Mostly through non-invasive, evidence based preventive recommendations (SBI-Core recommendations)*
- *Guided by real-world evidence data, on an open platform & in a non-profit approach.*
- *Ongoing in real life on a daily basis... !*

**First report on how the Safe Brain Initiative impacts
postoperative delirium: a multicenter observational study**

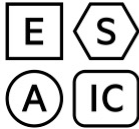
- **Main outcome measures:**
 - **Incidence of POD** (up to three time points in PACU), and **length of hospital stay**.
- **Results:**
 - 18,697 patients at four hospitals for up to 53 months
 - mean incidence of POD: **6.13%** (Site 1), 1.29% (Site 2), **5.19%** (Site 3), and **11.26%** (Site 4)
 - **significant risk factors for developing POD:**
 - >75 years of age,
 - ASA-PS III–V,
 - general anaesthesia,
 - preoperative delirium,
 - hospital site,
 - surgeries > 2 hours, and
 - months since care bundle initiated.
 - **POD incidences decreased significantly**
 - **On average, hospital stay was doubled for patients with POD** (from 35 hours to 70 hours)

First report on how the Safe Brain Initiative impacts postoperative delirium: a multicenter observational study

Trend of monthly POD incidences since the SBI care bundle was initiated



POD incidences decreased 3 cites



European Society of
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Intensive Care

The Economic Implication of POD in the PACU

ORIGINAL ARTICLE

acta Anaesthesiologica Scandinavica

Inadequate emergence after non-cardiac surgery—A
prospective observational study in 1000 patients



Of 1000 patients:

- **Percentage of Patient w/postoperative Delirium (POD) in PACU was:**
- **LOS was increased in patients with POD by:**
- **The average costs of an additional day of hospital stay in Region Zealand / Copenhagen amounts to:**
- **The Safe Brain Initiative (SBI) decreased the incidence of POD by > 50% in the clinical routine (sample size > 15.000 patients)**
- **Per 1000 SBI patients potential cost savings of:**

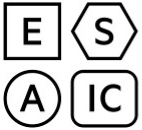
10.3%,

1 day,

404 Euro

(= 443 USD)

20.000 Euro



European Society of
Anaesthesiology and
Intensive Care

