BaltAnestIC 2023
11th International Baltic Congress of Anaesthesioogy and Intensive care
September 28–30, 2023, Tartu, Estonia Estonian National Museum

MANAGEMENT DECISIONS AND CRITICAL CARE OUTCOMES

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SANTAROS KLINIKOS

Does current evidence directly relate to real-world clinical outcomes?

Yes and No

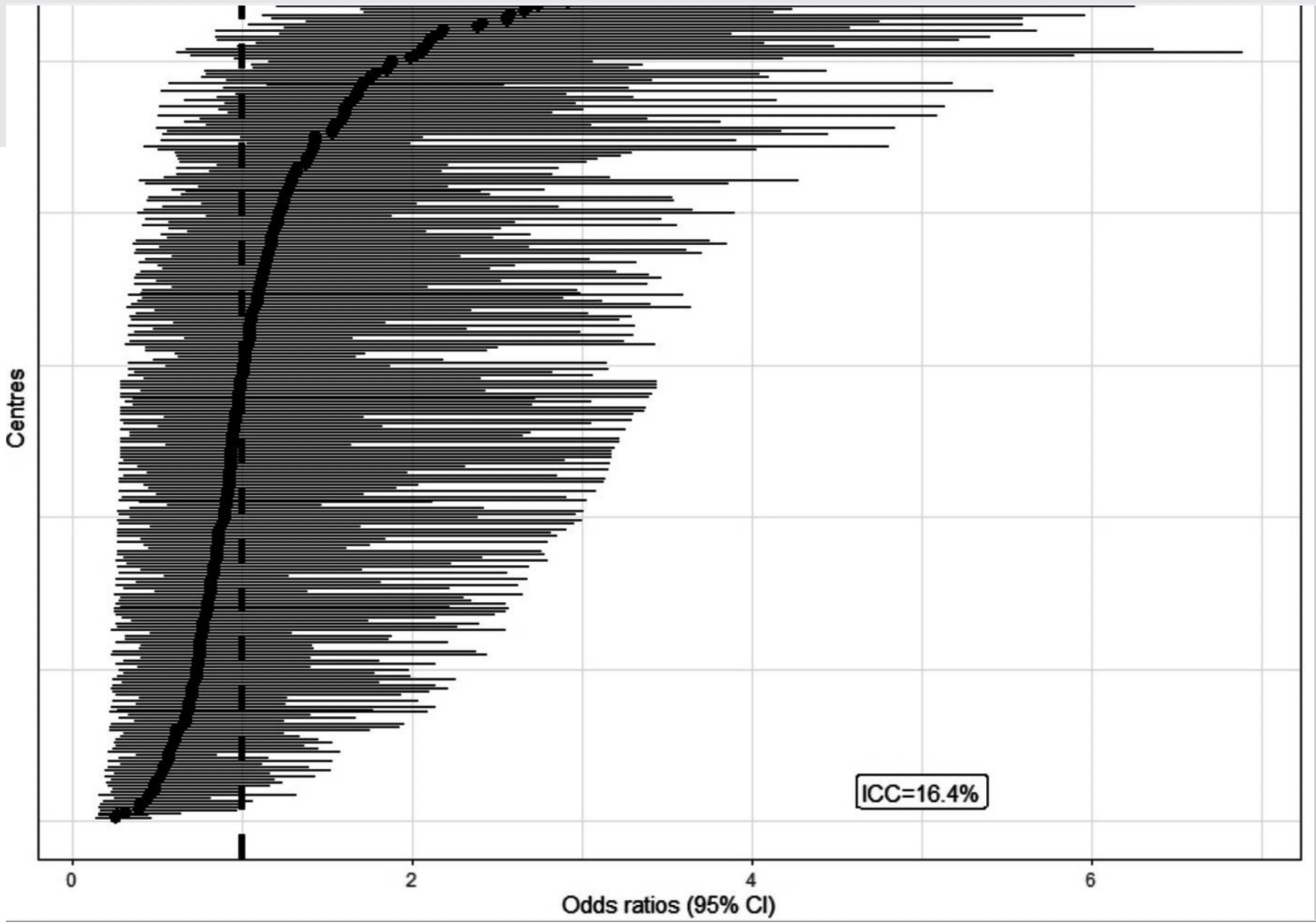
CRASH-2

- Tranexamic acid in trauma patients
- Positive trial
- No difference in treatment effect amongst centres

Roberts I, Shakur H, Coats T, Hunt B, Balogun E, Barnetson L, et al. The CRASH-2 trial: a randomised controlled trial and economic evaluation of the effects of tranexamic acid on death, vascular occlusive events and transfusion requirement in bleeding trauma patients. Health Technol Assess (Winchester, England) 2013;17(10):1.

CRASH-2

- Tranexamic acid in trauma patients
- Positive trial
- No difference in treatment effect amongst centres
- Significant difference in outcome by centre



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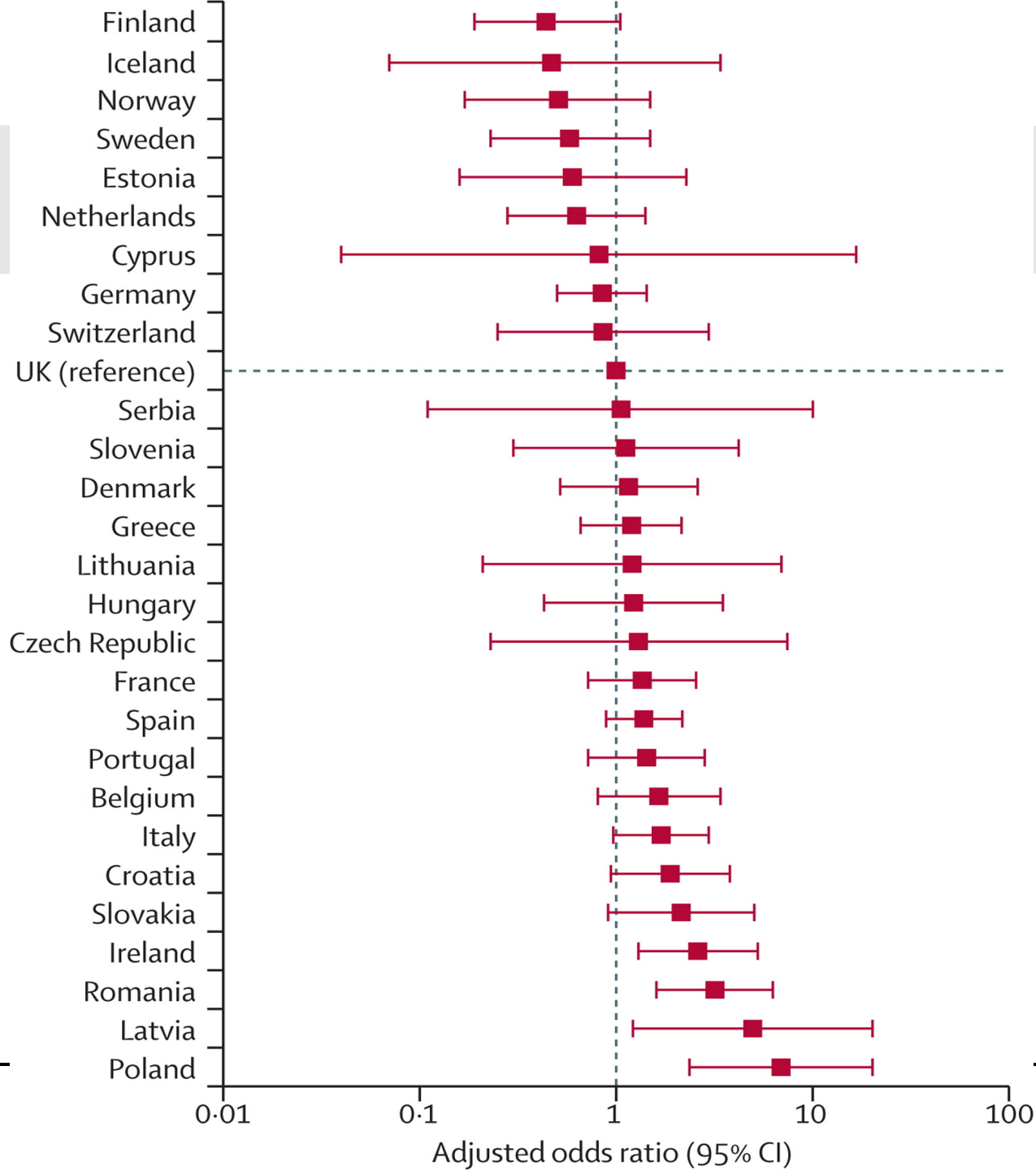
EuSOS

- Outcomes of emergency surgery
- Significant variance by country



The Lancet 2012 3801059-1065DOI: (10.1016/S0140-6736(12)61148-9)

Is this true for all ICU patients?

- Netherlands
- United Kingdom
- Lithuania

Comparing apples and pears

- Team A treated 1000 patients on their ICU last year:
  - 208 patients did not survive to ICU discharge
  - 12 more patients did not survive to hospital discharge
  - Hospital mortality in this cohort was 22%

Understanding standardised mortality ratios

- SMR compares actual unit/hospital mortality rate with predicted mortality based on patient population treated.
- Prediction is usually based on validated systems (APACHE, SAPS, ICNARC)
- Further adjustments can be made for specific patient populations (surgical, cancer, etc.)

Understanding standartised mortality ratios

- Prediction model suggests, that in the cohort of patients treated by Team A mortality should be 24.5%
- Actual hospital mortality was 22%
- 220 actual deaths /245 predicted deaths = SMR 0.9

Understanding standartised mortality ratios

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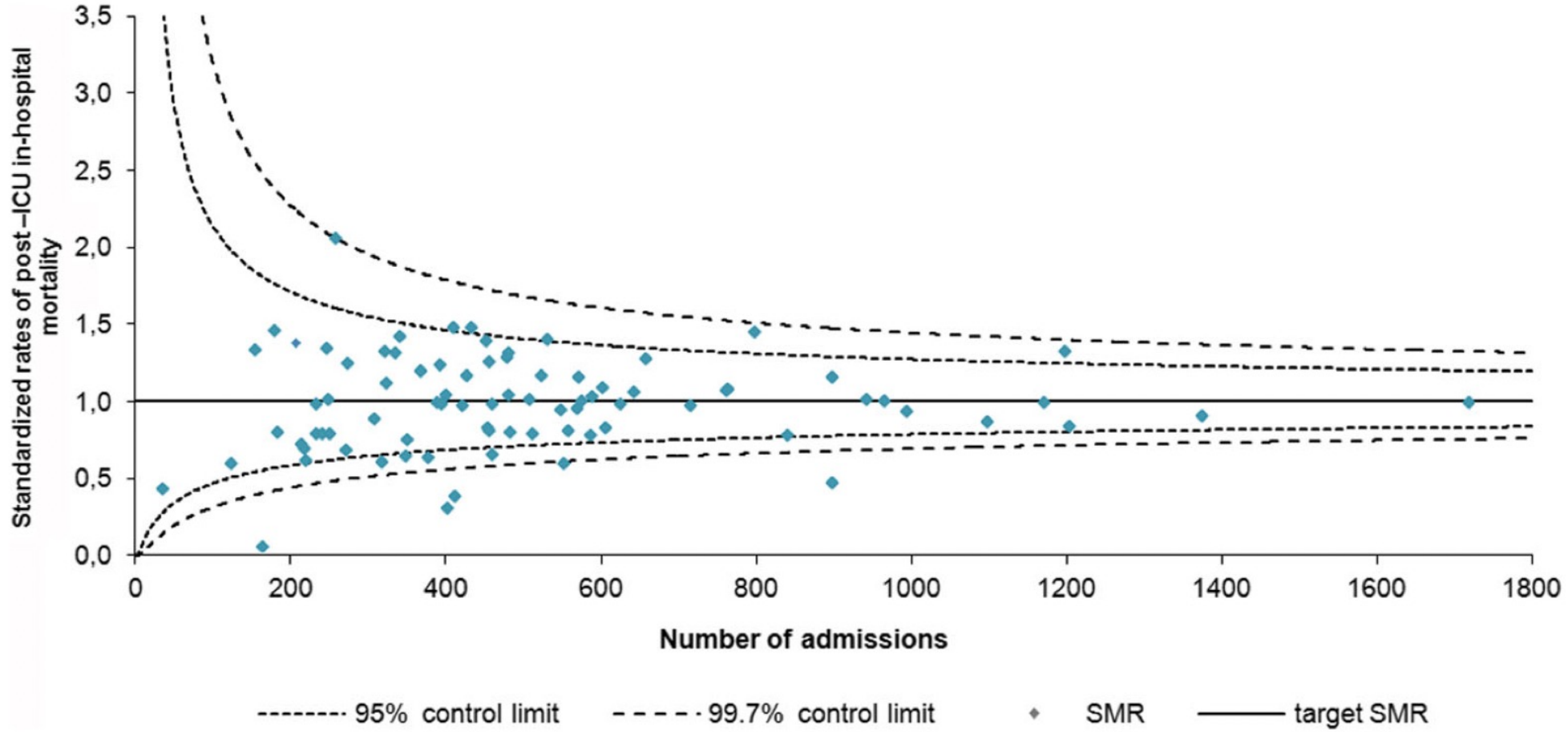
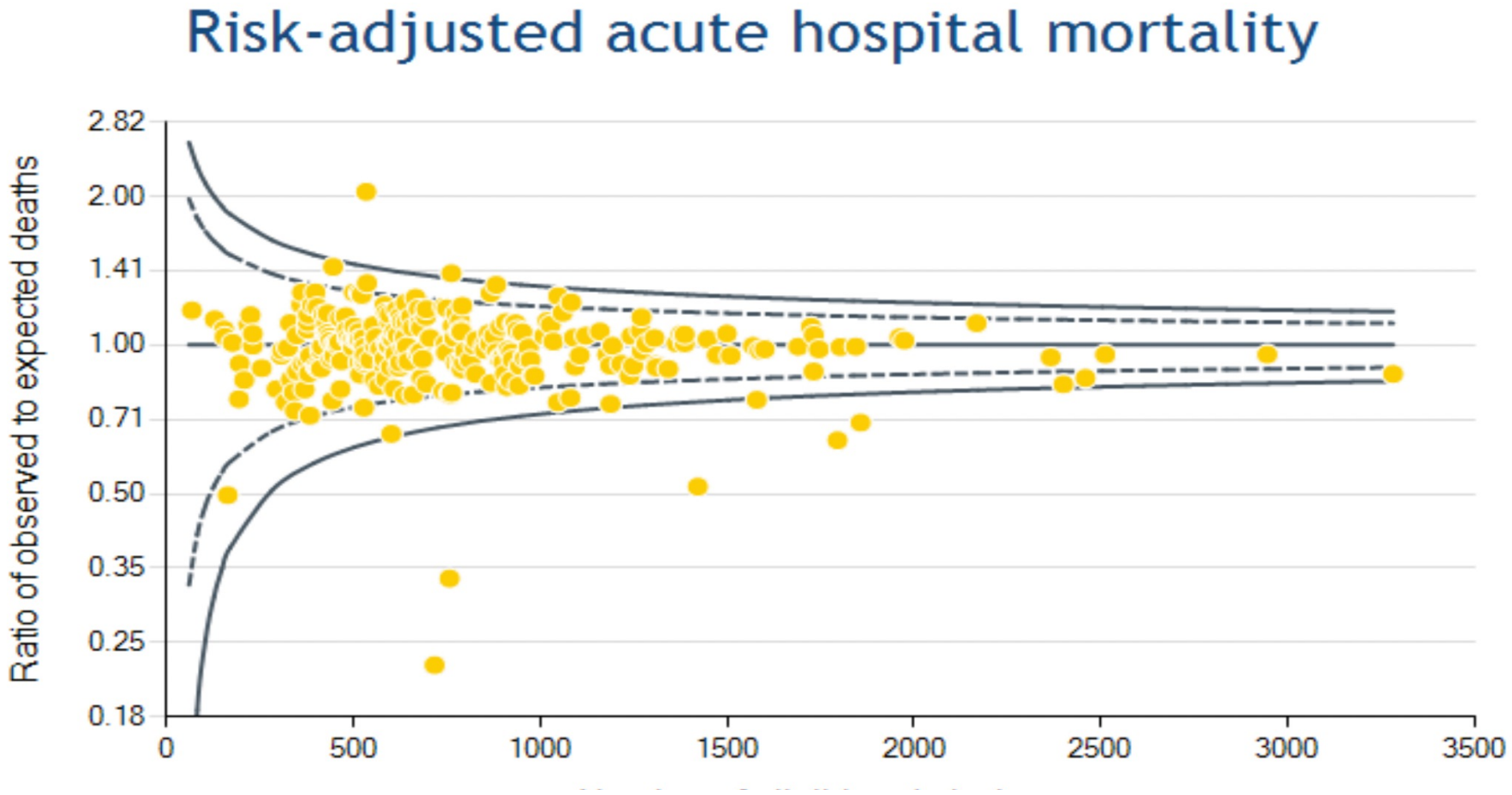
- Actual hospital mortality was 22%
- 220 actual deaths /245 predicted deaths = SMR 0.9
- Well done Team A!!!

Netherlands



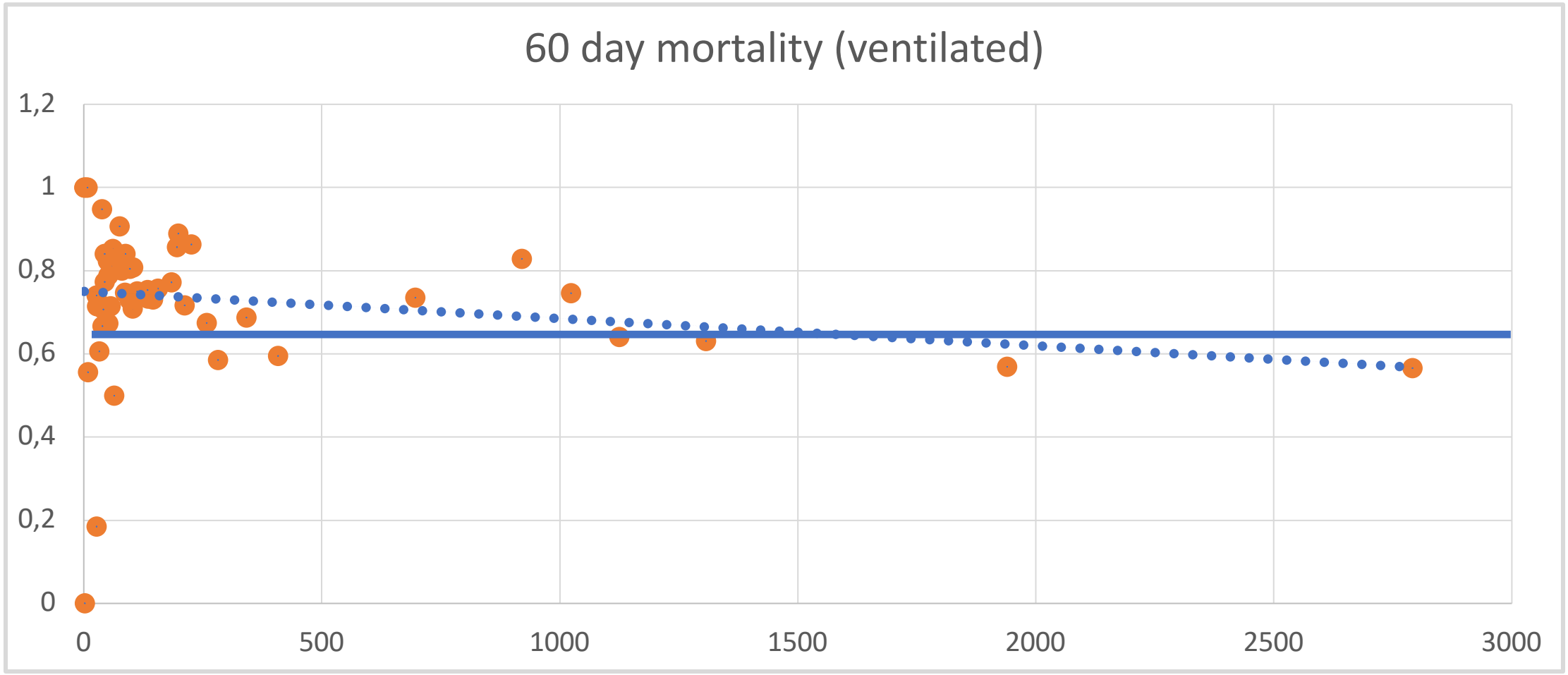
van Sluisveld et al. BMC Health Services Research (2017) 17:281

United Kingdom



ICNARC 2018-2019

Lithuania

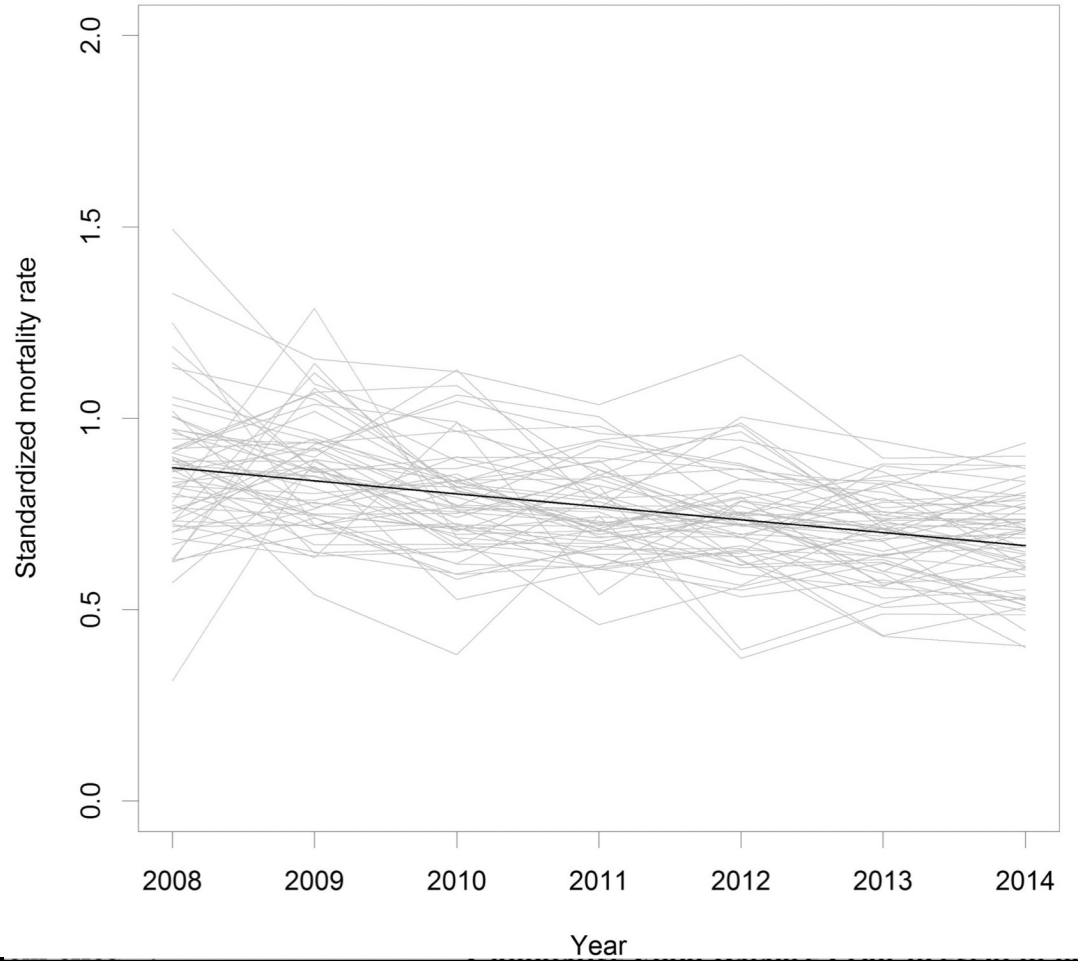


National health insurance fund 2018-2019

We are getting better over time

- Netherlands
- Reduction in average SMR over 6 year period
- But SMRs still vary between 0.7-1.4 (excluding extreme outliers)
- Over last decade some narrowing in SMR in the UK.
- NOTE:

SMR 0.7-1.4 = 50% mortality difference



Adult Critical Care Network

North East and North Central London

Welcome to North East and North Central London Adult Critical Care Network

An operational delivery network for adults in critical care

We are one of three, Networks, based in London whose main aim is to get the best out of the resources available for patients, who are usually the sickest patients in the hospital.

We are funded by NHS England and are hosted by the Royal Free Hospital where we are based. We started running the network in April 2014.

North East and North Central Adult Critical Care Network

Peer Review Report

St Bartholomew's Hospital

18th April 2018

North East and North Central Adult Critical Care Network

Peer Review Report

Newham

18th October 2017

NHS

London

Operational Delivery Networks

North East and North Central Adult Critical Care Network

Peer Review Report

Barnet Hospital

Intensive Care Unit

18th January 2017

NHS

London

Operational Delivery Networks

North East and North Central Adult Critical Care Network

Pilot Peer Review Report

Queens Hospital Rom

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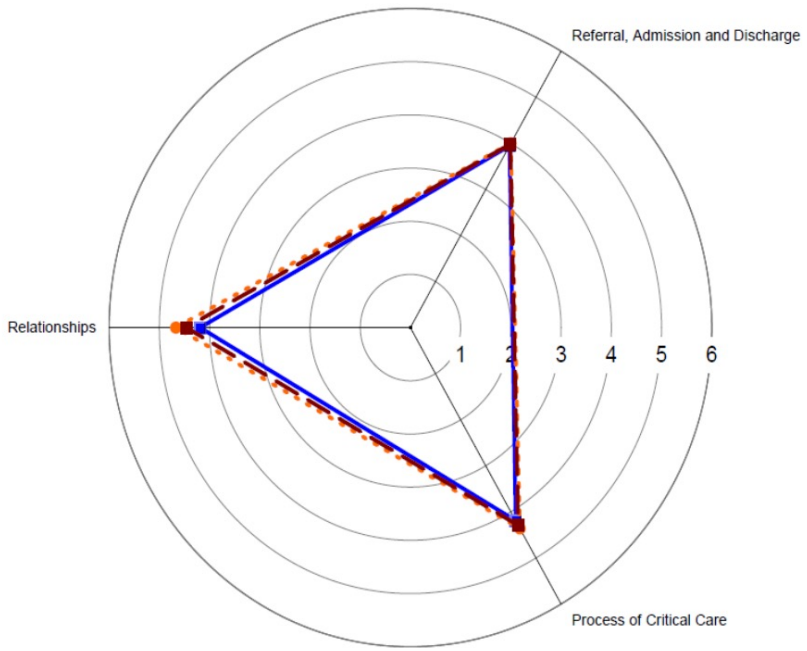
Adult Critical Care Netwo

Peer Review Report

King Georges Hospital

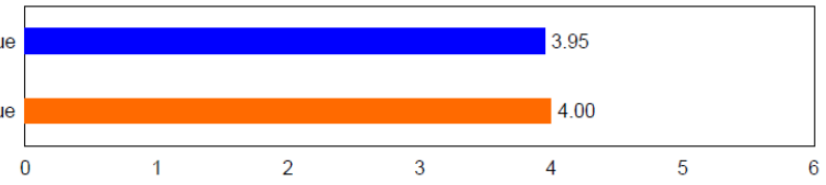
Romford

360° Overview

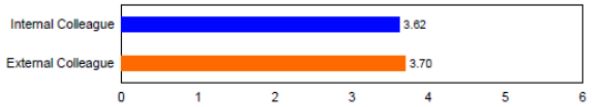


Referral, Admission and Discharge

Summary

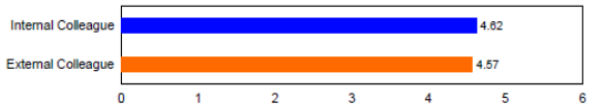


Are discharges from critical care carried out appropriately, within working hours and with good handover and clear onward planning?

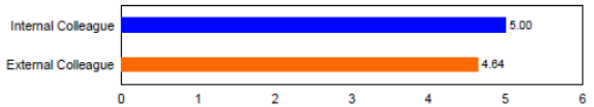


Are the criteria for admission transparent, consistent and easily understood?

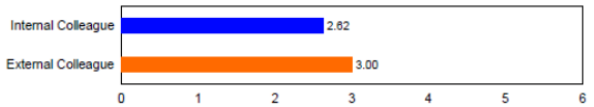
Are the critical care team always involved in critical care transfers to other hospitals?



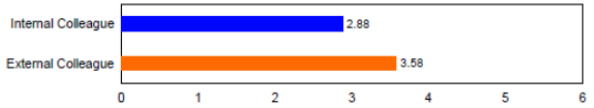
Is it always clear that admission decisions go through an ICU consultant?



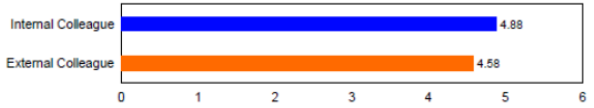
Is the critical care service able to meet elective demand?



Is the critical care service able to meet emergency demand?



Is the critical care service responsive and approachable for opinions and referrals?



Insights

- No obvious link between staffing levels, funding, availability of support services and SMR. Some manage to produce excellent results with minimal resource

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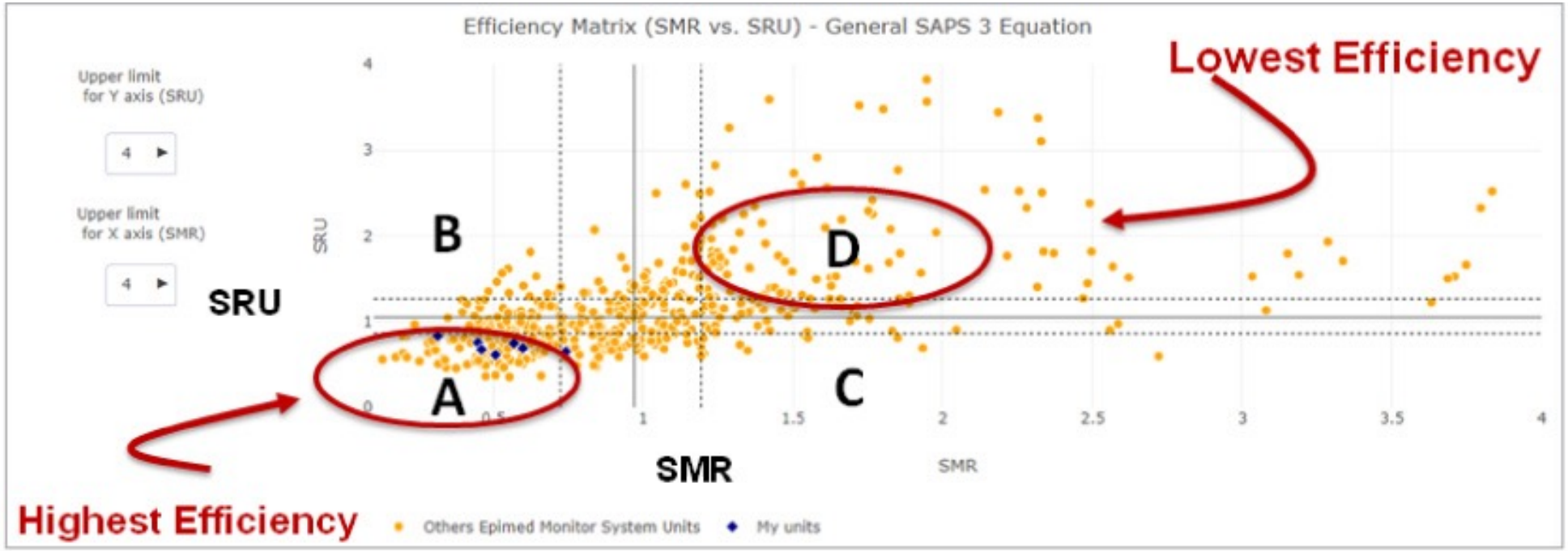


We do not follow what we preach

- LUNG-SAFE (ESICM trials group):
  - large observational study designed to evaluate the incidence, management, and outcome of patients with ARDS in 50 countries
  - only 60% of cases were recognized, and 35% received tidal volumes greater than 8 ml/kg predicted body weight
- Study at two U.S. hospitals:
  - physicians reported strong support of low-Vt for ARDS
  - 87% believed that they correctly diagnosed ARDS within 12 hours of onset.
  - physicians initiated low-Vt in only 7% of their eligible patients.
  - clinician attitudes and perceived barriers were not correlated with low-Vt ventilation initiation.

Bellani G, Laffey JG, Pham T, Fan E, Brochard L, Esteban A, et al. LUNG SAFE Investigators; ESICM Trials Group. Epidemiology, patterns of care, and mortality for patients with acute respiratory distress syndrome in intensive care units in 50 countries. JAMA. 2016;315:788–800.
Weiss CH, Baker DW, Tulas K, Weiner S, Bechel M, Rademaker A, et al. A critical care clinician survey comparing attitudes and perceived barriers to low tidal volume ventilation with actual practice. Ann Am Thorac Soc. 2017;14:1682–1689.

Drugs didn’t work, but process did!!!

- LIPS-A RCT.
  - Aspirin administration had no effect in ARDS prevention trial,
  - but implementation of a lung injury prevention checklist was associated with a 50% lower incidence of ARDS than anticipated (based on lung injury prediction scores across participating hospitals).

- MIND-USA RCT
  - failed to demonstrate a reduction in delirium duration with neuroleptic administration,
  - but documented a significant reduction in its incidence after implementation of a standardized ABCDE bundle.

Kor DJ, et al. Effect of aspirin on development of ARDS in at-risk patients presenting to the emergency department: the LIPS-A randomized clinical trial. JAMA. 2016;315:2406–2414.
Girard TD, et al. MIND-USA Investigators. Haloperidol and ziprasidone for treatment of delirium in critical illness. N Engl J Med. 2018;379:2506–2516.

Dealing with complexity

Effective decision-making and care delivery in the complex ICU environment require a distributed cognitive network—a well-coordinated **healthcare team** working in a **practice environment** that is adapted to **accommodate the limits of human cognition.**

Niven AS, Herasevich S, Pickering BW, Gajic O. The Future of Critical Care Lies in Quality Improvement and Education. Ann Am Thorac Soc. 2019 Jun;16(6):649-656.

Challenges

- Unit level
- Hospital level
- Regional/National level

Defining components

- STRUCTURE 8
- WORKFORCE 27
- PROCESS 62
- CLINICAL CARE 99
- ADDITIONAL COMPONENTS 134
- EMERGENCY PREPAREDNESS 149

The Faculty of Intensive Care Medicine

Intensive Care Society

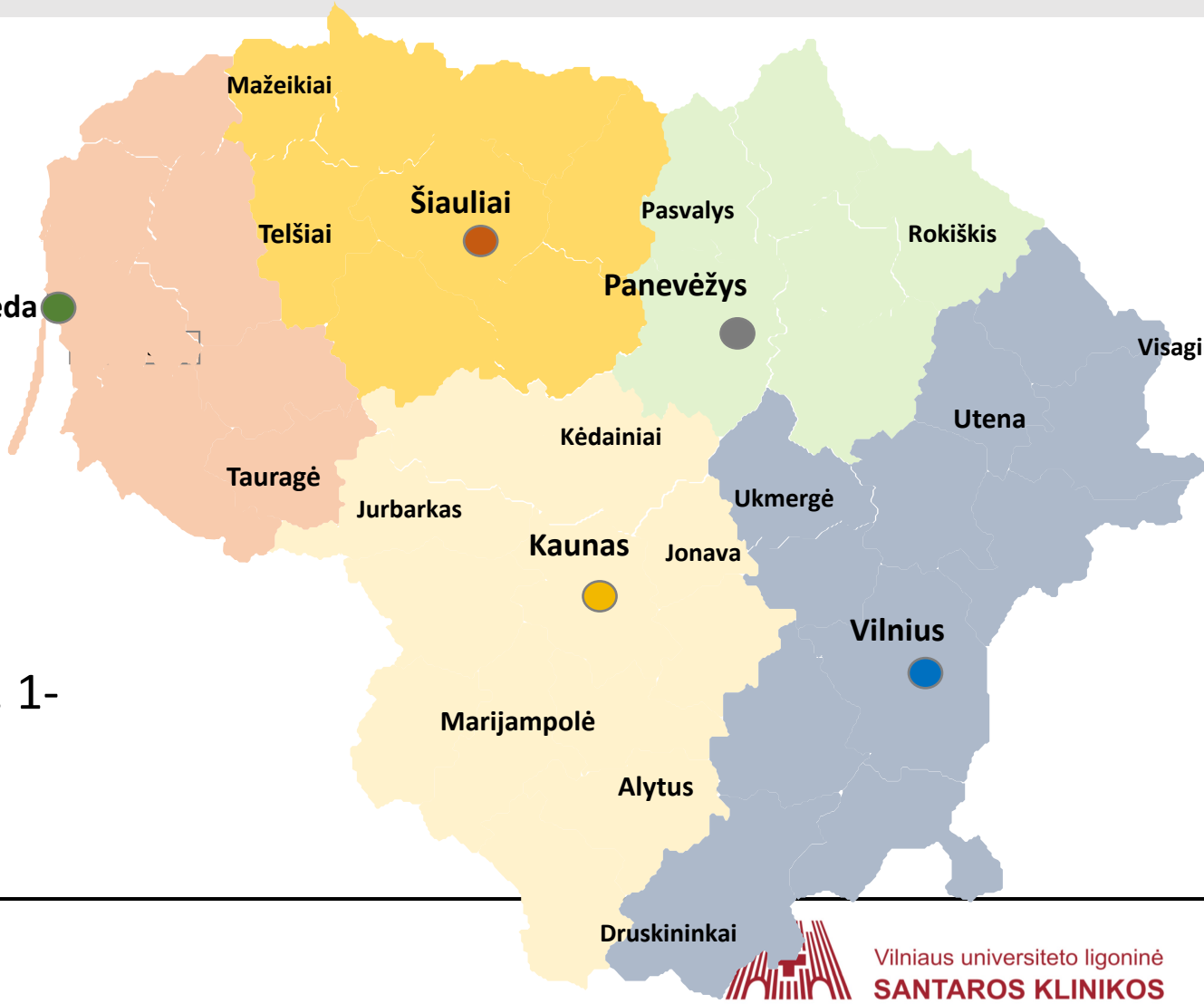
GUIDELINES FOR THE PROVISION OF INTENSIVE CARE SERVICES

Version 2.1
July 2022

Implementing core principles in Lithuania

MoH act on provision of Critical Care Services 2022

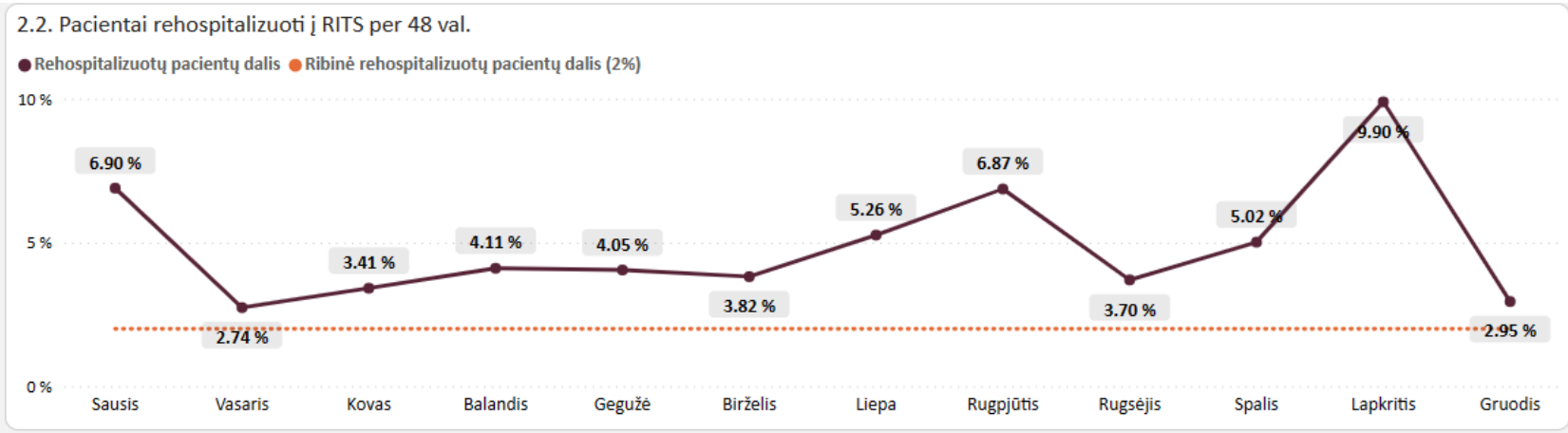
- Population and accessibility based system
- 5 regions, 3 specialist networks
- Requirements for hospital infrastructure and support services
- Requirements for unit level infrastructure and resources
- Staffing requirements
- Quality indicators
  - Structure, Processes and Results (incl. 1-year all-cause mortality)
  - Reportable yearly to MoH



Few examples from VUL SK

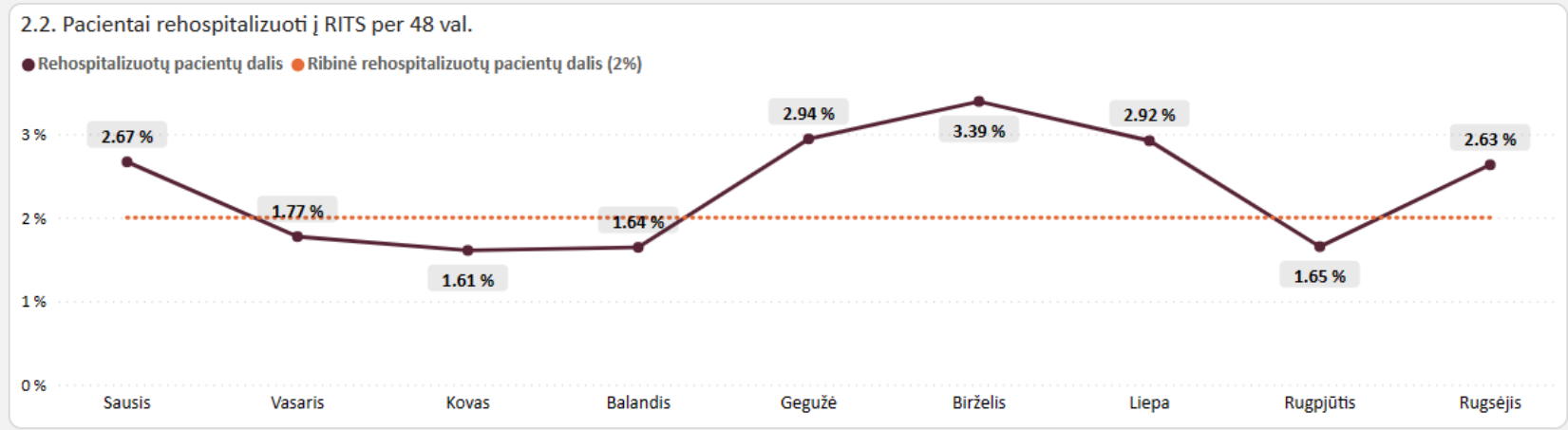
50% reduction in 48-hour readmission rates

4.99 %
Pacientai rehospitalizuoti į RITS per 48 val.



144
Rehospitalizuotų į RITS per 48 val. pacientų kiekis

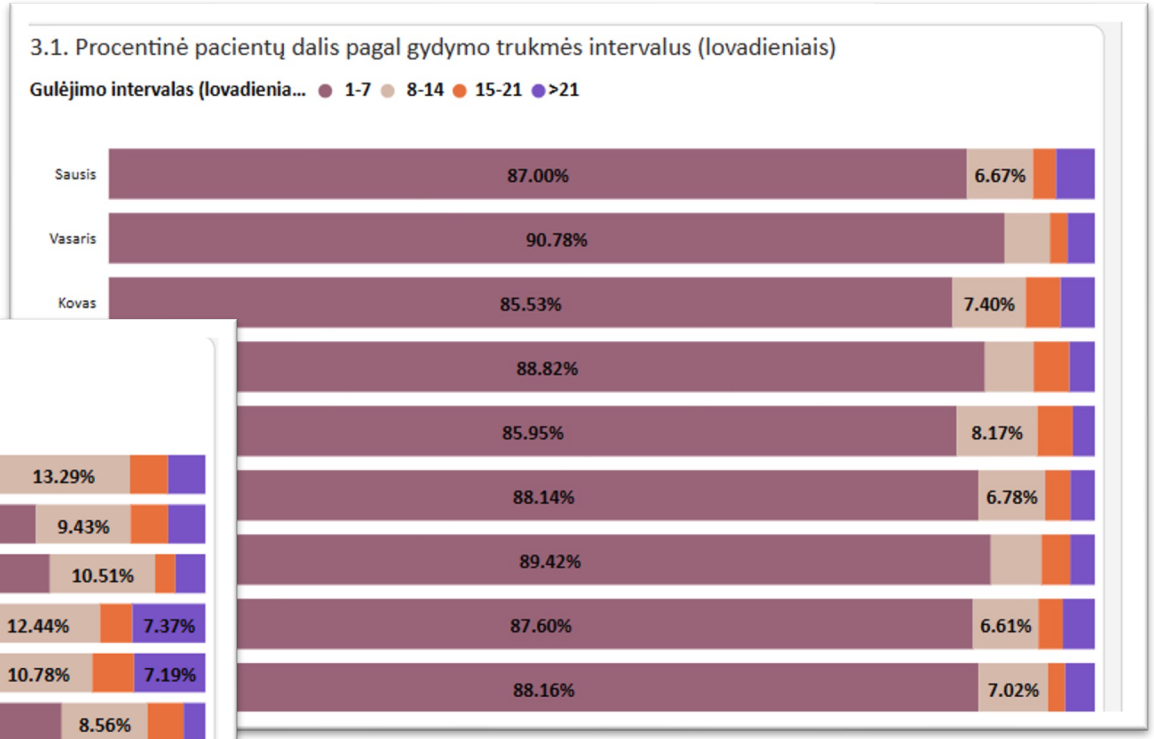
2.38 %
Pacientai rehospitalizuoti į RITS per 48 val.

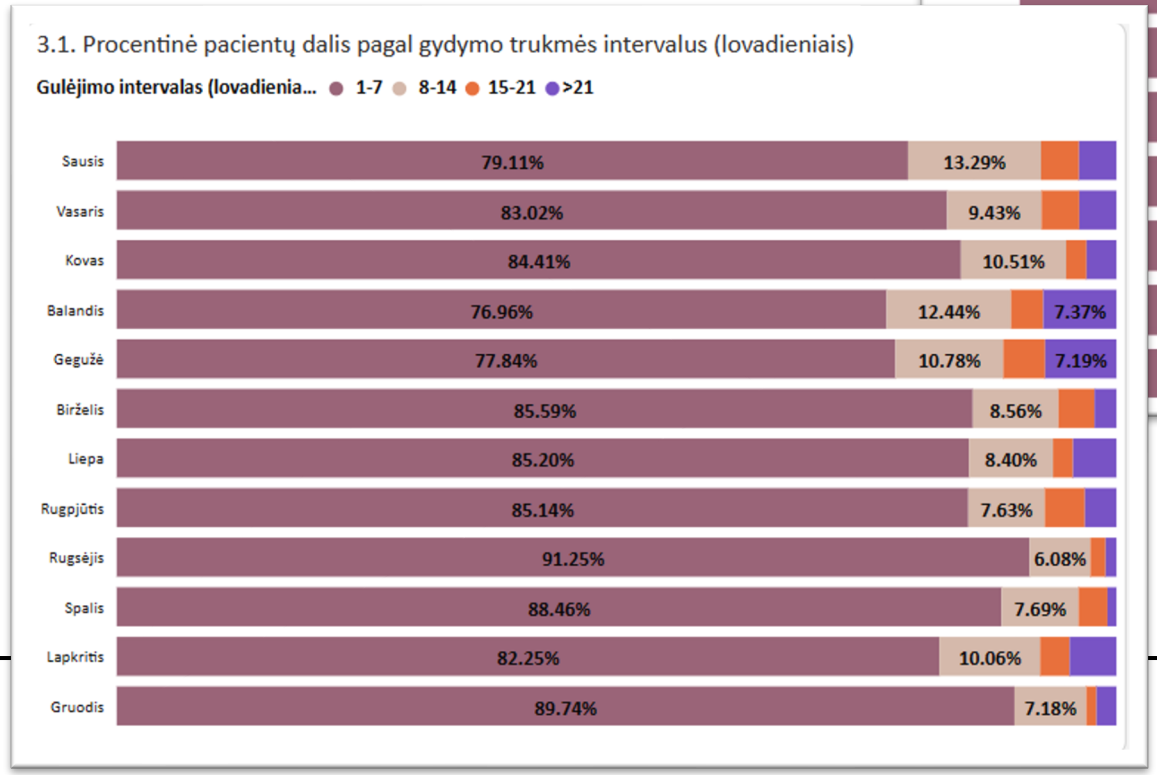


65
Rehospitalizuotų į RITS per 48 val. pacientų kiekis

50% reduction of chronic critical illness burden

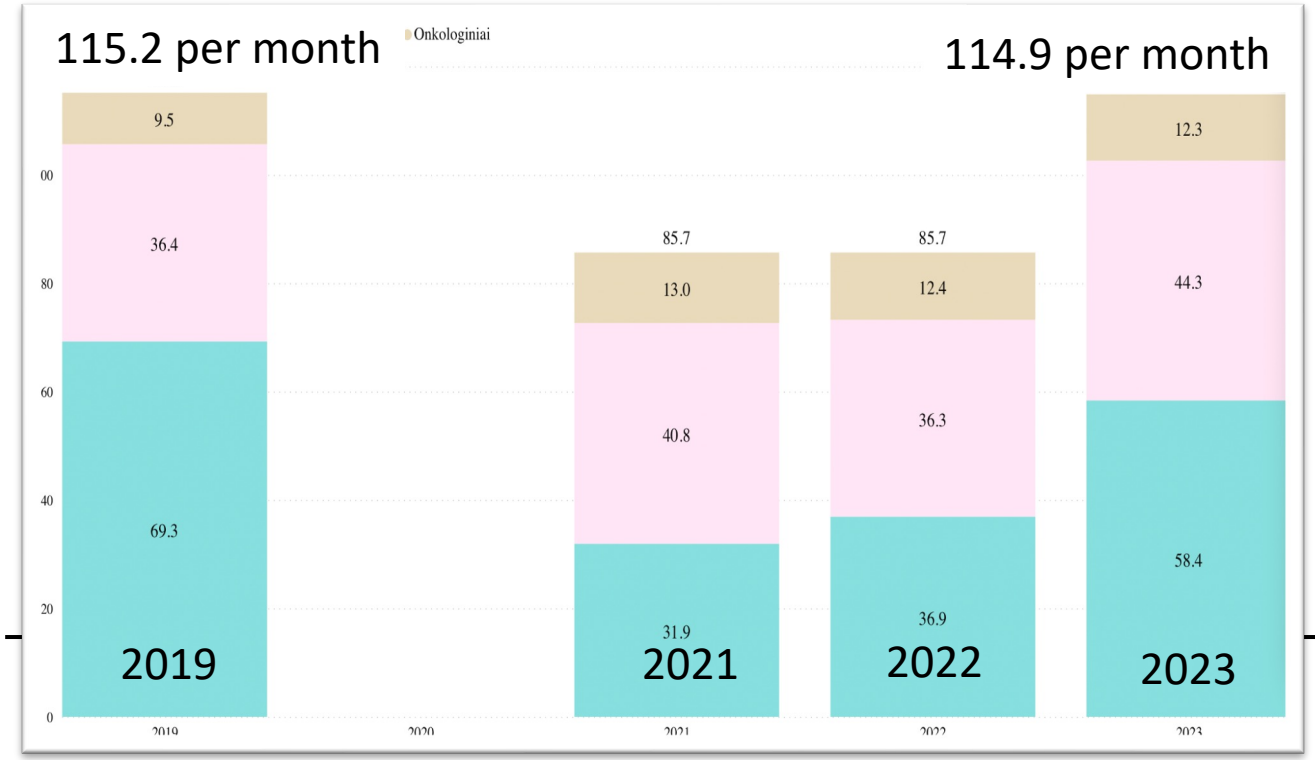
- ICU LoS >7 days
  - 22.6% in 2022
  - 12.1% in 2023

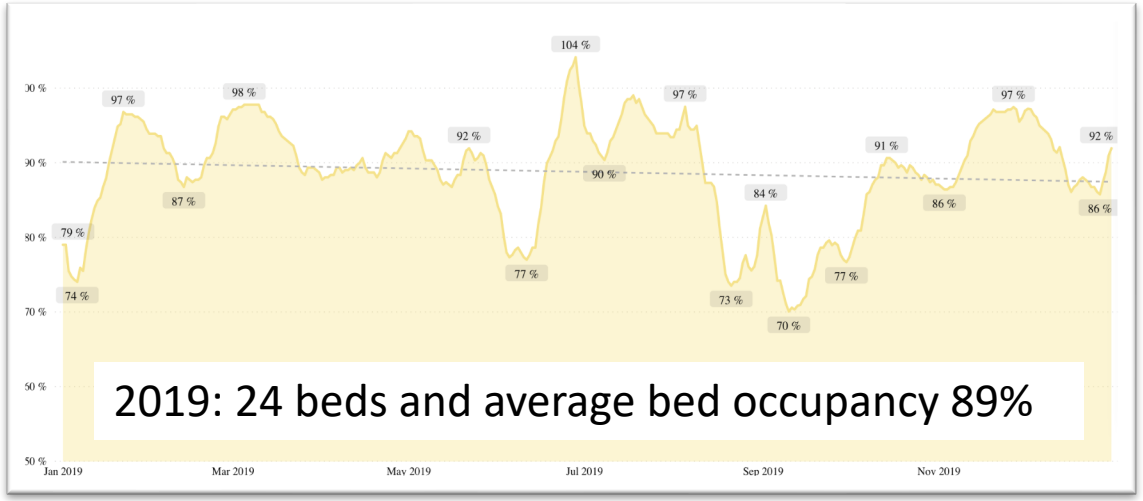


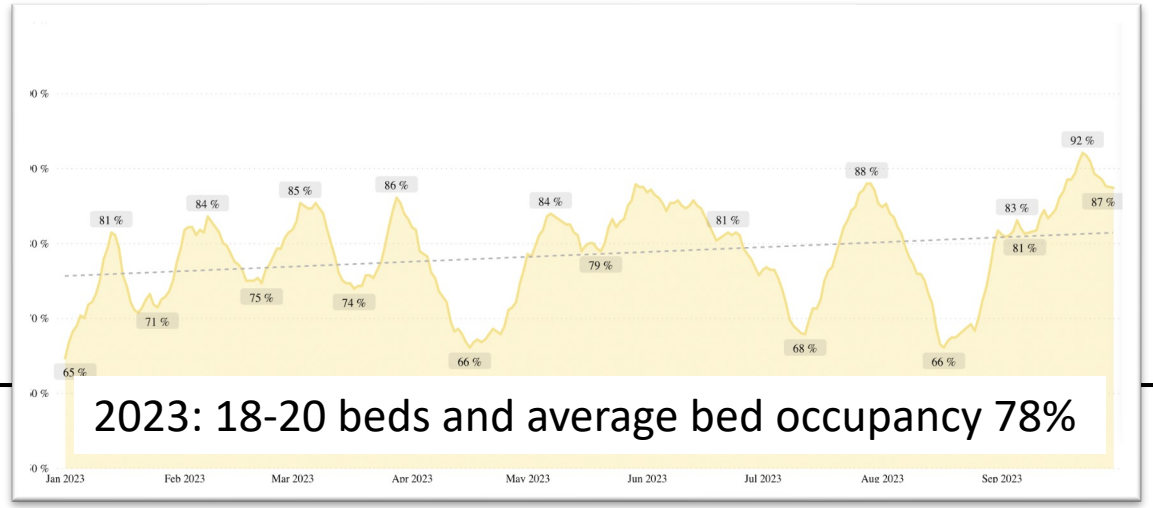


30% more efficient than in 2019 (Cardiothoracic ICU)

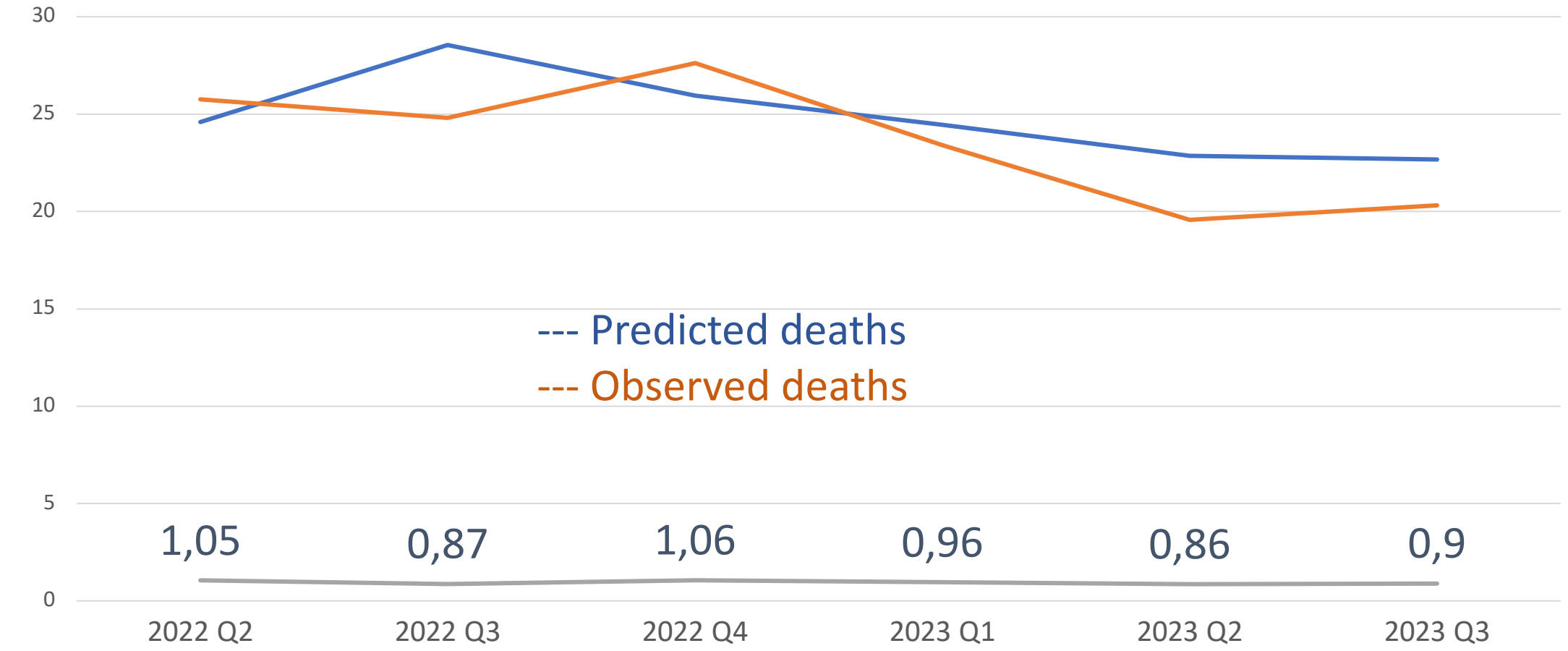
- Same number of cases per month
- 10% lower bed occupancy
- 20% reduction in no of beds







SMR in our units @VUL SK



18 month average

0.95

The future of Critical Care lies in Quality Improvement, Education and Complex Systems Management

Niven AS, Herasevich S, Pickering BW, Gajic O. The Future of Critical Care Lies in Quality Improvement and Education. Ann Am Thorac Soc. 2019 Jun;16(6):649-656.