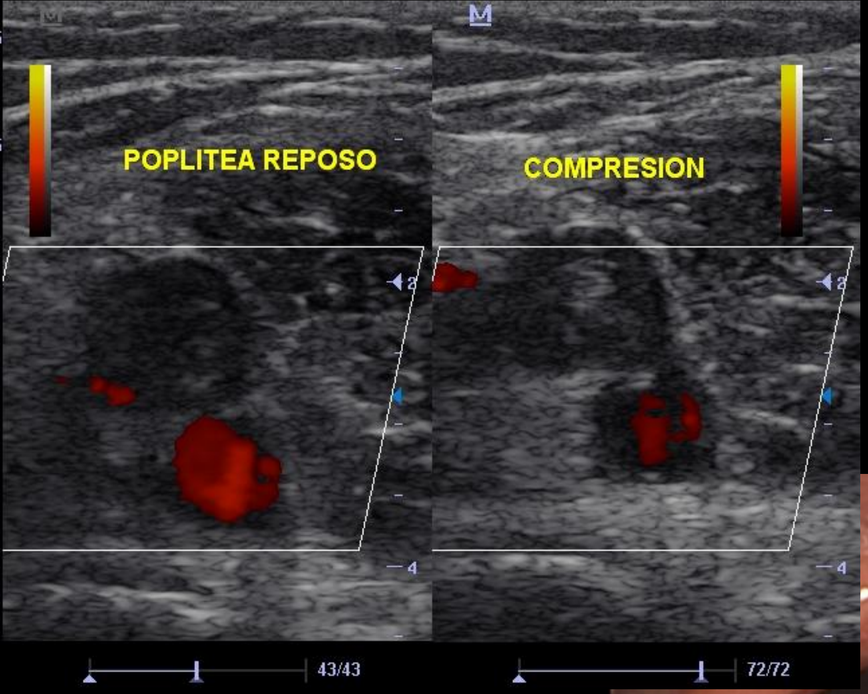
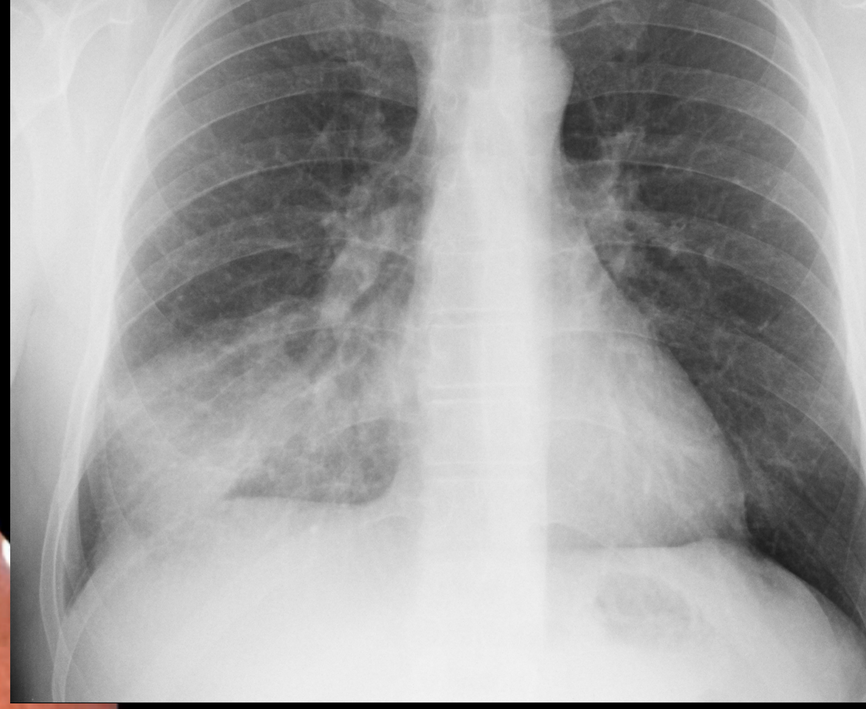
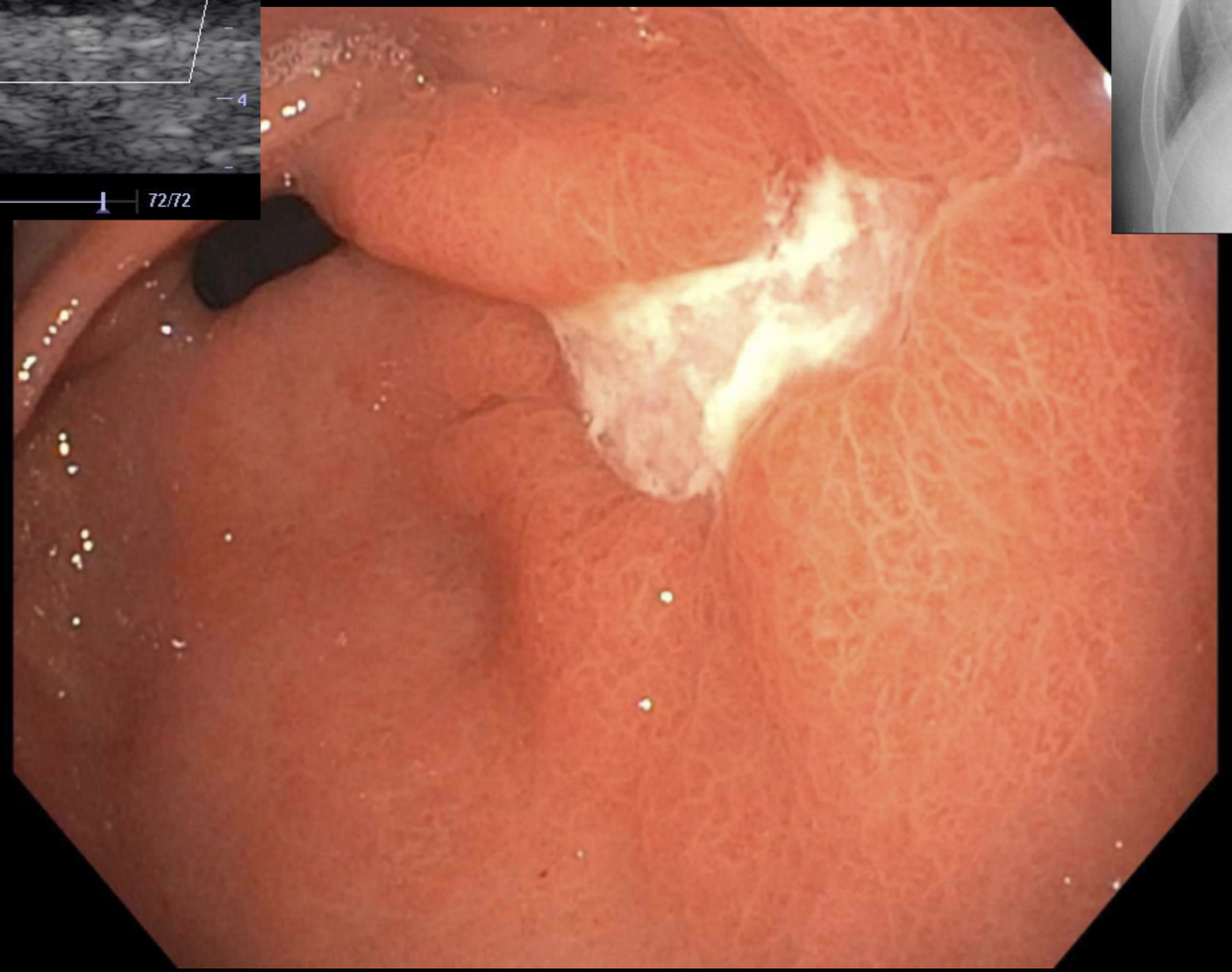
Prophylaxis in the ICU

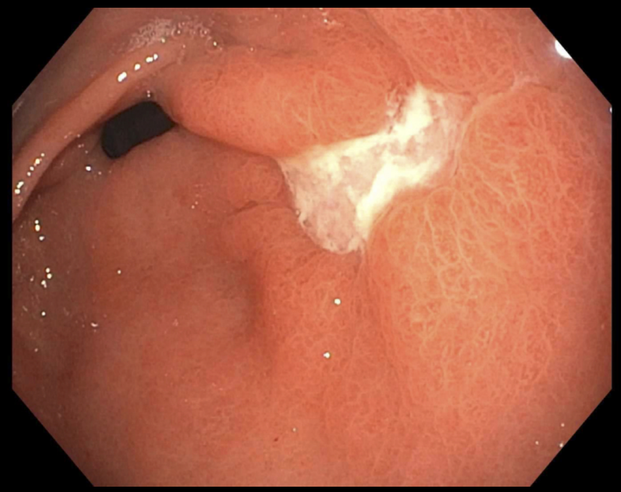
Feb 2024

Adam Thomas CCBC


POPLITEA REPOSO
COMPRESION
43/43
72/72







Stress Ulcer Prophylaxis

ORIGINAL ARTICLE

Pantoprazole in Patients at Risk for Gastrointestinal Bleeding in the ICU

Mette Krag, M.D., Ph.D., Søren Marker, M.D., Anders Perner, M.D., Ph.D., Jørn Wetterslev, M.D., Ph.D., Matt P. Wise, M.D., Ph.D., Joerg C. Schefold, M.D., Frederik Keus, M.D., Ph.D., Anne B. Guttormsen, M.D., Ph.D., Stepani Bendel, M.D., Ph.D., Mark Borthwick, M.Sc., Theis Lange, Ph.D., Bodil S. Rasmussen, M.D., Ph.D., et al., for the SUP-ICU trial gr... *

December 6, 2018
N Engl J Med 2018; 379:2199-2208
DOI: 10.1056/NEJMoa1714919
Chinese Translation 中文翻译

Original Investigation | Caring for the Critically Ill Patient

FREE

January 17, 2020

Effect of Stress Ulcer Prophylaxis With Proton Pump Inhibitors vs Histamine-2 Receptor Blockers on In-Hospital Mortality Among ICU Patients Receiving Invasive Mechanical Ventilation

The PEPTIC Randomized Clinical Trial

The PEPTIC Investigators for the Australian and New Zealand Intensive Care S...
Critical Care Strategic Clinical Network, and the Irish Critical Care Trials Group

Article Information

JAMA. 2020;323(7):616-626. doi:10.1001/jama.2019.22190

JAMA Network

QUESTION What is the comparative effect on in-hospital mortality of using proton pump inhibitors (PPIs) vs histamine-2 receptor blockers (H_2RBs) for stress ulcer prophylaxis in ICU patients requiring invasive mechanical ventilation?

CONCLUSION This clinical trial did not find a statistically significant difference between PPIs and H_2RBs for stress ulcer prophylaxis in ICU patients receiving mechanical ventilation, but study interpretation may be limited by crossover in medication use.

POPULATION

17 137 Men 9691 Women

Adults receiving mechanical ventilation within 24 hours of ICU admission

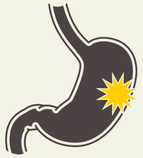
Mean age: 58 years

LOCATIONS

50 International ICUs

INTERVENTION

26 982 Patients randomized
26 771 Patients analyzed



13 415 PPI strategy

13 356 H_2RB strategy

PRIMARY OUTCOME

All-cause mortality during index hospitalization within 90 days

FINDINGS

All-cause mortality within 90 days

PPI strategy	H_2RB strategy
2459 of 13 415 patients	2333 of 13 356 patients
18.3%	17.5%

Absolute risk difference,
0.93 percentage points
(95% CI, −0.01 to 1.88); P =.054

The PEPTIC Investigators. Effect of stress ulcer prophylaxis with proton pump inhibitors vs histamine-2 receptor blockers on in-hospital mortality among ICU patients receiving invasive mechanical ventilation: the PEPTIC randomized clinical trial [published online January 17, 2020]. *JAMA*. doi:10.1001/jama.2019.22190

Journal of Critical Care 43 (2018) 108–113

Contents lists available at ScienceDirect

Journal of Critical Care

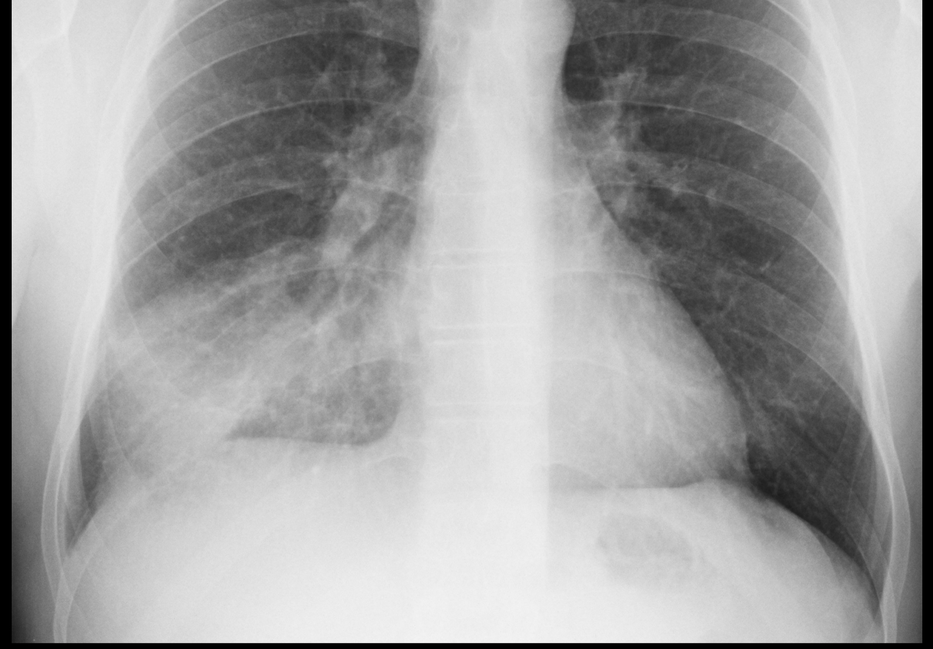
journal homepage: www.jccjournal.org

Enteral nutrition as stress ulcer prophylaxis in critically ill patients: A randomized controlled exploratory study

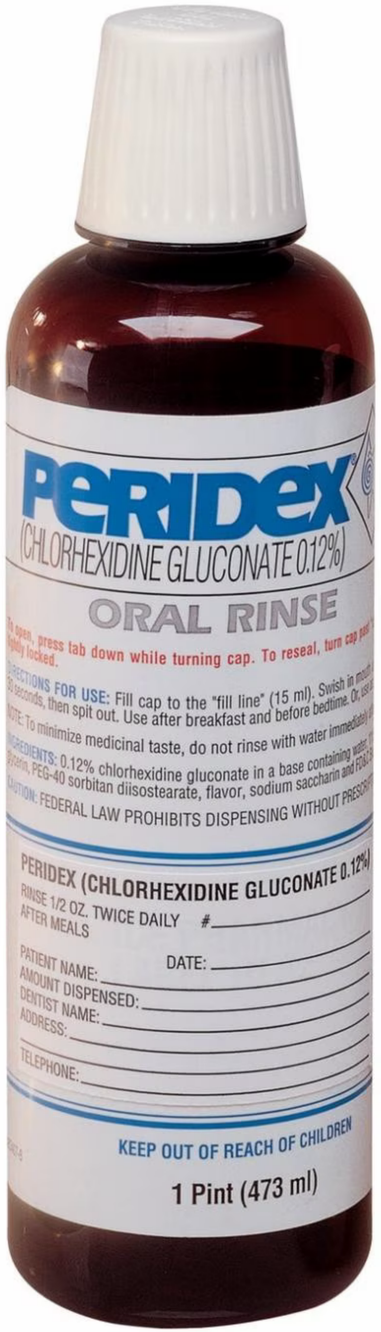
Karim El-Kersh, MD [a,*], Bilal Jalil, MD [a], Stephen A. McClave, MD [b], Rodrigo Cavallazzi, MD [a], Juan Guardiola, MD [a], Karen Guilkey, PT, DPT [a], Annuradha K. Persaud, MPH [c], Stephen P. Furmanek, MPH, MS [c], Brian E. Guinn, MPH [c], Timothy L. Wiemken, PhD [c], Bashar Chihada Alhariri, MD [a], Scott P. Kellie, MD [a], Mohamed Saad, MD [a]

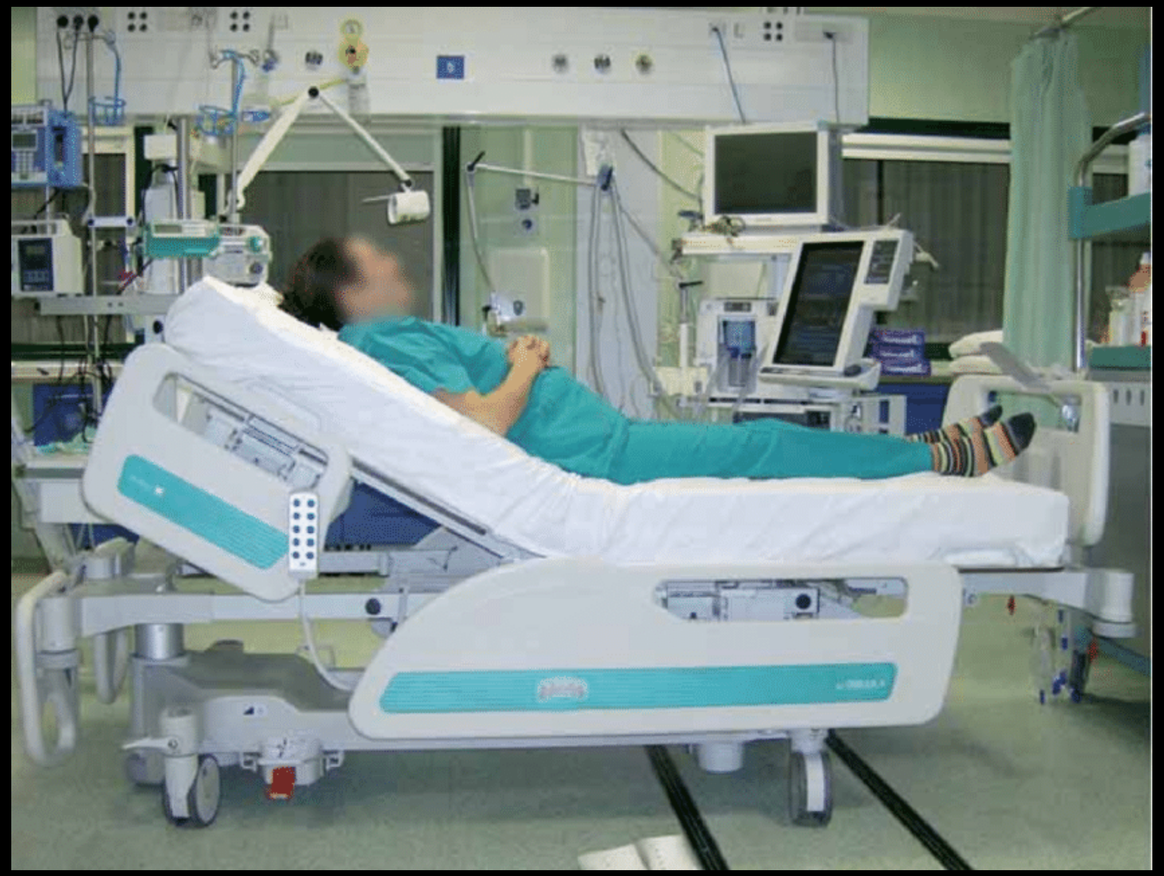
[a] University of Louisville School of Medicine, Department of Internal Medicine, Division of Pulmonary, Critical Care, and Sleep Medicine, University of Louisville, KY, United States
[b] University of Louisville School of Medicine, Department of Internal Medicine, Division of Gastroenterology, Hepatology and Nutrition, University of Louisville, KY, United States
[c] University of Louisville School of Medicine, Department of Internal Medicine, Division of Infectious Disease, University of Louisville, KY, United States

REVISE



VAP


PERIDEX
(CHLORHEXIDINE GLUCONATE 0.12%)
ORAL RINSE
To open, press tab down while turning cap. To reseal, turn cap past
DIRECTIONS FOR USE: Fill cap to the "fill line" (15 ml). Swish in mouth
30 seconds, then spit out. Use after breakfast and before bedtime. Or, use
NOTE: To minimize medicinal taste, do not rinse with water immediately
INGREDIENTS: 0.12% chlorhexidine gluconate in a base containing water,
glycerin, PEG-40 sorbitan diisostearate, flavor, sodium saccharin and FD&C
CAUTION: FEDERAL LAW PROHIBITS DISPENSING WITHOUT PRESCRIP
PERIDEX (CHLORHEXIDINE GLUCONATE 0.12%)
RINSE 1/2 OZ. TWICE DAILY AFTER MEALS
#
DATE:
PATIENT NAME:
AMOUNT DISPENSED:
DENTIST NAME:
ADDRESS:
TELEPHONE:
KEEP OUT OF REACH OF CHILDREN
1 Pint (473 ml)



SAT / SBT

Selective Decontamination

Oral Decon

Gastric Decon

Nasal Decon

This Issue Views 24,100 | Citations 0 | Altmetric 155

Original Investigation | Caring for the Critically Ill Patient

October 10, 2023

Nasal Iodophor Antiseptic vs Nasal Mupirocin Antibiotic in the Setting of Chlorhexidine Bathing to Prevent Infections in Adult ICUs

A Randomized Clinical Trial

JAMA®

QUESTION Does nasal iodophor antiseptic work as well as nasal mupirocin antibiotic for preventing *Staphylococcus aureus* clinical cultures in intensive care unit (ICU) patients receiving daily chlorhexidine gluconate (CHG) bathing?

CONCLUSION This clinical trial found that nasal iodophor was inferior to nasal mupirocin in preventing *S aureus* clinical cultures in ICU patients.

POPULATION

430 764 Men
370 587 Women

Adult ICU patients

Mean age: **63.4** years

LOCATIONS

137
Community hospitals in the US

INTERVENTION

137 Hospitals randomized

69

Iodophor-CHG

Mupirocin-CHG then switched to twice-daily intranasal 10% povidone-iodine swabs for 5 days + daily CHG bath

68

Mupirocin-CHG

Twice-daily intranasal 2% mupirocin ointment for 5 days + daily CHG bath

PRIMARY OUTCOME

S aureus clinical cultures attributed to the ICU (occurring from ICU day 3 through 2 days after ICU discharge) from baseline to intervention period

FINDINGS

ICU-attributable days

Iodophor-CHG

Baseline: 4.3/1000
Intervention period: 5.0/1000

Mupirocin-CHG

Baseline: 4.0/1000
Intervention period: 4.1/1000

Clustered HR, iodophor-CHG: 1.17
Clustered HR, mupirocin-CHG: 0.99

HR difference in differences, 18.4%
(95% CI, 10.7% to 26.6%)

Huang SS, Septimus EJ, Kleinman K, et al. Nasal mupirocin vs iodophor in the setting of chlorhexidine bathing to prevent infections in adult ICUs: a randomized clinical trial. *JAMA*. Published October 10, 2023. doi:10.1001/jama.2023.17219

Original Investigation | Caring for the Critically Ill Patient

FREE

October 26, 2022

Effect of Selective Decontamination of the Digestive Tract on Hospital Mortality in Critically Ill Patients Receiving Mechanical Ventilation

A Randomized Clinical Trial

The SuDDICU Investigators for the Australian and New Zealand Intensive Care Society Clinical Trials Group

Article Information

JAMA. 2022;328(19):1911-1921. doi:10.1001/jama.2022.17927

JAMA

QUESTION Among critically ill patients receiving mechanical ventilation, what is the effect of selective decontamination of the digestive tract (SDD) on hospital mortality?

CONCLUSION Among critically ill patients receiving mechanical ventilation, SDD did not significantly reduce in-hospital mortality vs standard care, although the confidence interval around the effect estimate includes a clinically important benefit.

POPULATION

3780 Men 2202 Women

Adults receiving mechanical ventilation in an intensive care unit

Mean age: 58 years

LOCATIONS

19 Intensive care units in Australia

INTERVENTION

5982 Patients randomized

2791 **SDD**
6-Hourly oral paste and gastric suspension of colistin, tobramycin, and nystatin, plus 4-day IV antibiotic course

3191 **Standard care**
Standard care without SDD

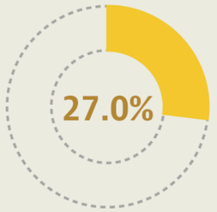
PRIMARY OUTCOME

90-Day in-hospital mortality

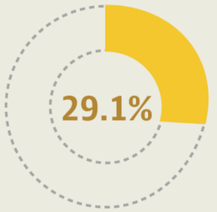
FINDINGS

In-hospital deaths

SDD
753 of 2791 patients



Standard care
928 of 3191 patients



SDD did not significantly reduce in-hospital mortality:

Mean difference, **−1.7%** (95% CI, −4.8% to 1.3%)

Odds ratio, **0.91** (95% CI, 0.82-1.02); *P* = .12

Writing Committee for the SuDDICU Investigators. Effect of selective decontamination of the digestive tract on hospital mortality in critically ill patients receiving mechanical ventilation: a randomized clinical trial. *JAMA*. Published online October 26, 2022. doi:10.1001/jama.2022.17927

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Prevention of Early Ventilator-Associated Pneumonia after Cardiac Arrest

Bruno François, M.D., Alain Cariou, M.D., Ph.D., Raphaël Clere-Jehl, M.D., Pierre-François Dequin, M.D., Ph.D., et al., for the CRICS-TRIGGERSEP Network and the ANTHARTIC Study Group*

November 7, 2019
N Engl J Med 2019; 381:1831-1842
DOI: 10.1056/NEJMoa1812379
Chinese Translation 中文翻译

Figure 2. Cumulative Incidence of Ventilator-Associated Pneumonia.

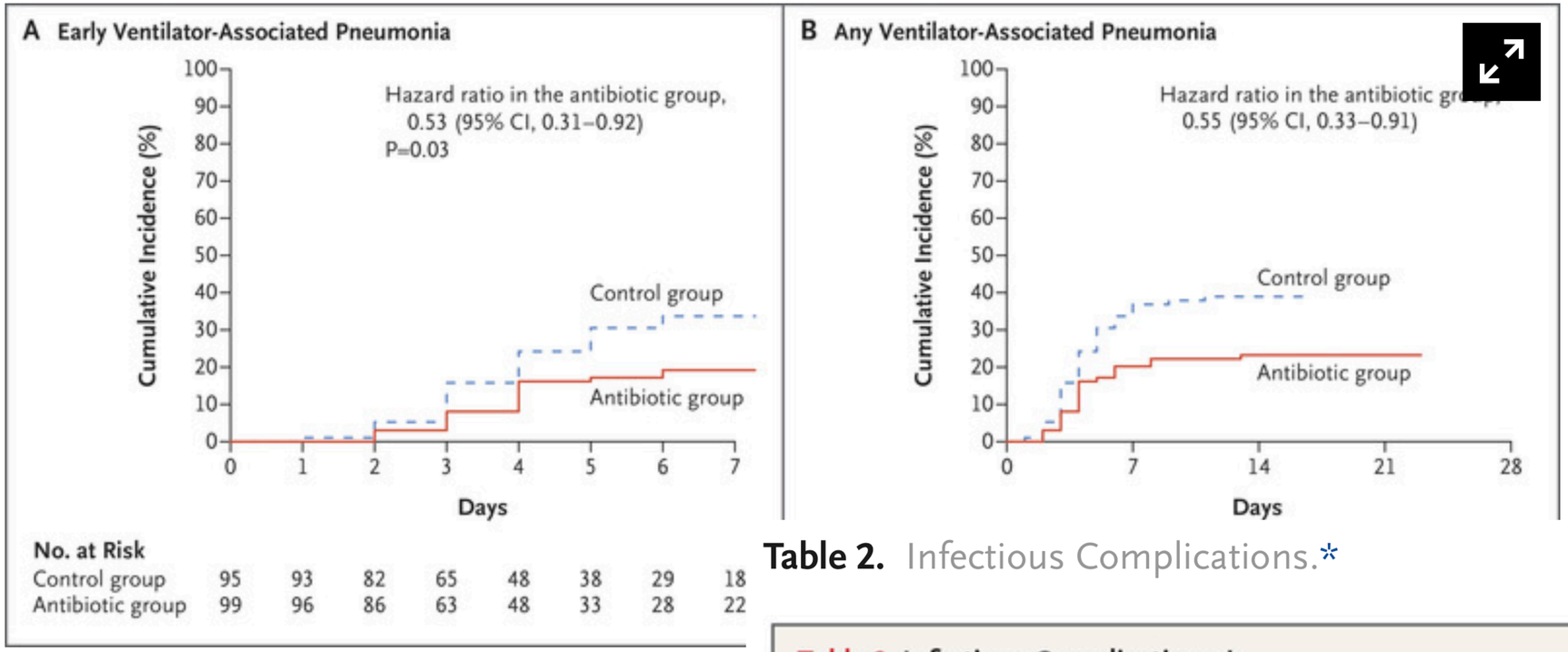


Table 2. Infectious Complications.*

Table 2. Infectious Complications.*

Complication	Antibiotic Group (N=99)	Control Group (N=95)	Hazard Ratio (95% CI)	P Value
	number (percent)			
Ventilator-associated pneumonia†‡	23 (23)	37 (39)	0.55 (0.33–0.91)	
Early‡	19 (19)	32 (34)	0.53 (0.31–0.92)	0.03
Late	4 (4)	5 (5)		
Catheter-related bloodstream infection	1 (1)	1 (1)		
Urinary tract infection	4 (4)	3 (3)		
Other infections§	0	2 (2)		

AMIKINHAL Trial

The NEW ENGLAND JOURNAL of MEDICINE

RESEARCH SUMMARY

Inhaled Amikacin to Prevent Ventilator-Associated Pneumonia

Ehrmann S et al. DOI: 10.1056/NEJMoa2310307

CLINICAL PROBLEM

Ventilator-associated pneumonia is the most frequent presentation of hospital-acquired infection of the lower respiratory tract. Microaspirations around the tracheal-tube cuff and the formation of biofilm can lead to progressive bacterial spread in the tracheobronchial tree, ultimately leading to pneumonia. Inhaled antibiotic therapy enables delivery of very high antibiotic concentrations to the tracheobronchial tree, lung parenchyma, and tracheal-tube biofilm. Whether preventive inhaled antibiotics may reduce the incidence of ventilator-associated pneumonia is unclear.

CLINICAL TRIAL

Design: A multicenter, double-blind, randomized, placebo-controlled trial in France examined the efficacy and safety of inhaled amikacin in critically ill adults who had undergone invasive mechanical ventilation for ≥72 hours.

Intervention: 847 patients were randomly assigned to receive inhaled amikacin at a dose of 20 mg per kilogram of ideal body weight or placebo once daily for 3 days. The primary outcome was a first episode of ventilator-associated pneumonia through day 28.

RESULTS

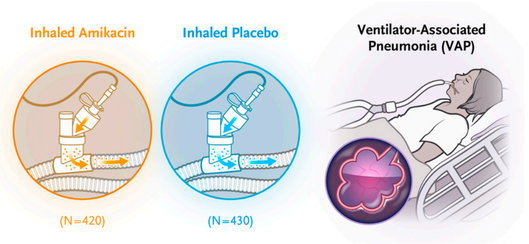
Efficacy: At 28 days, ventilator-associated pneumonia had developed in fewer patients in the amikacin group than in the placebo group.

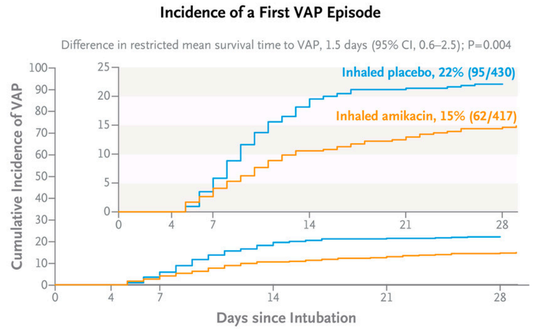
Safety: Trial-related serious adverse effects were seen in 7 patients in the amikacin group and 4 patients in the placebo group.

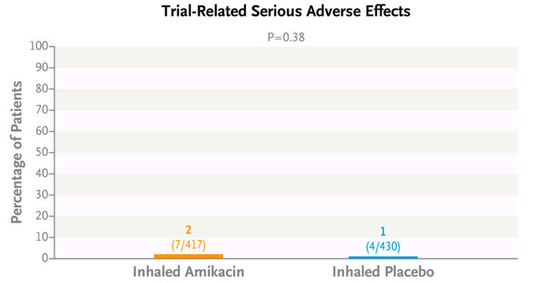
LIMITATIONS AND REMAINING QUESTIONS

- The trial was not powered to investigate other patient-centered outcomes, such as death or length of stay in the ICU and hospital.
- The trial was also not powered to detect whether preventive inhaled antibiotics could reduce the use of systemic antibiotics to limit antibiotic-resistance selection pressure.

Links: Full Article | NEJM Quick Take



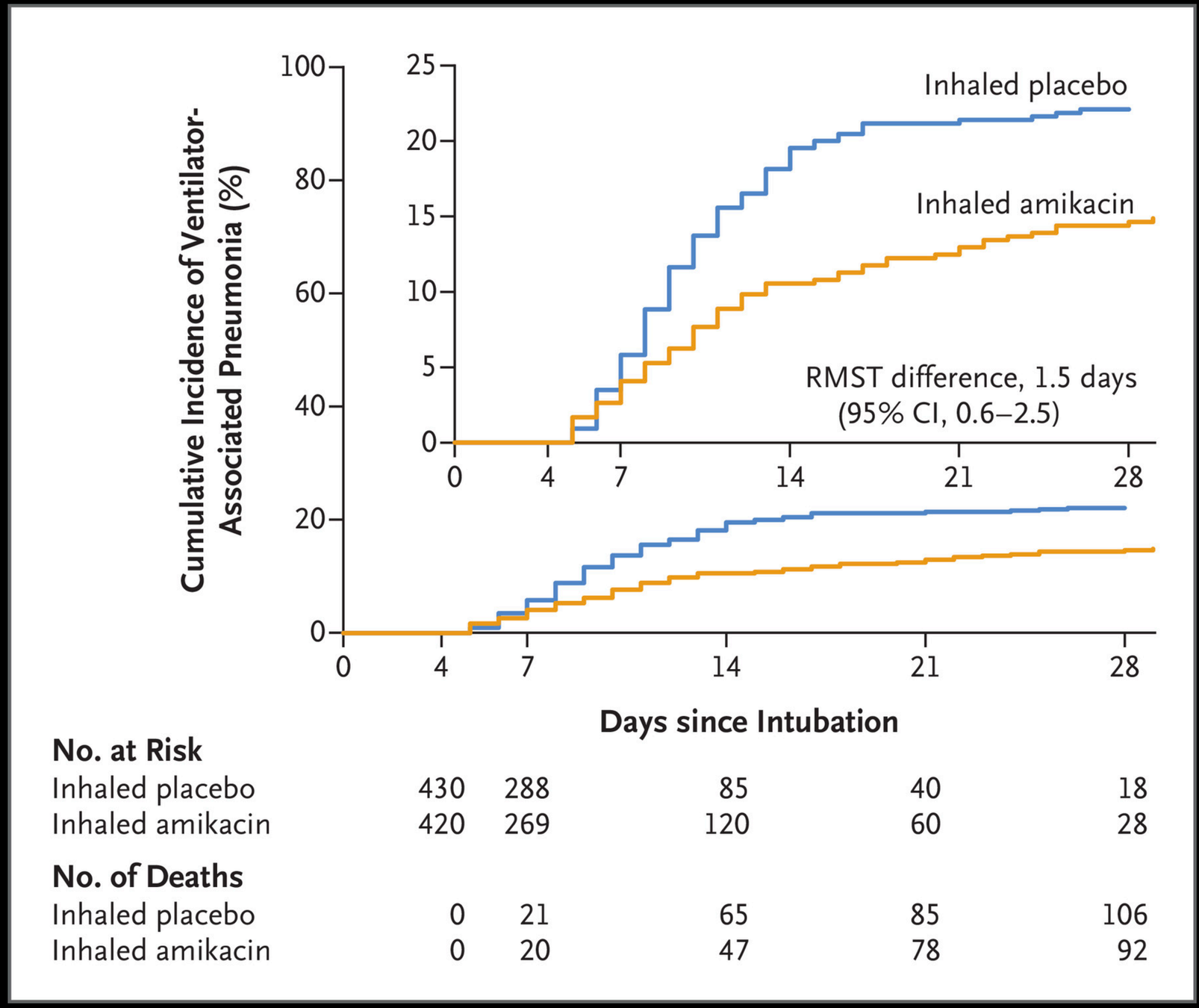




CONCLUSIONS

Among critically ill patients who had undergone mechanical ventilation for more than 3 days, a subsequent 3-day course of inhaled amikacin reduced the burden of ventilator-associated pneumonia during 28 days of follow-up.

AMIKINHAL Trial



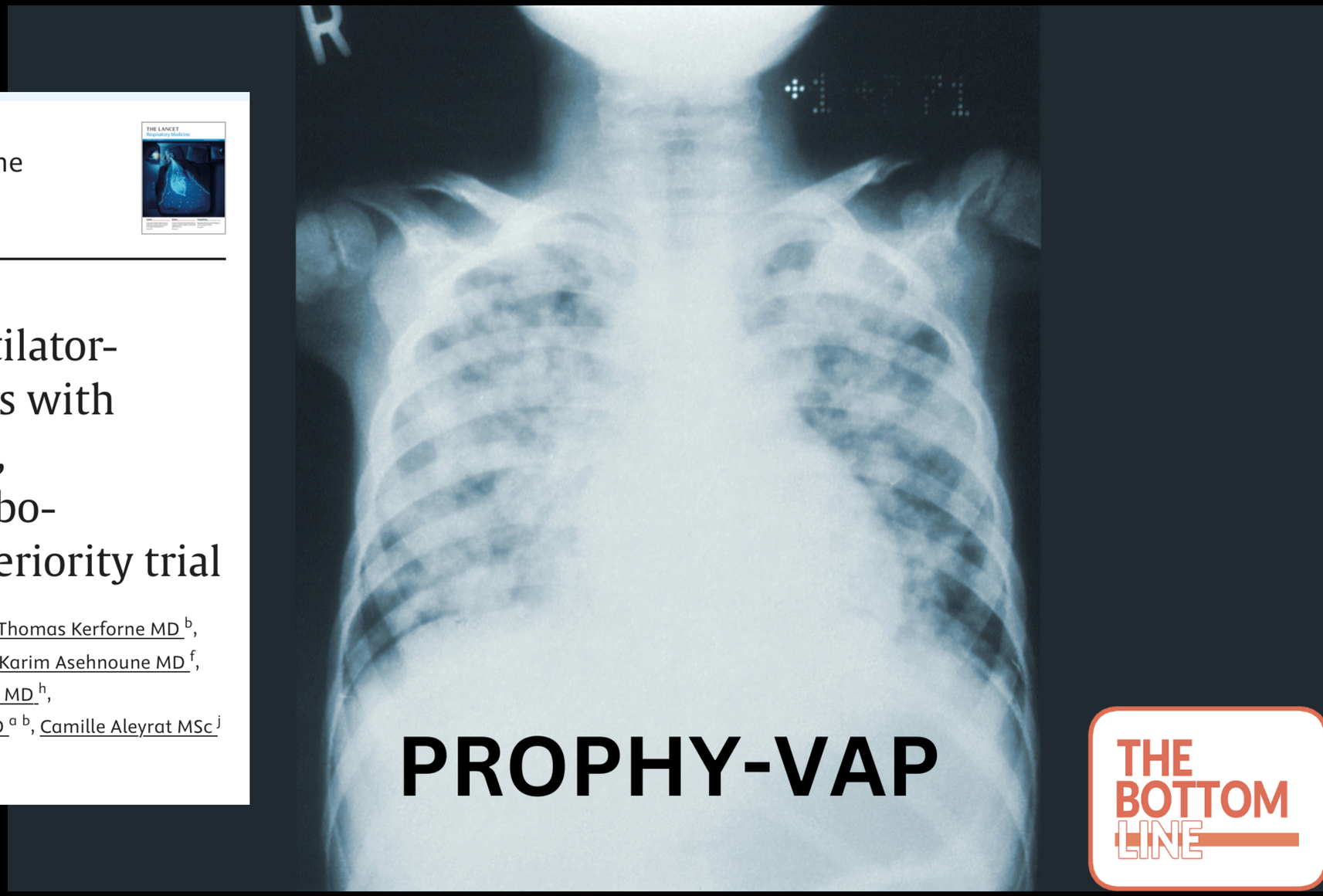
No. at Risk					
Inhaled placebo	430	288	85	40	18
Inhaled amikacin	420	269	120	60	28
No. of Deaths					
Inhaled placebo	0	21	65	85	106
Inhaled amikacin	0	20	47	78	92

The Lancet Respiratory Medicine
Available online 20 January 2024
In Press, Corrected Proof ⓘ What's this?

Articles

Ceftriaxone to prevent early ventilator-associated pneumonia in patients with acute brain injury: a multicentre, randomised, double-blind, placebo-controlled, assessor-masked superiority trial

Prof Claire Dahyot-Fizelier MD [a b], Prof Sigismond Lasocki MD [c], Thomas Kerforne MD [b], Prof Pierre-Francois Perrigault MD [d], Prof Thomas Geeraerts MD [e], Prof Karim Asehnoune MD [f], Prof Raphaël Cinotti MD [f], Prof Yoann Launey MD [g], Vincent Cottenceau MD [h], Prof Marc Laffon MD [i], Thomas Gaillard MD [c], Prof Matthieu Boisson MD [a b], Camille Aleyrat MSc [j], Prof Denis Frasca MD [b j], Prof Olivier Mimoz MD [a k]
PROPHY-VAP Study Group and the ATLANREA Study Group†



THE BOTTOM LINE

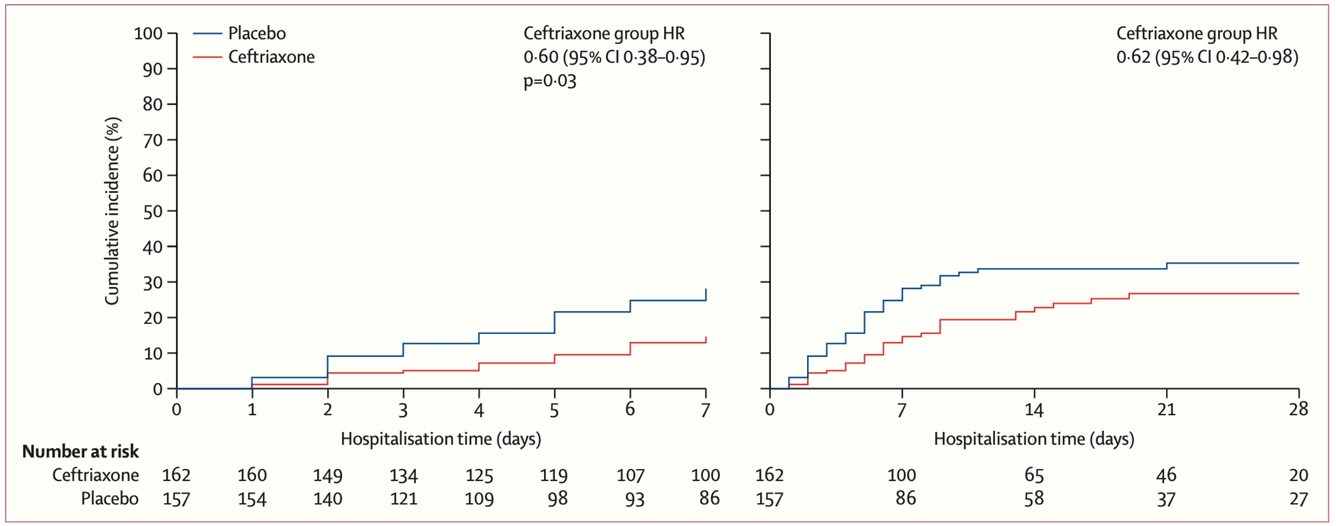


Figure 2: **Cumulative incidence of (A) early and (B) all cases of ventilator-associated pneumonia**
Cumulative incidence curves of early (from the second to the seventh day of mechanical ventilation) and all cases of ventilator-associated pneumonia were compared using the Fine-Gray approach between patients assigned to receive ceftriaxone and those assigned to receive placebo. HR=hazard ratio.

	Ceftriaxone group (n=162)	Placebo group (n=157)	HR	p value
Primary outcome				
Early VAP	23/23 (14%)	51/51 (32%)	0·60 (0·38–0·95)	0·030
Secondary outcomes on day 28				
All VAP	35/33 (20%)	58/57 (36%)	0·62 (0·42–0·98)	..
Late VAP	12/11 (7%)	7/7 (5%)	..	..
Ventilator-free days	9 (0–22)	5 (0–18)	..	0·023
Antibiotic-free days	21 (13–28)	15 (8–21)	..	<0·0001
Time between inclusion and first VAP, days	5 (3–9)	4 (2–6)	..	0·048
Modified Rankin score	..	..	..	0·032
0–1	27/145 (19%)	13/139 (9%)	..	..
2–3	30/145 (21%)	23/139 (17%)	..	..
4–5	63/145 (43%)	64/139 (46%)	..	..
6	25/145 (17%)	39/139 (28%)	..	..
Mortality	25/162 (15%)	39/157 (25%)	0·62 (0·39–0·97)	0·036
Secondary outcomes on day 60	..	..	..	..
ICU-free days	34 (15–49)	26 (0–42)	..	0·0033
Hospital-free days	23 (0–39)	8 (0–33)	..	0·005
Modified Rankin score*	..	..	..	0·17
0–1	44/158 (28%)	31/155 (20%)	..	..
2–3	32/158 (20%)	28/155 (18%)	..	..
4–5	50/158 (32%)	50/155 (32%)	..	..
6	32/158 (20%)	46/155 (30%)	..	..
Mortality	32/161 (20%)	46/157 (30%)	0·66 (0·42–1·04)	0·074

Data are median (IQR), n (%), n/N (%), mean number of events/number of patients evaluated, or HR (95% CI).
HR (95% CI) are presented for qualitative variables taking account of competing risk if needed. VAP that occurred during the first 7 days of hospitalisation was defined as early, and VAP that occurred after the first 7 days of hospitalisation was defined as late. The following data were missing: antibiotic-free days for one patient receiving placebo, ICU-free days for one patient receiving placebo, modified Rankin score on day 28 for 17 patients receiving ceftriaxone and 18 receiving placebo, modified Rankin score on day 60 for four patients receiving ceftriaxone and two receiving placebo, and death at day 60 for one patient receiving ceftriaxone. HR=hazard ratio. ICU=intensive care unit. VAP=ventilator-associated pneumonia. *Modified Rankin scale ranges from 0 to 6, with 0 representing no symptoms, 1 no clinically significant disability, 2 slight disability, 3 moderate disability, 4 moderately severe disability, 5 severe disability, and 6 death.

Table 2: **Primary and secondary outcomes**

Delirium

ARTICLES | VOLUME 1, ISSUE 7, P515-523, SEPTEMBER 2013 Download Full Issue

Effect of intravenous haloperidol on the duration of delirium and coma in critically ill patients (Hope-ICU): a randomised, double-blind, placebo-controlled trial

Dr Valerie J Page, MBBCh • Prof E Wesley Ely, MD • Prof Simon Gates, PhD • Xiao Bei Zhao, RN • Timothy Alce, PhD • Ayumi Shintani, PhD • et al. Show all authors

Open Access • Published: August 21, 2013 • DOI: https://doi.org/10.1016/S2213-2600(13)70166-8 •

Check for updates

Original Investigation | Caring for the Critically Ill Patient

FREE

February 20, 2018

Effect of Haloperidol on Survival Among Critically Ill Adults With a High Risk of Delirium

The REDUCE Randomized Clinical Trial

Mark van den Boogaard, PhD[1]; Arjen J. C. Slooter, MD, PhD[2]; Roger J. M. Brüggemann, PharmD, PhD[3]; et al

» Author Affiliations | Article Information

JAMA. 2018;319(7):680-690. doi:10.1001/jama.2018.0160

ORIGINAL ARTICLE

Haloperidol and Ziprasidone for Treatment of Delirium in Critical Illness

Timothy D. Girard, M.D., M.S.C.I., Matthew C. Exline, M.D., M.P.H., Shannon S. Carson, M.D., Catherine L. Hough, M.D., Peter Rock, M.D., M.B.A., Michelle N. Gong, M.D., Ivor S. Douglas, M.D., Atul Malhotra, M.D., Robert L. Owens, M.D., Daniel J. Feinstein, M.D., Babar Khan, M.B., B.S., Margaret A. Pisani, M.D., M.P.H., et al., for the MIND-USA Investigators*

ORIGINAL ARTICLE

Haloperidol for the Treatment of Delirium in ICU Patients

Nina C. Andersen-Ranberg, M.D., Lone M. Poulsen, M.D., Anders Perner, Ph.D., Jørn Wetterslev, Ph.D., Stine Estrup, Ph.D., Johanna Hästbacka, Ph.D., Matt Morgan, Ph.D., Giuseppe Citerio, Ph.D., Jesus Caballero, M.D., Theis Lange, Ph.D., Maj-Brit N. Kjær, M.Sc., Bjørn H. Ebdrup, Ph.D., et al., for the AID-ICU Trial Group*

Prophylactic melatonin for delirium in intensive care (Pro-MEDIC): a randomized controlled trial

Original | Published: 27 February 2022

Volume 48, pages 414–425, (2022) Cite this article

ORIGINAL ARTICLE

Early Sedation with Dexmedetomidine in Critically Ill Patients

Yahya Shehabi, Ph.D., M.B., B.S., Belinda D. Howe, R.N., M.P.H., Rinaldo Bellomo, M.D., Ph.D., Yaseen M. Arabi, M.D., Michael Bailey, Ph.D., Frances E. Bass, R.N., Suhaini Bin Kadiman, M.D., Colin J. McArthur, M.B., Ch.B., Lynnette Murray, B.S., Michael C. Reade, M.B., B.S., M.P.H., D.Phil., Ian M. Seppelt, M.B., B.S., Jukka Takala, M.D., Ph.D., et al., for the ANZICS Clinical Trials Group, and the SPICE III Investigators*

June 27, 2019

N Engl J Med 2019; 380:2506-2517

DOI: 10.1056/NEJMoa1904710

Take Home Points

- PPI > H2 for now? Priorities early enteral feeds
- Consider adopting mupirocin ointment BID
- Brain injury = 2g Ceftriaxone post intubation
- Tx Hyperactive Delirium as it present