

Role of Corticosteroids in Patients with Community Acquired Pneumonia

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Disclosures



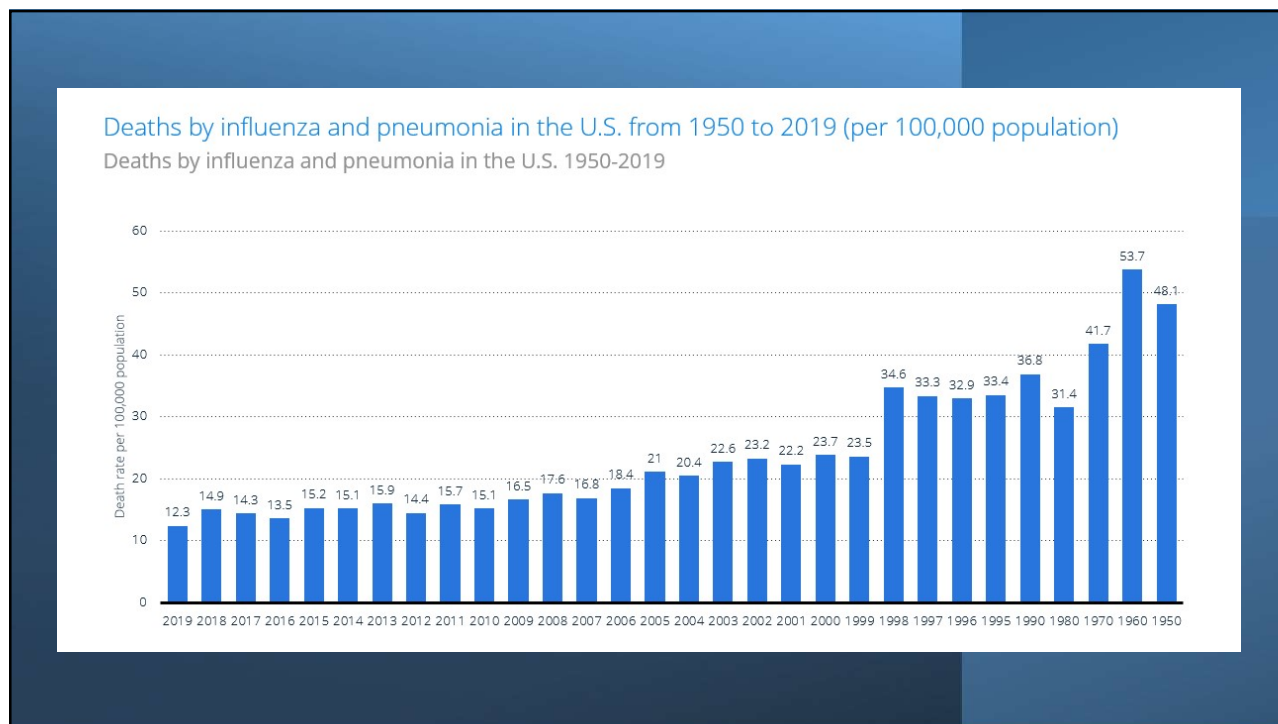
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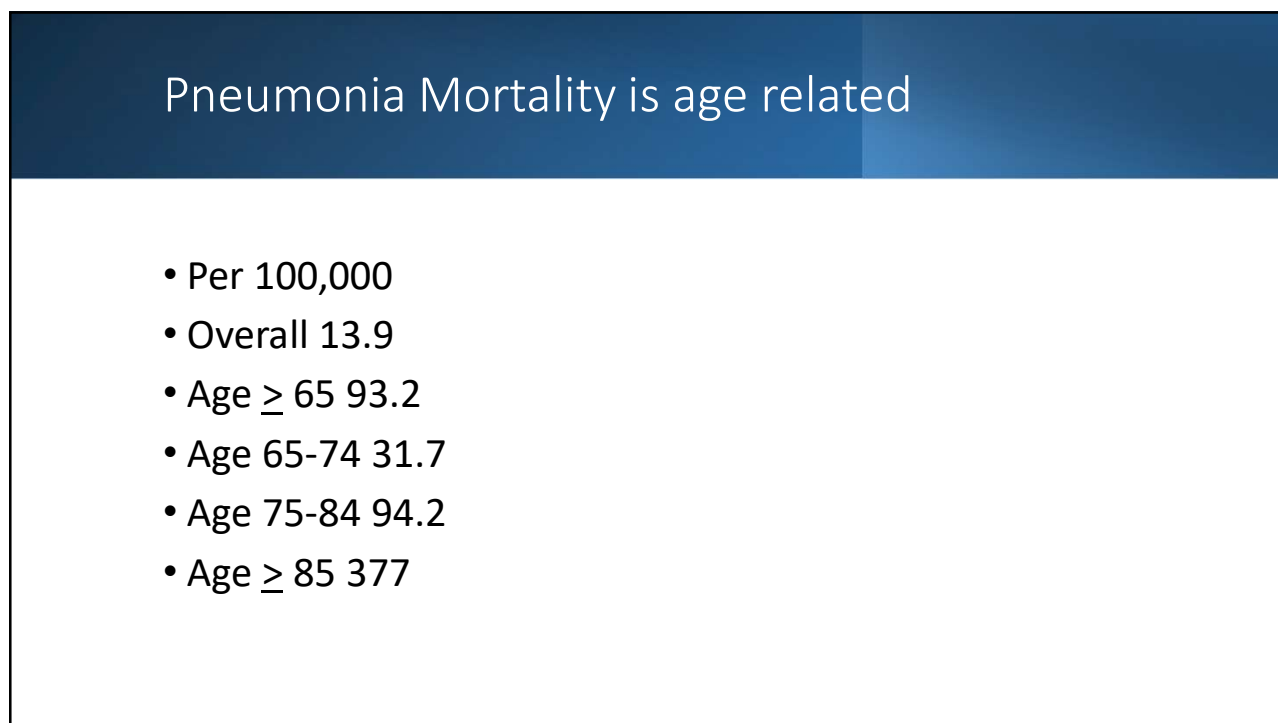
REFERENCES TO OFF-LABEL USAGE(S) OF PHARMACEUTICALS OR INSTRUMENTS

PRN use of ICS/LABA

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Meta-Analysis: 6 RCT, 1509 patients

CID 2018;66 (1 February) •
Briel et al

Confalonieri, 2005	Italy	46	2000–2003	67.5 (51–76)	32 (70)	Patients with severe CAP according to 1993 ATS severity criteria	Hydrocortisone 200 mg IV bolus followed by 10 mg/h IV for 7 d
Snijders, 2010	The Netherlands	204	2005–2008	64.5 (71–80)	118 (58)	Adults hospitalized with CAP	Prednisolone 40 mg IV or orally for 7 d
Meijvis, 2011	The Netherlands	302	2007–2010	66.5 (51–79)	169 (56)	Adults with CAP but without need for intensive care	Dexamethasone 5 mg IV daily for 4 d
Fernandez-Serrano, 2011	Spain	52	2000–2002	62.5 (47–68.5)	16 (31)	Adults up to age 75 years with severe CAP (consolidation of ≥ 2 lobes and $PO_2/FIO_2 < 300$)	Methylprednisolone 200 mg IV bolus followed by tapering infusion (3.3–0.8 mg/h IV) over 9 d
Blum, 2015	Switzerland	785	2009–2014	73 (61–83)	487 (62)	Adults hospitalised with CAP	Prednisone 50 mg oral daily for 7 d
Torres, 2015	Spain	120	2004–2012	69.5 (63–81)	74 (62)	Adults with severe CAP according to ATS or pneumonia severity index criteria and C-reactive protein > 150 mg/L	Methylprednisolone 0.5 mg/kg IV twice daily for 5 d

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Outcomes

Mortality 30 days	OR, 0.75 (95% CI, .46 to 1.21) Based on data from 1506 patients in 6 studies Follow-up 30 days	59 per 1000	45 per 1000	Moderate ^a	Corticosteroids probably have little or no effect on 30-day mortality
Secondary intensive care unit admission More than 30 days	OR, 0.74 (95% CI, .45 to 1.21) Based on data from 1359 patients in 6 studies Follow-up 30 days	63 per 1000	47 per 1000	Moderate ^a	Corticosteroids probably have little or no effect on secondary intensive care unit admissions
CAP-related rehospitalization More than 30 days after discharge	OR, 1.85 (95% CI, 1.03 to 3.32) Based on data from 1386 patients in 5 studies Follow-up 30 days	27 per 1000	49 per 1000	Moderate ^a	Corticosteroids probably increase CAP-related rehospitalizations
Hyperglycemia requiring insulin More than 30 days	OR, 2.15 (95% CI, 1.6 to 2.9) Based on data from 1460 patients in 5 studies Follow-up 30 days	120 per 1000	227 per 1000	High	Corticosteroids increase hyperglycemia treated with insulin
Nosocomial infections 30 days	OR, 1.31 (95% CI, .77 to 2.24) Based on data 1506 patients in 6 trials Follow-up 30 days	33 per 1000	43 per 1000	Moderate ^a	Corticosteroids probably have little or no effect on nosocomial infections
Length of hospital stay	Scale: days Based on data from 1506 patients in 6 studies	8.0 (Median)	7.0 (Median)	High	Corticosteroids reduce length of hospital stay
Time to clinical stability	Scale: days Based on data from 1158 patients in 4 studies	4.0 (Median)	3.0 (Median)	High	Corticosteroids reduce time to clinical stability

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Outcomes

- No mortality benefit overall or in identified subgroups
 - Moderate strength
- Reduced time to clinical stability and hospital LOS
 - High strength
- Increased CAP related re-hospitalization
 - Moderate
- Increased hyperglycemia
 - High strength

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Medure VA Trial

- 584 patients with severe CAP
- Enrolled within 72-96 hours
- Intravenous methylprednisolone over 20 days
 - 40 mg loading dose followed by 40 mg daily
- No change in mortality or secondary outcomes
 - Mortality 16% vs. 18%; adjusted odds ratio 0.90, 95% CI 0.57–1.40
- Similar adverse effects

• Meduri GU Intensive Care
Med (2022) 48:1009–1023

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Hydrocortisone in Severe Community Acquired Pneumonia (CAP): CAPE COD Trial

- Hypothesis
 - Early use of hydrocortisone would decrease death in patients with severe CAP
- Intervention
 - Hydrocortisone 200 mg daily for either 4 or 7 days (determined by clinical improvement) or placebo
- Population
 - Adults with CAP admitted to ICU
- Outcome
 - Death
 - Oxygenation, vasopressor use, severity score, ventilator use

• Dequin PF New Eng J Med
May 2023; 388:1931-41.

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Who was studied

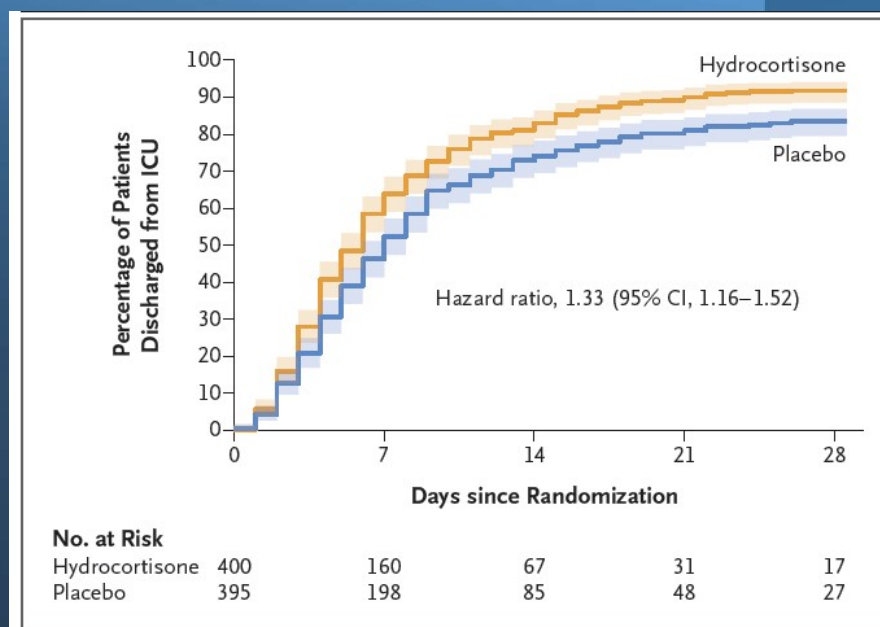
- Mean age 67
- 25-30% had COPD or asthma
- Approximately 85% had Class IV or V pneumonia (PSI)
- 45% on mechanical ventilation at enrollment
- 70% with elevated CRP (> 15)

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Outcomes

- Decreased death @ 28 days
 - 6.2% v. 11.9%, $p = 0.06$
- Decreased death at 90 days
 - 12.2% v. 18.2 %
- Reduced need for intubation
 - 18.0% (hydrocortisone) v. 29.5% (placebo) (hazard ratio, 0.59; 95% CI, 0.40 to 0.86)
- No difference in VAP, development of bacteremia or GI bleeding

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Dequin, P. F., Meziani, F., Quenot, J. P., Kamel, T., Ricard, J. D., Badier, J., ... & Le Gouge, A. (2023). Hydrocortisone in severe community-acquired pneumonia. *New England Journal of Medicine*, 388(21), 1931-1941.

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Comments

Multicentered but
single country study

Early administration of
steroids (< 15 hrs)

Choice of steroid may
matter

Death rate lower than
expected in control
group

- Observed 11.9% v.
expected 27%

Incomplete analysis of
potential adverse
effects of steroid
therapy

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Take Home Points

- Mortality from CAP pneumonia remains significant, especially in the elderly, despite increasing antibiotic options
- The CAPECOD Trial showed that early use of hydrocortisone in patients with severe CAP requiring ICU care decreased deaths
 - Differs from prior data
- Refinement of tools to identify those for whom steroids are beneficial are lacking
- Use of steroids should not be extrapolated to the broader population of patients with CAP

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References

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- Meduri, G. U. (2022). *Intensive Care Medicine*, 48(6), 1009–1023.
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