

Algoritmus odesílání pacienta s exacerbací CHOPN k hospitalizaci

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AE – CHOPN: definice

- epizody asociované s amplifikací zánětu v dýchacích cestách, zhoršením bronchiální obstrukce, plicní hyperinflace, V/Q nepoměrem
- zhoršení respiračních symptomů
- dušnost, kašel, produkce nebo purulence hlenů
- vyžadují léčebný zásah
- negativní vliv na QoL, akcelerují progresi onemocnění, mohou vést k hospitalizaci nebo úmrtí

AE-CHOPN: klasifikace - Anthonisen

Typ I

všechny 3 hl.
symptomy:

Zvýšená
produkce
sputa

Zvýšeně
purulentní
sputum

Zhoršení
dušnosti

Typ II

Alespoň 2 hl.
symptomy

Typ III

Alespoň 1 hl. symptom

+ alespoň 1 vedl. symptom:

infekce HCD
v
posledních
5ti dnech

Zhoršení
vrzotů

Zhoršení
kašle

Horečka
bez
zjevného
zdroje

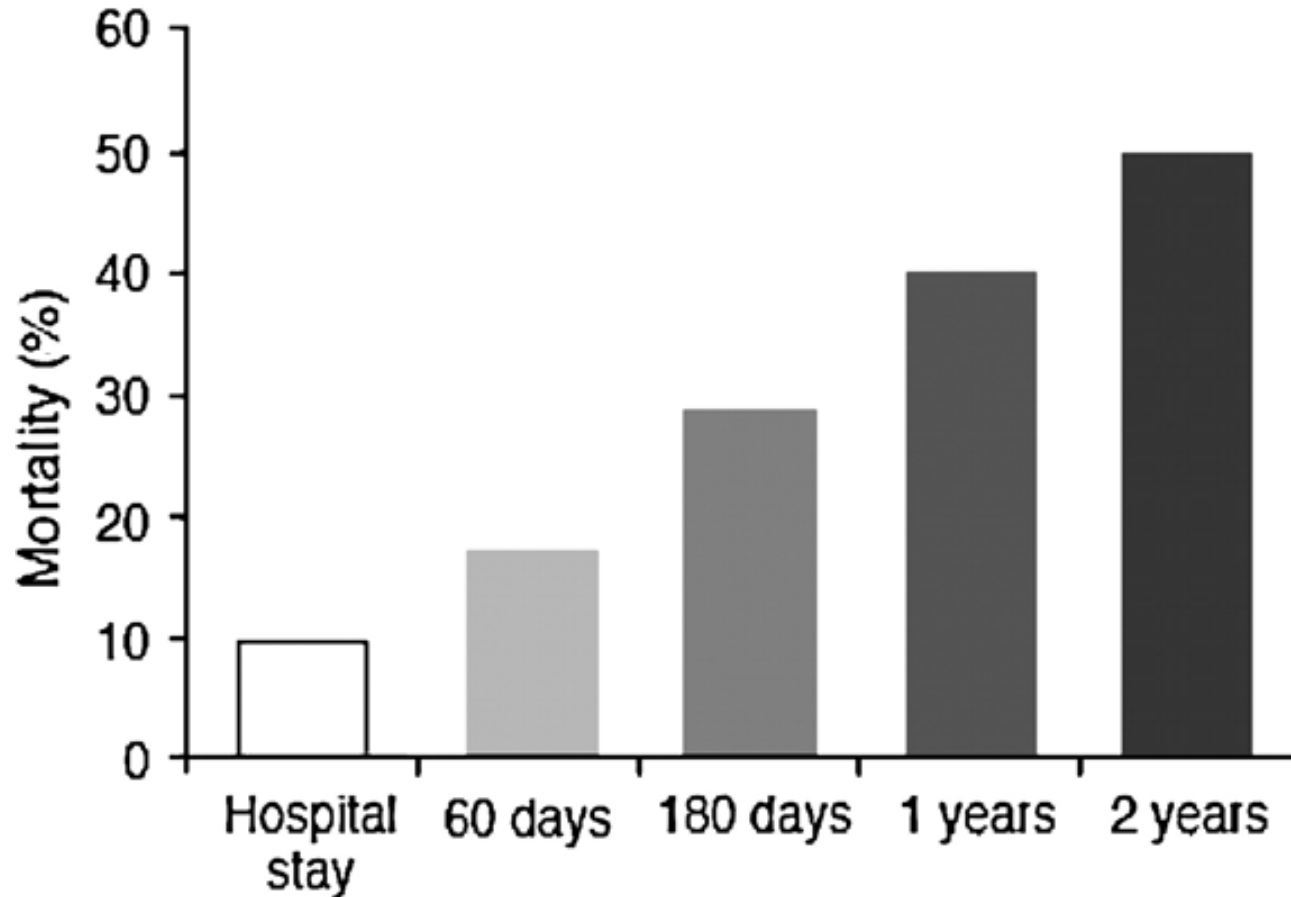
Zvýšení DF
o 20%

Zrychlení TF
oproti
běžným
hodnotám

AE-CHOPN: klasifikace GOLD



AE-CHOPN: Mortalita



Anzueto, Proc Am Thorac Soc, 2007

Nemocniční mortalita
2,5% - 24,5%

Laribi, ERJ 2017

Relaps vyžadující hospitalizaci
cca 17%

Emerman, Chest, 1991

AE-CHOPN: rizikové faktory mortality

| Krátkodobá mortalita | | Mortalita JIP | Dlouhodobá |
|----------------------|-----------------|---------------|-------------------|
| věk | cTNT | věk | věk |
| ♂ | DDOT | nízké GCS | nízké BMI |
| nízké BMI | acidóza | nízké PH | srdeční selhání |
| otok DKK | cor pulmonale | | diabetes mellitus |
| zmatenost | srdeční selhání | | ICHS |
| FEV1<30% | renální selhání | | malignita |
| | | | FEV1 |
| | | | DDOT |
| | | | PaO2 při přijetí |

metaanalýza, 37 studií, n = 189.772

AE-CHOPN: rizikové faktory asociované s nemocniční mortalitou

(data: European COPD Audit)

TABLE 2 Logistic regression model for the risk associated with in-hospital mortality

| | OR (95% CI) | p-value |
|--|---------------------|---------|
| Age years | 1.064 (1.054–1.074) | 0.0001 |
| Charlson Comorbidity Index points | 1.137 (1.087–1.189) | 0.0001 |
| Ventilatory support: yes | 3.667 (2.997–4.486) | 0.0001 |
| Respiratory acidosis | | |
| Mild <i>versus</i> normal | 1.582 (1.286–1.945) | 0.0001 |
| Severe <i>versus</i> normal | 2.313 (1.721–3.109) | |

N=16 016. Respiratory acidosis is categorised as: severe, pH <7.25; mild, pH 7.25–7.35; normal, pH >7.35. Results are from a random effects model adjusting for country.

AE-CHOPN: ventilační selhání 90-denní mortalita

(data: European COPD Audit)

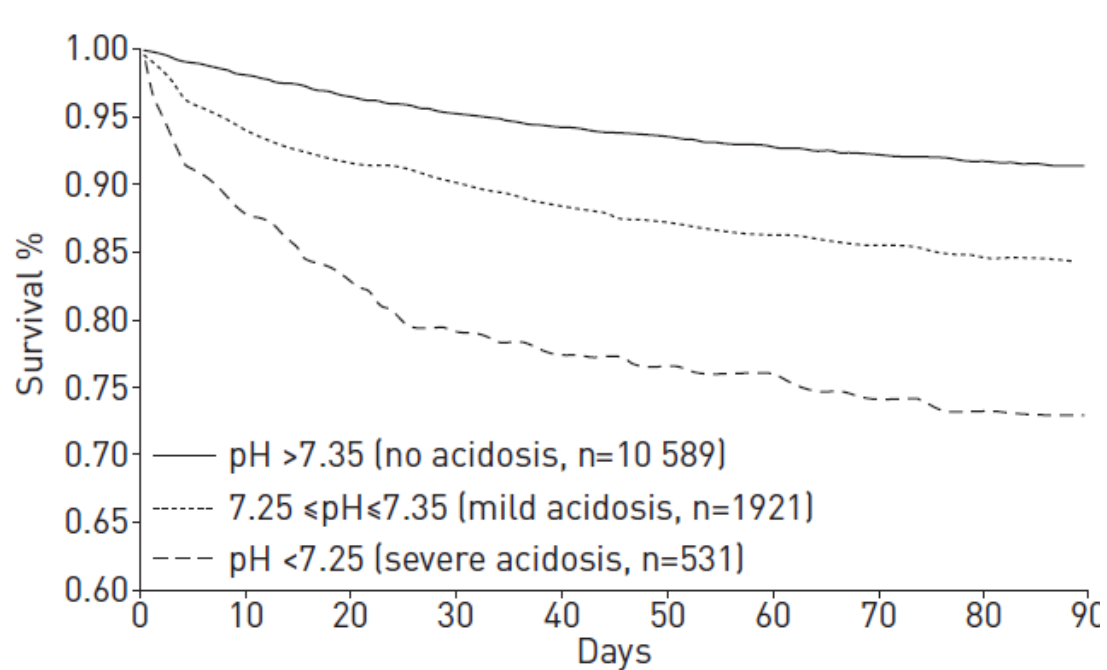


FIGURE 2 Survival curves of the 90-day post-discharge follow-up according to severity of respiratory acidosis; n=13 041.

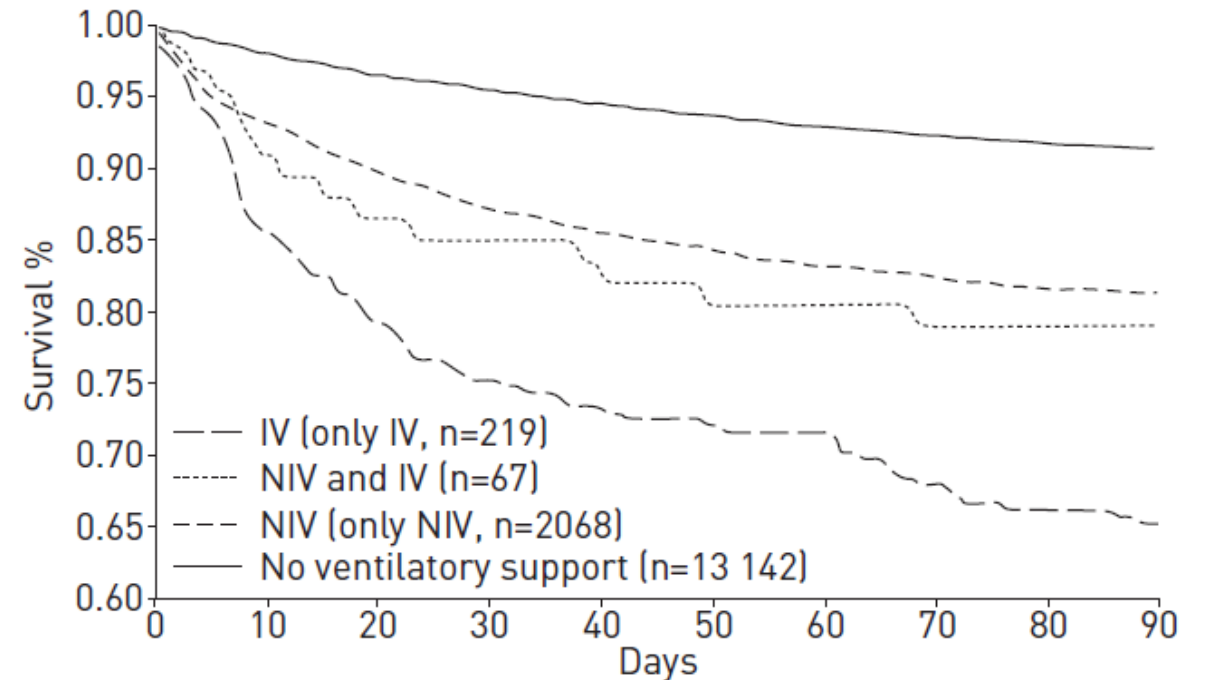
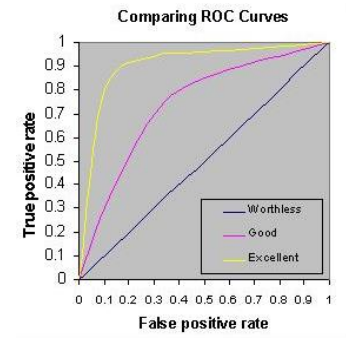


FIGURE 3 Survival curves of the 90-day post-discharge follow-up according to the type of ventilatory support during hospital stay; n=15 429. NIV: noninvasive ventilation; IV: invasive ventilation.

AE-CHOPN: nástroje pro predikci mortality

| Study | Severity Assessment Tool Assessed | Components | Outcome | n | AUC | Grade of Evidence* |
|----------------------------------|------------------------------------|--|--|--------|------------------------------------|--------------------|
| Chang <i>et al.</i> (13) | CURB-65 | Confusion, urea, RR, BP, age \geq 65 yr | 30-d mortality | 249 | 0.73 | 2 |
| Steer <i>et al.</i> (14) | CURB-65 | As above | 30-d mortality | 920 | 0.72 | 2 |
| Edwards <i>et al.</i> (53) | CRB-65 | Confusion, RR, BP, age \geq 65 yr | In-hospital and 30-d mortality | 133 | 0.68 | 1 |
| Roche <i>et al.</i> (28) | Not named | Age, dyspnea severity, clinical severity | In-hospital mortality | 794 | Derivation 0.79 Validation 0.83 | 2 |
| Tabak <i>et al.</i> (15) | BAP-65 | Urea, confusion, HR, age \geq 65 yr | In-hospital mortality | 88,074 | Derivation 0.72 Validation 0.71 | 2 |
| Shorr <i>et al.</i> (16) | BAP-65 | Urea, confusion, HR, age \geq 65 yr | Hospital mortality or requirement for mechanical ventilation | 34,699 | 0.79 | 2 |
| Ruiz Gonzalez <i>et al.</i> (54) | Not named | Confusion, CRP \geq 50 mg/L, \geq 2 comorbidities, current smoker | 15-d mortality, need for ICU or development of acute cardiac failure | 147 | 0.80 | 1 |
| Connors <i>et al.</i> (3) | Not named | APACHE III, PaO ₂ /FIO ₂ ratio, BMI, comorbidity, albumin, CHF, cor pulmonale, functional status | 6-mo mortality | 1,016 | 0.73 | 1 |
| Wildman <i>et al.</i> (55) | CAOS COPD/asthma prognostic score | Multiple variables | In-hospital mortality in ICU-admitted study subjects | 832 | 0.72 | 1 |
| Steer <i>et al.</i> (14) | Extended MRC dyspnea score (eMRCD) | Extended version of MRC dyspnea score | In-hospital mortality | 920 | 0.79 | 1 |
| Steer <i>et al.</i> (33) | DECAF score | eMRCD score Eosinopenia, consolidation, acidemia, AF | 30-d mortality | 920 | 0.82 | 1 |



DECAF score:

Dyspnoea, Eosinopenia, Consolidation, Acidaemia and atrial Fibrillation

N = 920

**5 nejsilnějších prediktorů
nemocniční mortality**

**Dušnost
Konsolidace
Eosinopenie
Acidoza
Fibrilace síní**

Nemocniční mortalita 10,4%

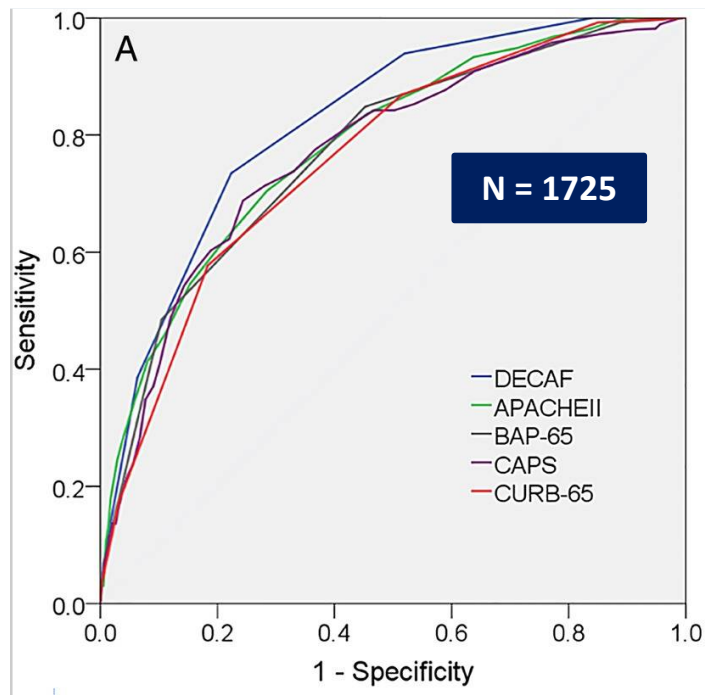
Independent categorical predictors of in-hospital mortality

| Variable | B | Odds ratio (95% CI) | Significance |
|--|------|---------------------|--------------|
| eMRCD 1–4 | | 1 | |
| eMRCD 5a | 1.63 | 5.11 (2.62 to 9.97) | <0.001 |
| eMRCD 5b | 1.99 | 7.30 (3.77 to 14.2) | <0.001 |
| Coexistent consolidation | 1.06 | 2.88 (1.69 to 4.90) | <0.001 |
| Eosinophil count $<0.05 \times 10^9/l$ | 1.02 | 2.76 (1.58 to 4.83) | 0.001 |
| pH <7.3 | 0.99 | 2.68 (1.41 to 5.09) | 0.003 |
| AF | 0.98 | 2.66 (1.39 to 5.09) | 0.003 |

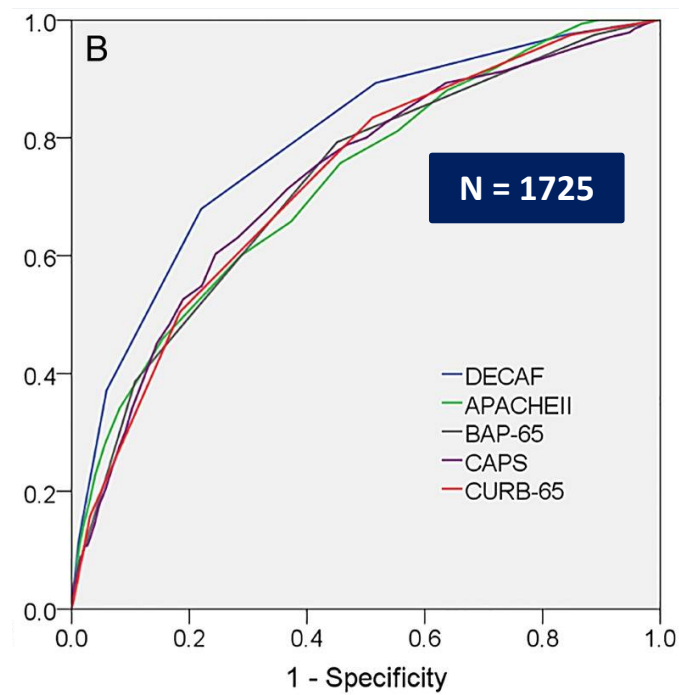
DECAF score:

Dyspnoea, Eosinopenia, Consolidation, Acidaemia and atrial Fibrillation

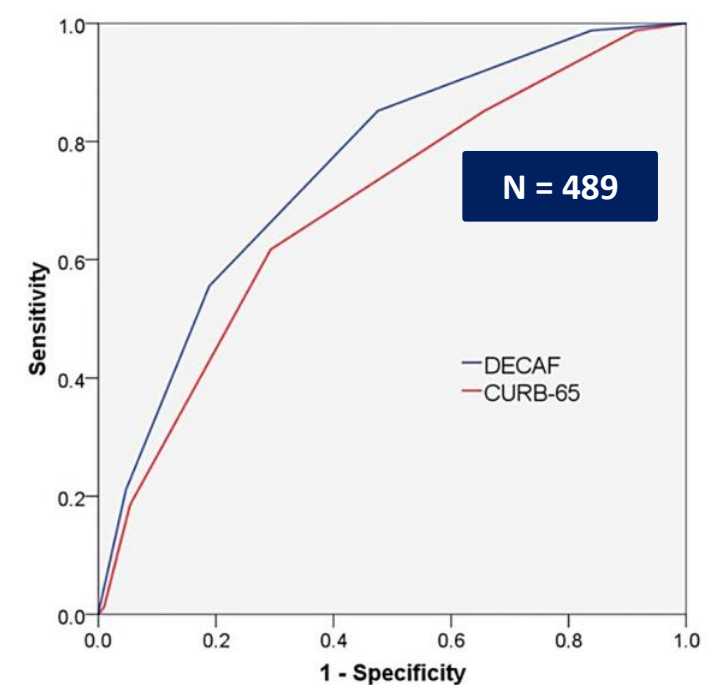
Receiver operator characteristic curves (ROC) of prognostic scores:



nemocniční mortalita



30-denní mortalita

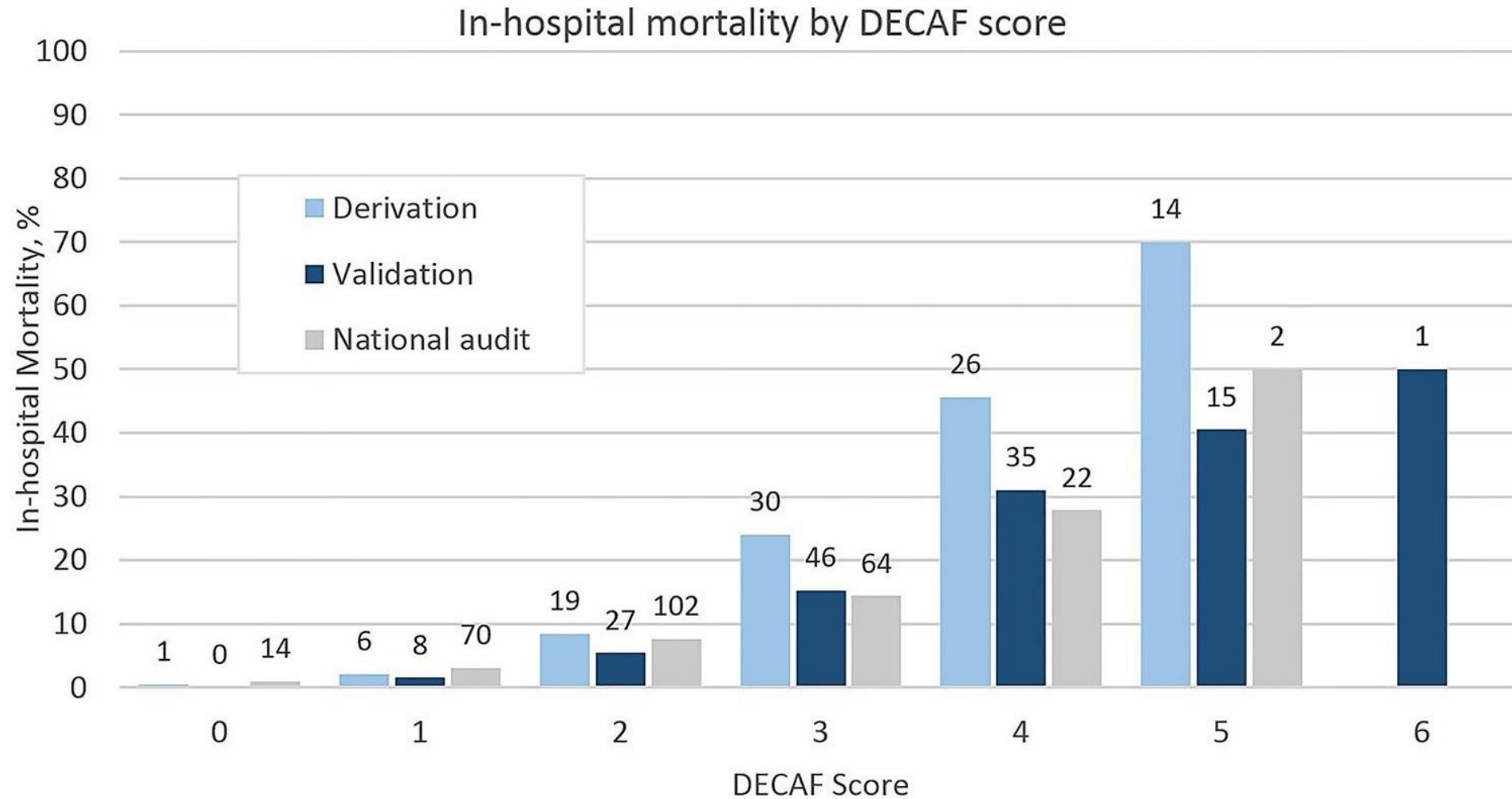


30-denní mortalita u
pneumonických AE-CHOPN

Nemocniční mortalita ve validizační studii 7,7%

DECAF score:

Dyspnoea, Eosinopenia, Consolidation, Acidaemia and atrial Fibrillation



DECAF score:

Dyspnoea, Eosinopenia, Consolidation, Acidaemia and atrial Fibrillation

| | Points | | |
|--|---|--|---|
| | 0 | 1 | 2 |
| Extended MRC Dyspnea Scale (eMRCD) | Not too dyspneic to leave house (eMRCD 1-4) | Too dyspneic to leave house but independent with washing/dressing (eMRCD 5a) | Too dyspneic to leave house and wash/dress (eMRCD 5b) |
| Eosinopenia (eosinophils $<0.05 \times 10^9/L$) | No | Yes | -- |
| Consolidation on chest x-ray | No | Yes | -- |
| Acidemia (pH <7.30) | No | Yes | -- |
| Atrial fibrillation (including history of paroxysmal afib) | No | Yes | -- |

| Interpretation: | | | |
|-----------------|--------------|---|------------------------|
| DECAF Score | Risk | Recommendation | In-hospital mortality* |
| 0 | Low | Routine management | 0% |
| 1 | | | 1.5% |
| 2 | Intermediate | Use clinician judgment re: disposition | 5.4% |
| 3 | | | 15.3% |
| 4 | | | 31% |
| 5 | High | Consider escalation of care vs. palliative care | 40.5% |
| 6 | | | 50% |

| | ČPFS 2016 | GOLD 2018 | ATS/ERS 2004 | NICE 2010 | BTS 2006 | UPTODATE 2018 |
|--|--------------|--------------|-----------------|--------------|-------------|------------------|
| těžké stadium CHOPN | * | ns | ns | ns | ns | * |
| intenzita příznaků, náhlý vznik příznaků (dušnost aj.) | * | * | * | * | ns | * |
| vznik nových příznaků | * | * | ns | ns | ns | * |
| cyanóza | * | * | ns | * | ns | * |
| porucha vědomí / zmatenost | ns | * | * | * | * | * |
| periferní otoky | * | * | ns | * | ns | * |
| neschopnost jíst nebo spát pro symptomy | ns | ns | * | ns | ns | ns |
| špatná celková kondice / míra fyzické aktivity | ns | ns | ns | * | ns | ns |
| křehký pacient | ns | ns | ns | ns | ns | * |
| zvýšená DF | ns | * | ns | ns | ns | ns |
| zhoršení hypoxémie / snížená saturace/pO2 < 7kPa | ns | * | * | * | * | * |
| DDOT | ns | ns | ns | ns | ns | * |
| ventilační selhání / hyperkapnie | ns | * | * | * | ns | * |
| pH <7.35 | ns | ns | ns | * | * | ns |
| závažné komorbidity (SS, arytmie) | * | * | * | * | * | * |
| pneumonie / RTG změny | ns | ns | * | * | * | * |
| historie častých exacerbací +/- nutnost hospitalizací | * | ns | ns | ns | ns | * |
| selhání ambulantní / iniciální léčby | * | * | * | ns | ns | * |
| nedostatečná domácí péče / nesoběstačnost | * | * | * | * | * | * |
| starší věk (nad 65 let) | * | ns | ns | ns | ns | ns |
| nejasná diagnóza | ns | ns | * | ns | ns | ns |



CrossMark

Management of COPD exacerbations: a European Respiratory Society/American Thoracic Society guideline

Question #5: Should a home-based management program (“hospital-at-home”) be implemented in patients with COPD exacerbations?

ERS/ATS recommendation on Question #5

- For patients with a COPD exacerbation who present to the emergency department or hospital, we suggest a home-based management program.

(conditional recommendation, moderate quality evidence)

Intermediate care—Hospital-at-Home in chronic obstructive pulmonary disease: British Thoracic Society guideline

Recommendations

HaH should not be offered to patients with:

- (R2) Impaired level of consciousness. [Grade C]
- (R3) Acute confusion. [Grade C]
- (R4) pH <7.35, if arterial blood gases have been measured. [Grade C]
- (R5) Acute changes on chest radiograph. [Grade C]
- (R6) Concomitant medical problem requiring inpatient stay. [Grade C]
- (R7) Insufficient social support, no telephone, residence geographically removed from hospital. [Grade C]
- (R8) New hypoxaemia ($SpO_2 \leq 90\%$)—a contraindication if oxygen cannot be provided at home. [Grade D]

Table 5.4. Indications for respiratory or medical intensive care unit admission*

- Severe dyspnea that responds inadequately to initial emergency therapy.
- Changes in mental status (confusion, lethargy, coma).
- Persistent or worsening hypoxemia ($\text{PaO}_2 < 5.3 \text{ kPa}$ or 40 mmHg) and/or severe/worsening respiratory acidosis ($\text{pH} < 7.25$) despite supplemental oxygen and noninvasive ventilation.
- Need for invasive mechanical ventilation.
- Hemodynamic instability—need for vasopressors.

