ER-GS COMBINE CONFERENCE

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Discussion

- How to predict pneumonia out come
PSI
CURB-65
SMART COP
- Sepsis bundle

CLINICAL TOOL TO PREDICT CAP PROGNOSIS

- PSI SCORE (N Engl J Med 1997;336:243e50.)
- CURB 65(Thorax 2003;58:377e82.)
- CRB 65 (Thorax 2008;63:665e6.)

*30 days mortality rate

PSI

Patient Characteristics	Points Assigned	Patient's Points
Demographic Factors		
Age (in years)		
Males	age	
Females	age – 10	
Nursing home resident	+ 10	
Coexisting Conditions*		
Neoplastic disease	+ 30	
Liver disease	+ 20	
Congestive heart failure	+ 10	
Cerebrovascular disease	+ 10	
Renal disease	+ 10	
INITIAL Physical Examination Findings		
Altered mental status (acute)*	+ 20	
Respiratory rate ≥ 30/min.	+ 20	
Systolic BP <90 mm Hg	+ 20	
Temperature <35 or ≥40 oC	+ 15	
(<95 o F or > 104 o F)		
Pulse ≥125/min	+ 10	
INITIAL Diagnostic Test Findings (score zero if not tested)		
pH <7.35	+ 30	
BUN >30 mg/dl	+ 20	
Sodium <130 mEq/L	+ 20	
Glucose >250 mg/dl	+ 10	
Hematocrit <30%	+ 10	
pO2 <60 mmHg or O2 sat <90%	+ 10	
Pleural effusion	+ 10	

PSI Score	Category (Circle One)	Projected Mortality†
≤ 70	I, II	< 1%
71 – 90	III	2.8%
91 – 130	IV	8.2%
>130	V	29.2%

A. Class 1-2: Outpatient management
B. Class 3: Consider short observation hospital stay
C. Class 4-5: Inpatient management

CURB 65

Clinical factor	Points
Confusion	1
Blood urea nitrogen > 19 mg per dL.	1
Respiratory rate ≥ 30 breaths per minute	1
Systolic blood pressure < 90 mm Hg or Diastolic blood pressure ≤ 60 mm Hg	1
Age ≥ 65 years	1
Total points:	

CURB-65 score	Deaths/total (%)*	Recommendation†
0	7/1,223 (0.6)	Low risk; consider home treatment
1	31/1,142 (2.7)	
2	69/1,019 (6.8)	Short inpatient hospitalization or closely supervised outpatient treatment
3	79/563 (14.0)	Severe pneumonia; hospitalize and consider admitting to intensive care
4 or 5	44/158 (27.8)	

CRB 65

Clinical factor	Points
Confusion	1
Blood urea nitrogen > 19 mg per dL.	1
Respiratory rate ≥ 30 breaths per minute	1
Systolic blood pressure < 90 mm Hg or Diastolic blood pressure ≤ 60 mm Hg	1
Age ≥ 65 years	1
Total points:	

CRB-65 score‡	Deaths/total (%)*	Recommendation†
0	2/212 (0.9)	Very low risk of death; usually does not require hospitalization
1	18/344 (5.2)	Increased risk of death; consider hospitalization
2	30/251 (12.0)	
3 or 4	39/125 (31.2)	High risk of death; urgent hospitalization

WHICH IS BETTER?

Severity assessment tools for predicting mortality in hospitalised patients with community-acquired pneumonia. Systematic review and meta-analysis

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	Sensitivity	Specificity
PSI		
≥III	98.2% (97.8−98.5%)	38.8% (38.4−39.2%)
≥IV	91.4% (90.8−92.1%)	49.5% (49.2−49.9%)
≥V	63.2% (62.1−64.3%)	83.6% (83.4−83.9%)
CURB65		
≥1	98.6% (97.6−99.2%)	26.5% (26.5−27.4%)
≥2	89.1% (87.1−90.8)	52.2% (51.3−53.1%)
≥3	62.0% (59.3−64.6%)	80.8% (80.2−81.4%)
≥4	29.0% (26.3−31.8%)	95.3% (95.0−95.7%)
CRB65		
≥1	94.4% (94.2−94.6%)	38.3% (38.1−38.5%)
≥2	72.7% (69.3−76.0%)	70.8% (69.8−71.8%)
≥3	29.1% (28.8−29.5%)	90.9% (90.8−91.0%)

	Observed mortality	Predicted mortality	RR (95% CI)	p Value	I²
PSI					
I–II	0.75%	0.3%	2.24 (1.27 to 3.96)	0.005	0%
I–III	1.6%	0.4%	3.64 (2.72 to 4.87)	<0.00001	0%
IV	8.9%	9.3%	0.91 (0.79 to 1.06)	0.2	48%
V	28.2%	27%	0.99 (0.88 to 1.11)	0.9	57%
CURB65					
0–1	2.0%	1.2%	1.63 (1.11 to 2.40)	0.01	27%
2	8.3%	9%	0.95 (0.74 to 1.21)	0.7	55%
3–5	22.3%	22.6%	1.03 (0.84 to 1.25)	0.8	76%
CRB65					
0	2.3%	0.9%	1.15 (0.45 to 2.94)	0.8	52%
1–2	13.3%	8.1%	1.13 (0.83 to 1.55)	0.4	90%
3–4	34.4%	31.2%	1.06 (0.91 to 1.23)	0.5	31%

PSI, Pneumonia Severity Index.
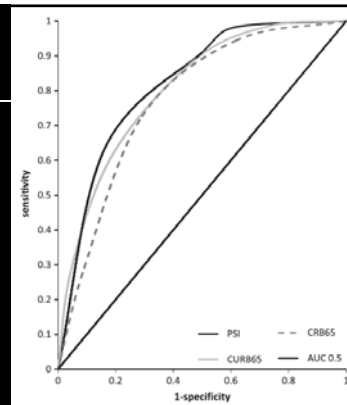
CONCLUSION

- There were no significant differences in overall test performance between PSI, CURB65 and CRB65 for predicting mortality from community-acquired pneumonia.

Scheme 1. Diagnostic criteria for sepsis

Scheme 2.

Severe sepsis = sepsis-induced tissue hypoperfusion or organ dysfunction (any of the following thought to be due to the infection)
Sepsis-induced hypotension
Lactate greater than the upper limits of normal laboratory results
Urine output <0.5 mL/kg hr for >2 hrs, despite adequate fluid resuscitation
ALI with Pao_2/Fio_2 <250 in the absence of pneumonia as infection source
ALI with Pao_2/Fio_2 <200 in the presence of pneumonia as infection source
Creatinine >2.0 mg/dL (176.8 µmol/L)
Bilirubin >2 mg/dL (34.2 µmol/L)
Platelet count <100,000
Coagulopathy (INR >1.5)

SEPSIS RESUSCITATION BUNDLE(in 6 hrs)

The goal is to perform all indicated tasks 100% of the time within the first 6 hours of identification of severe sepsis.
The tasks are:

1. Measure serum lactate
2. Obtain blood cultures prior to antibiotic administration
3. Administer broad-spectrum antibiotic, *within 3 hrs of ED admission and within 1 hour of non-ED admission*
4. In the event of hypotension and/or a serum lactate > 4 mmol/L
   a. Deliver an initial minimum of 20 ml/kg of crystalloid or an equivalent
   b. Apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain mean arterial pressure (MAP) > 65 mm Hg
5. In the event of persistent hypotension despite fluid resuscitation (septic shock) and/or lactate > 4 mmol/L
   a. Achieve a central venous pressure (CVP) of ≥ 8 mm Hg
   b. Achieve a central venous oxygen saturation (ScvO2) ≥ 70 % or mixed venous oxygen saturation (SvO2) ≥ 65 %

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SEPSIS MANAGEMENT BUNDLE(in 24 hrs)

Efforts to accomplish these goals should begin immediately, but these items may be completed within 24 hours of presentation for patients with severe sepsis or septic shock.

1. Administer low-dose steroids for septic shock in accordance with a standardized ICU policy. *If not administered*, document why the patient did not qualify for low-dose steroids based upon the standardized protocol.
2. Administer drotrecogin alfa (activated) in accordance with a standardized ICU policy. *If not administered*, document why the patient did not qualify for drotrecogin alfa (activated).
3. Maintain glucose control ≥ 70, but < 150 mg/dl
4. Maintain a median inspiratory plateau pressure (IPP)* < 30 cm H2O for mechanically ventilated patients

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THANKS FOR YOUR ATTANTION