COVID-GRAM: A Clinical Risk Score to Predict Development of COVID-19 Critical Illness

abnormality

Cancer

history

How do you identify which patients are likely to develop critical illness at the time they are admitted to the hospital?

POPULATION

- · Retrospective cohort
- 575 Chinese hospitals



Cases reported from:

21

2019

31 2020

N = 1590RT-PCR (+) cases

Cohort characteristics:

48.9 yo 57.3% male mean age

71.0% 25.1% ≥1 pre-existing abnormal chest CT condition

CLINICAL COURSE

On hospital admission:

98.5%

Mild CAP Severe CAP

1.5%

CAP: Defined by the American Thoracic Society Guidelines

Critical illness:

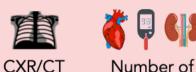


*defined as admission to the ICU, invasive ventilation, or death.

Overall mortality: 3.2%

RISK SCORE PREDICTORS

10 statistically significant predictors identified



LDH



Age

comorbidities





Neutrophil-tolymphocyte ratio



Dyspnea





Hemoptysis Unconsciousness Predictors supported by other studies

COVID-GRAM calculator:

- 10 predictors
- Weighted by strength of effect (by logistic regression)

Validation:

- Validation cohort (n=710) showed AUC (~accuracy) of 0.88.
- This matched internal validation

Versus CURB-65*:

- For COVID patient, CURB-6 AUC = 0.75.
- COVID-GRAM thus has higher predictive value for severity of pneumonia. *CURB-6 in paper

LIMITATIONS

- Limited external validity outside of China
- Data was collected early in the pandemic
- Small sample size for risk score construction

CONCLUSION

COVID-GRAM, the web-based calculator developed from these results, may be able to predict which patients progress to critical illness in order to optimize care.



Access COVID-GRAM online

Reference: Liang et al. Development and Validation of a Clinical Risk Score to Predict the Occurrence of Critical Illness in Hospitalized Patients with COVID-19. JAMA. May 12, 2020 doi:10.1001/jamainternmed.2020.2033

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Creators: Emerson Bouldin, MS3 @em_bouldin; Rachel Fried, MS3 @RachelFried6

Editors: Tyler Daugherty, MS4 @tylerdau; Caroline Coleman, MS4 @cg_coleman Reviewer: Dr. Dierdre Axell-House, MD @AxellHouse





