

# Emergency Departments - Prognosis during COVID-19 Guideline<sup>32,33,34,88, 89,90, 91,92,93</sup> - April 14, 2020 0745

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**Introductions:** Certain historical, clinical, and laboratory features likely correlate with a worse prognosis. Multiple imaging findings are possible through a wide spectrum of disease severity ([See "COVID One Page Diagnosis."](#))

## Historical Features with Worse Prognosis

Age >60  
Diabetes Hypertension  
Immunosuppression  
Cardiovascular disease  
Chronic lung diseases

Hypertension Cancer  
Chronic kidney disease  
Obesity (BMI >40) Liver Disease

## Clinical Features with Worse Prognosis Likely to Require Intubation

1. **Rapid progression** over hours
2. **Lack of improvement** on >40L/minute high flow nasal cannula (HFNC) with FiO2 >0.6
3. Evolving **hypercapnia**
4. Hemodynamic **instability** or **multiorgan failure**

### Ratio of Oxygen Saturation (ROX)

((SpO2/FiO2)/Respiratory Rate)

**ROX ≥ 4.88** at 2, 6, 12 hours on HFNC associated with **lower risk of intubation.**

Example 1: SpO2 100%, FiO2 0.21, RR 20: ROX = (100/0.21)/20 = 23.8 (>4.88 = good, likely to avoid vent)

Example 2: SpO2 85%, FiO2 1.0, RR 30: ROX = (85/1.0)/30 = 2.8 (<4.88 = more likely to need vent)

## Laboratory Features with Worse Prognosis

Lymphopenia: ALC < 800/microliter  
CRP > 100 mg/liter  
Elevated IL-6  
Ferritin >500 mcg/liter  
LDH >245 units/liter  
CPK > twice normal limit  
D-dimer >1000 ng/ml  
Acute kidney injury  
Elevated PT  
Elevated liver enzymes

### Elevated Neutrophil to Lymphocyte Ratio (NLR)

Calculate: (Absolute Neutrophil Count) / (Absolute Lymphocyte Count) OR (% Neutrophils) / (% Lymphocytes)

(NLR Normal 1-3, Mild Stress 6-9, **Critically ill often >9**)

(Note: NLR is a marker of severity of illness / stress, NOT specific to COVID-19.)