

Blood Test Indices for COVID-19 Patient Management

	Test Parameter	Reference Interval	Symptom* Onset	Admission	Hospitalization		Discharge**
			9 days (median)		12 days (median)		(Reference from COVID-19 Designated Hospitals, China)
WBC	White blood cells (WBC)	4.0-10.0 x10 ⁹ /L	Normal, or slightly elevated		Survivals	Shifting with slight increase within the reference range ¹	> 3.0 x10 ⁹ /L
					None-survivals	Exceeding the upper reference range ¹	
	Lymphocyte number (Lym#)	0.8-4.0 x10 ⁹ /L	Normal, or slightly decreased		Survivals	Progressively decreasing, then rising back during recovery.	> 1.0 x10 ⁹ /L
					None-survivals	Persistent decrease, fluctuating at low level (below 0.8 x10 ⁹ /L) ¹	
					In Mindray COVID-19 retrospective study, AI acquired Lym# & RDW-SD parameter (unpublished, requiring further verification) > 0.794 could predict severe progression.		
	Monocyte number (Mon#)	0.12-1.2 x10 ⁹ /L	Normal, or slightly decreased		Monocyte deform to phagocyte, engulfing virus. In the deterioration process, Mon cell cluster appears some sudden change in SF CUBE (Mindray unpublished retrospective study).		0.12-1.2 x10 ⁹ /L
	Neutrophil number (Neu#)	2.0-7.0 x10 ⁹ /L	Normal, or slightly elevated		Survivals	Progressively increasing, rising slowly within the reference range ¹	> 1.5 x10 ⁹ /L
					None-survivals	Progressively increasing, exceeding the upper reference range ¹	
Eosinophil number (Eos#)	0.02-0.5 x10 ⁹ /L	Normal, or slightly decreased		Progressively decreasing, some will fall out of the lower reference range ³		0.02-0.5 x10 ⁹ /L	
High fluorescent Cell number (HFC#)	0.00 x10 ⁹ /L	Normal, or slightly increased		Some results will be flagged with atypical lymphocyte.		0.00 x10 ⁹ /L	
Neutrophil-to-lymphocyte ratio (NLR)	Cutoff: 3.13 ²	Normal, or slightly increased		Elderly patients (>50 years) with NLR>3.13 are recommended to transfer to ICU ²		NA	
NLR & RDW-SD	Cutoff: 1.06 ⁴	Normal, or slightly increased		Patients with NLR & RDW-SD > 1.06 can be classified as the severe progression for more intervention therapy ⁴		NA	
RBC / RET	Reticulocyte number (Ret#)	0.02-0.20 x10 ¹² /L	Normal, or slightly increased, could decrease in severe cases		Severe and critically ill patients will have high Ret count and IRF (Mindray unpublished retrospective study).		> 0.02 x10 ¹² /L
	Immature Reticulocyte Fraction (IRF)	0.0-25.0 %					0.0-25.0 %
	Hemoglobin (HGB)	110-160 g/L	Normal, or slightly decreased		Progressively decreasing, then rising back during recovery		> 90 g/L
	Red blood cell distribution width – standard deviation (RDW-SD) ⁵	35.0-56.0 fl	Normal, or slightly increased		Progressively increasing, can be combined with other parameters for severity identification or prediction.		35.0-56.0 fl
PLT	Platelet count (PLT)	100-300 x10 ⁹ /L	Normal, or slightly increased, could decrease in severe cases		In the well-controlled cases, PLT rises progressively, then declining during recovery		> 80 x10 ⁹ /L
					Decreasing with septic deterioration ⁶ , then rising back during recovery		
	Platelet Distribution Width (PDW)	6.5-12.0 fl	Normal, or slightly increased		Progressively increasing, then going down during recovery		6.5-12.0 fl
	Immature Platelet Fraction (IPF)	0.9-10.0 %	Normal, or slightly increased		Progressively increasing, then going down during recovery		0.9-10.0 %
Platelet-large cell count (P-LCC)	30-90 x10 ⁹ /L	Normal, or slightly increased		Progressively increasing, then going down during recovery		30-90 x10 ⁹ /L	
CRP	Full-range C-reactive protein (FR-CRP)	0.00-4.00 mg/L	Slightly increased		Progressively increasing, CRP > 34mg/L plus age > 60 years indicating high probability of mortality in 12 days ⁷		0.00-4.00 mg/L

*Symptoms: fever, cough, breathing difficulties, headache, diarrhea

**Discharge: Under the premise that the patient's nucleic acid test result is negative for two consecutive days (alveolar lavage fluid is recommended⁸)

References:

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