

Routine Laboratory 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)		Normal, or slightly elevated	Survivals	Shifting with slight increase within the reference range ¹		
				None-survivals	Exceeding the upper reference range ¹		
	Lymphocyte number (Lym#)			Survivals	Progressively decreasing, followed by recovering climbing back.		
				None-survivals			
				In Mindray COVID-19 retrospective study, AI acquired Lym# & RDW-SD parameter (unpublished, requiring further verification) 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#)		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 In the deterioration process, Mon cell cluster appears some sudden change in SF CUBE (Mindray unpublished retrospective study).			
	Neutrophil number (Neu#)		Normal, or slightly elevated	Survivals			
			None-survivals				
Eosinophil number (Eos#)		Normal, or slightly decreased	Progressively decreasing, some will fall out of the lower reference range ³				
High fluorescent Cell number (HFC#)		Normal, or slightly increased	Some results will be flagged with atypical lymphocyte.				
Neutrophil-to-lymphocyte ratio (NLR)		Normal, or slightly increased					
NLR & RDW-SD		Normal, or slightly increased	Patients with NLR & RDW-SD > 1.06 can be classified as the severe progression for more intervention therapy ⁴				
RBC / RET	Reticulocyte number (Ret#)		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increased, could decrease in severe cases	Severe and critically ill patients will have high Ret count and IRF (Mindray unpublished retrospective study).			
	Immature Reticulocyte Fraction (IRF)						
	Hemoglobin (HGB)		Normal, or slightly decreased	Progressively decreasing, then rising back during recovery			
	Red blood cell distribution width – standard deviation (RDW-SD) ⁵		Normal, or slightly increased	Progressively increasing, can be combined with other parameters for severity identification or prediction.			
	Platelet count (PLT)		Normal, or slightly increased, could decrease in severe cases				
	Platelet Distribution Width (PDW)		Normal, or slightly increased				
	Immature Platelet Fraction (IPF)		Normal, or slightly increased				
	Platelet-large cell count (P-LCC)		Normal, or slightly increased				
Full-range C-reactive protein (FR-CRP)			Progressively increasing, CRP > 34mg/L plus age > 60 years indicating high probability of mortality in 12 days ⁷				

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Mindray's total laboratory solutions assisted frontline health workers in fighting COVID-19 in China's Leishenshan and Huoshenshan Hospitals, two emergency specialty filed hospitals built in mere a few days in response to the coronavirus.

