COVID-19 ASSESSMENT:
SELECTION OF PERSONAL HEALTH METRICS FOR VISUALIZATION USING HGRAPH

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Selected metrics – Good candidates for visualization using hGraph			
Signs and symptoms			
Sign or symptom:	**Normal values:**	**Suggestive of COVID-19 infection if:**	**Reason for selection:**
Fever (elevated temperature)	97.7–99.5 °F	Elevated	Elevated in 83-99% of hospitalized cases at some point[2,5] (but 56% are afebrile on admission[2,5]).
Labs			
Lab:	**Normal values:**	**Suggestive of COVID-19 infection if:**	**Reason for selection:**
Complete Blood Count (CBC) with differential — **White blood cells (WBC)**	4,500 to 11,000 cells per microliter (cells/mcL)	Low	Low in 30-45% of patients (but elevated in 5% of patients)[2,5].
Platelets	150,000 to 450,000 platelets/mcL	Low	Low in 12-36% of patients[3,5].
White blood cell differential: - **Lymphocyte percentage**	20 to 40%	Low	Low in 83% of patients[2,6]. Predicts disease severity[2,6]. Associated with mortality[2].
White blood cell differential: - **Neutrophil percentage**	40 to 60%	Elevated	Elevated in 38% of patients[2,3]. Predicts disease severity[2].
Comprehensive Metabolic Panel (CMP) — **Albumin**	40.0 to 55.0 g/L	Low	Low in 98% of patients[3].
Blood Urea Nitrogen (BUN)	2.5 to 7.1 mmol/L	Elevated	Elevated in 44% of patients[2].
Creatinine	0.7 to 1.2 milligrams per deciliter (mg/dL) for males and 0.5 to 1.0 mg/dL for females	Elevated	Elevated in an undetermined percentage of patients[11]. Predicts disease severity[11].
Alanine amino transferase (ALT, SGPT)	29 to 33 units per liter (IU/L) for males and 19 to 25 IU/L for females	Elevated	Elevated in 4-53% of patients[2]. Predicts disease severity[2].
Aspartate amino transferase (AST, SGOT)	7 to 56 units per liter (IU/L)	Elevated	Elevated in 4-53% of patients[2]. Predicts disease severity[2].
Procalcitonin (PCT)	0.15 ng/mL or less	Elevated	Elevated in 5.5% of patients overall (14% if severe, 24% in ICU patients)[2].

	Ferritin	12 to 300 nanograms per milliliter of blood (ng/mL) for males and 12 to 150 ng/mL for females	Elevated	Elevated in an undetermined percentage of patients[2]. Predicts disease severity[2].
	D-dimer	500 ng/mL or less	Elevated	Elevated in an undetermined percentage of patients[4]. Associated with mortality[2]. IL-6 and D-Dimer predict disease severity with 93.3% specificity (tandem testing) and 96.4% sensitivity (parallel testing)[4].
	Interleukin-6 (IL-6)	5-15 pg/ml	Elevated	Elevated in an undetermined percentage of patients[4]. IL-6 and D-Dimer predict disease severity with 93.3% specificity (tandem testing) and 96.4% sensitivity (parallel testing)[4].
	C-reactive protein (CRP)	Less than 10 milligram per liter (mg/L)	Elevated	Elevated in 61-86% of patients[2]. Predicts disease severity[2].
	LDH	140 units per liter (IU/L) to 280 IU/L	Elevated	Elevated in 27-75% of patients[2,11]. Predicts disease severity[2].
	International normalized ratio (INR)	1.1 or below	Elevated	Elevated in an undetermined percentage of patients[2]. Predicts disease severity[2].
	Prothrombin time (PT)	10.5 to 13.5 seconds	Elevated	Elevated in 58% of patients[11] (but low in 30% of patients according to other studies[2,3]).
	Thrombin time (TT)	15 to 19 seconds	Elevated	Elevated in an undetermined percentage of patients[4]. Predicts disease severity[4].
	Fibrinogen (FIB)	150–400 mg/dl	Elevated	Elevated in an undetermined percentage of patients[4]. Predicts disease severity[4].
	Glucose (GLU)	72-99mg/dL while fasting	Elevated	Elevated in 51% of patients[3,4]. Predicts disease severity[4].

Other non-selected metrics – Not good candidates for visualization using hGraph			
Signs and symptoms			
Sign or symptom:	**Normal values:**	**Suggestive of COVID-19 infection if:**	**Reason for non-selection:**
Cough	Absent	Present	Present in 46-82% of patients[2,5], but information is difficult to capture from free-text clinical narrative.
Fatigue	Absent	Present	Present in 35% of patients[2], but information is difficult to capture from free-text clinical narrative.

	Normal value	Suggestive of COVID-19	Reason for non-selection
Anorexia	Absent	Present	Present in 40-84% of patients[2], but information is difficult to capture from free-text clinical narrative.
Shortness of breath	Absent	Present	Present in 20-64% of patients[2], but information is difficult to capture from free-text clinical narrative.
Sputum production	Absent	Present	Present in 28–33% of patients[2], but information is difficult to capture from free-text clinical narrative.
Myalgias	Absent	Present	Present in 11-35% of patients[2], but information is difficult to capture from free-text clinical narrative.
Sore throat, rhinorrhea, and other upper respiratory infection symptoms	Absent	Present	Present in <15% of patients[2,5], but information is difficult to capture from free-text clinical narrative.
Diarrhea and other gastrointestinal symptoms	Absent	Present	Present in <10% of patients[2], but information is difficult to capture from free-text clinical narrative.

Imaging			
Test:	**Normal value:**	**Suggestive of COVID-19 infection if:**	**Reason for non-selection:**
Portable CXR	Absence of abnormalities	Variable, bilateral patchy opacities most common.	This imaging pattern is non-specific and overlaps with other infections[2,15]. Information is difficult to capture from free-text clinical narrative.
CXR PA/Lateral	Absence of abnormalities	Variable, bilateral patchy opacities most common.	This imaging pattern is non-specific and overlaps with other infections[2,15]. Information is difficult to capture from free-text clinical narrative.
CT Chest	Absence of abnormalities	Ground glass opacification with or without consolidative abnormalities; more likely bilateral with peripheral distribution[2].	This imaging pattern is non-specific and overlaps with other infections[2,15]. Information is difficult to capture from free-text clinical narrative.

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