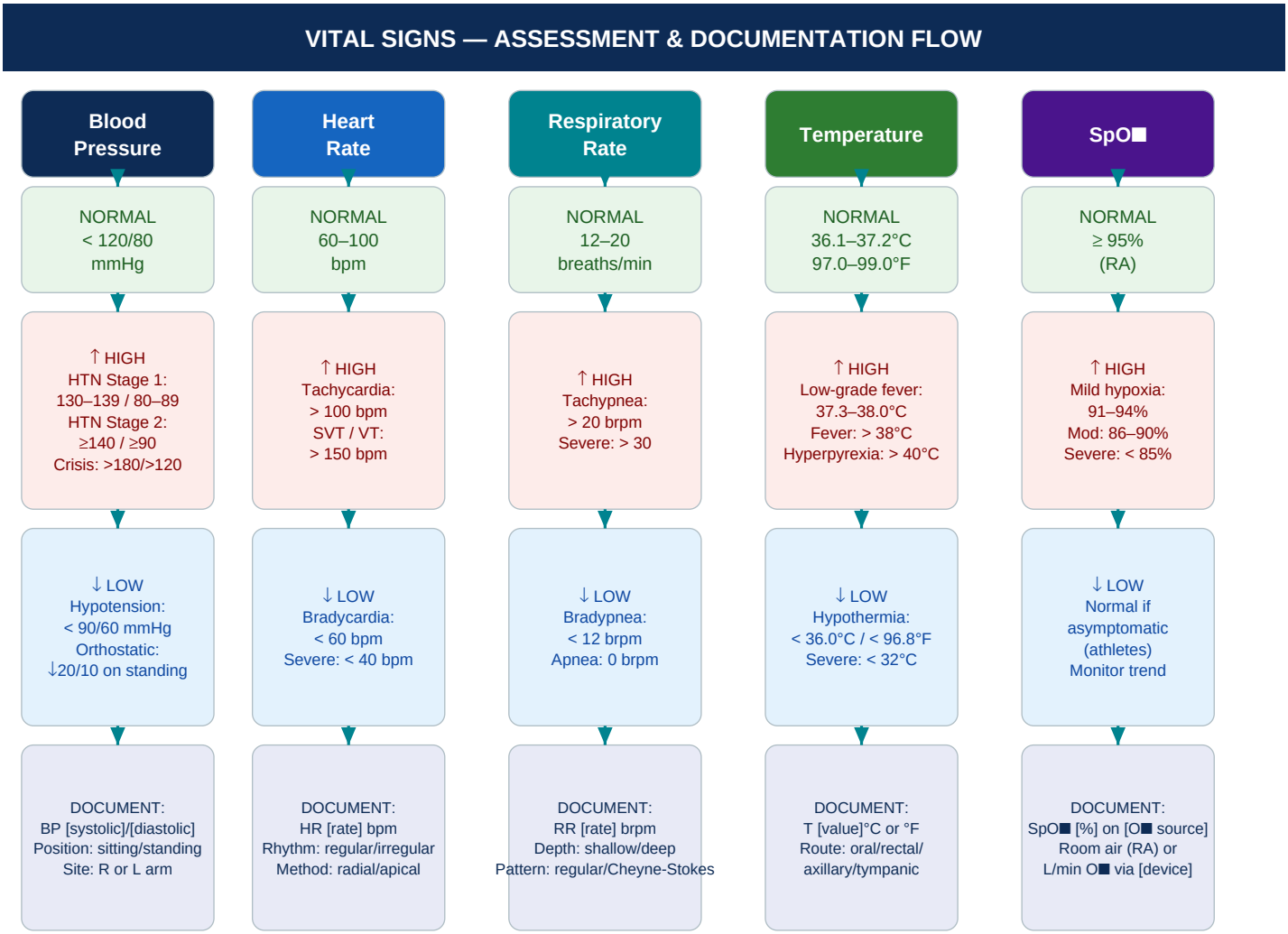
Vital Signs Interpretation Flowchart

Read · Classify · Document · Act · Clinical Reasoning Tool 3 of 3

CR 3/3

Vital signs (VS) are the foundation of clinical assessment. This guide covers correct terminology for documenting each vital sign, how to classify abnormal values, and the clinical reasoning pathway for each finding.



Blood Pressure (BP) — Detailed Reference

Blood pressure = force of blood against arterial walls. Recorded as **systolic/diastolic** mmHg. Systolic = ventricles contracting; Diastolic = ventricles relaxing.

■ NOTIFY PROVIDER IMMEDIATELY FOR ANY OF THESE:

Classification	Systolic (mmHg)	Diastolic (mmHg)	Action / Documentation
Normal	< 120	< 80	Document; encourage lifestyle maintenance
Elevated	120–129	< 80	Lifestyle counseling; recheck in 3–6 months
HTN Stage 1	130–139	80–89	Lifestyle + consider medication; recheck in 1 month
HTN Stage 2	≥ 140	≥ 90	Medication + lifestyle; recheck in 1 week
Hypertensive Urgency	≥ 180	≥ 120	No end-organ damage; reduce BP over 24–48 h; notify provider
Hypertensive Emergency	> 180	> 120	End-organ damage present (chest pain, AMS, vision Δ); STAT intervention
Hypotension	< 90	< 60	Assess for shock, dehydration, sepsis, medication effect; notify provider
Orthostatic Hypotension	↓ ≥ 20 systolic	↓ ≥ 10	Check BP supine → sitting → standing; indicates volume depletion or autonc

Vital Signs Interpretation Flowchart

Read · Classify · Document · Act · Clinical Reasoning Tool 3 of 3

CR 3/3

Heart Rate (HR) — Rhythm & Rate Terminology

Term	Definition	Rate / Characteristic	Common Causes
Normal sinus rhythm	Regular, normal-origin HR	60–100 bpm	Healthy baseline
Sinus bradycardia	Slow sinus rhythm	< 60 bpm	Athletes, beta-blockers, hypothyroidism, increased ICP
Sinus tachycardia	Fast sinus rhythm	> 100 bpm	Pain, fever, anxiety, anemia, dehydration, sepsis
Atrial fibrillation (AFib)	Irregular, disorganized atrial activity	Irregular; often 100–150 bpm	Hypertension, valve disease, hyperthyroidism, alcohol
Supraventricular tachycardia (SVT)	Rapid regular rhythm from above ventricles	> 150 bpm, often 180–220	Accessory pathways, caffeine, stress; often abrupt onset
Ventricular tachycardia (VT)	Rapid, wide-complex rhythm from ventricles	> 150 bpm	MI, cardiomyopathy; may be life-threatening
Ventricular fibrillation (VFib)	Chaotic ventricular activity; no effective contraction	No discernible rate	Cardiac arrest; requires immediate defibrillation
Heart block (3rd degree)	No conduction from atria to ventricles	HR 20–40 bpm (escape)	Inferior MI, Lyme disease, drugs; pacemaker required
Pulseless electrical activity (PEA)	EKG activity without palpable pulse	Organized EKG	Cardiac arrest; CPR + treat reversible causes (Hs & Ts)

Respiratory Rate (RR) & Breathing Patterns

Term	Definition / Pattern	Rate	Associated Conditions
Eupnea	Normal, effortless breathing	12–20 brpm	Healthy baseline
Tachypnea	Rapid breathing	> 20 brpm	Fever, pain, anxiety, PE, pneumonia, acidosis
Bradypnea	Abnormally slow breathing	< 12 brpm	Opioid overdose, CNS depression, hypothyroidism
Apnea	Cessation of breathing	0 brpm (episodes)	Sleep apnea, opioid OD, neurological injury, cardiac arrest
Hyperpnea	Increased depth of breathing	Normal or elevated rate	Exercise, anxiety, metabolic acidosis
Kussmaul breathing	Deep, labored, rapid breathing	Fast rate + increased depth	Diabetic ketoacidosis (DKA), renal failure
Cheyne-Stokes	Cyclical: crescendo–decrescendo then apnea	Cyclic pattern	CHF, stroke, opioids, TBI, high altitude
Biot's breathing	Irregular pattern with sudden apnea pauses	Irregular	Increased intracranial pressure, meningitis
Agonal breathing	Gasping, irregular, ineffective breaths	Very slow, irregular	Cardiac arrest, pre-death; not effective ventilation

Temperature — Routes, Conversions & Classifications

Formula: °C × 9/5 + 32 = °F | (°F – 32) × 5/9 = °C | Rectal temp is ~0.5°C higher than oral; axillary is ~0.5°C lower.

Classification	°C Range	°F Range	Terminology & Notes
Hypothermia (mild)	32–36°C	89.6–96.8°F	Shivering, confusion, tachycardia; warm gradually
Hypothermia (severe)	< 32°C	< 89.6°F	Paradoxical undressing, arrhythmias, loss of consciousness
Normal (oral)	36.1–37.2°C	97.0–99.0°F	Eupyrexia; circadian variation normal (lowest at 6 AM)
Low-grade fever	37.3–38.0°C	99.1–100.4°F	Subfebrile; may not require treatment
Fever (pyrexia)	38.1–40.0°C	100.6–104.0°F	Document: febrile (adj); likely infection, inflammation, or malignancy
High fever	40.1–41.0°C	104.2–105.8°F	Antipyretics + cooling; cultures, CBC, blood cultures
Hyperpyrexia	> 41°C	> 105.8°F	Medical emergency; heatstroke, malignant hyperthermia, CNS injury

Oxygen Saturation (SpO■) & Oxygen Delivery Terminology

Vital Signs Interpretation Flowchart

Read · Classify · Document · Act · Clinical Reasoning Tool 3 of 3

CR 3/3

SpO■ Range	Classification	Clinical Response & Terminology
≥ 95%	Normal	Eupnea; no supplemental O■ needed (unless baseline is abnormal)
91–94%	Mild hypoxia	Supplemental O■ via nasal cannula (NC) 1–4 L/min; assess cause
86–90%	Moderate hypoxia	O■ via simple face mask (SFM) 5–10 L/min; urgent evaluation
< 86%	Severe hypoxia	Non-rebreather mask (NRB) at 15 L/min; prepare for intubation
< 80%	Critical hypoxemia	Immediate airway management; RSI if needed; STAT ABG
Unable to read	Signal artifact / poor perfusion	Assess perfusion, try different probe location; obtain ABG

O■ Delivery Device	Flow Rate	FiO■ Delivered	Terminology
Nasal cannula (NC)	1–6 L/min	24–44%	Low-flow; comfortable; FiO■ ≈ 21% + 4% per L/min
Simple face mask (SFM)	5–10 L/min	35–50%	Medium-flow; must be ≥ 5 L/min to flush CO■
Venturi mask	4–15 L/min	24–60% (precise)	High-flow with controlled FiO■; used in COPD (controlled O■)
Partial rebreather mask	6–10 L/min	40–70%	Has reservoir bag; exhaled air partially rebreathes
Non-rebreather mask (NRB)	10–15 L/min	60–95%	One-way valves; highest non-invasive O■ delivery
High-flow nasal cannula (HFNC)	Up to 60 L/min	21–100%	Heated, humidified; Optiflow/Airvo; for severe hypoxia
Bag-valve mask (BVM)	15 L/min reservoir	~100%	Manual ventilation; used in apnea/cardiac arrest
Mechanical ventilator	Programmed	21–100% (set FiO■)	Intubated patient; terms: PEEP, tidal volume, FiO■, mode

Pain Assessment — Terminology & Documentation

Pain is considered the **5th vital sign**. Accurate documentation of pain requires standardized terminology. Use the **OLDCARTS** mnemonic for full pain assessment.

OLDCARTS Element	Question to Ask	Documentation Terms
O — Onset	When did it start? Sudden or gradual?	Acute onset, insidious onset, sudden onset
L — Location	Where is the pain? Does it move?	Localized, diffuse, radiating to [location]
D — Duration	How long does it last?	Constant, intermittent, episodic, persistent
C — Character	What does it feel like?	Sharp, dull, aching, burning, throbbing, crampy, colicky, pressure-like
A — Aggravating factors	What makes it worse?	Exacerbated by movement/eating/breathing/palpation
R — Relieving factors	What makes it better?	Relieved by rest/medication/position/heat/ice
T — Timing	Is it always there? Any pattern?	Nocturnal, postprandial, exertional, at rest
S — Severity	Rate 0–10; how does it affect you?	Mild (1–3), moderate (4–6), severe (7–10); NRS, VAS, FACES scale

Quick VS Documentation Examples — Correct vs. Incorrect

VS Component	✗ Incorrect Documentation	✓ Correct Documentation
Blood Pressure	BP good	BP 128/82 mmHg, left arm, sitting
Heart Rate	Pulse fast and irregular	HR 118 bpm, irregular (consistent with AFib)
Respiratory Rate	Breathing OK	RR 22 brpm, shallow, SpO■ 93% on RA
Temperature	Temp elevated	T 38.6°C (101.5°F) oral; patient febrile

Vital Signs Interpretation Flowchart

Read · Classify · Document · Act · Clinical Reasoning Tool 3 of 3

CR 3/3

VS Component	✗ Incorrect Documentation	✓ Correct Documentation
SpO■	O■ sat low, gave O■	SpO■ 89% on RA → 96% on 4 L/min NC; patient denies SOB
Pain	Complains of pain	Patient c/o 7/10 sharp, radiating chest pain onset 30 min ago, aggravated by de
Full VS Set	VS stable	T 37.2°C, BP 134/86, HR 88 bpm regular, RR 16 brpm, SpO■ 98% RA, Pain 2/1