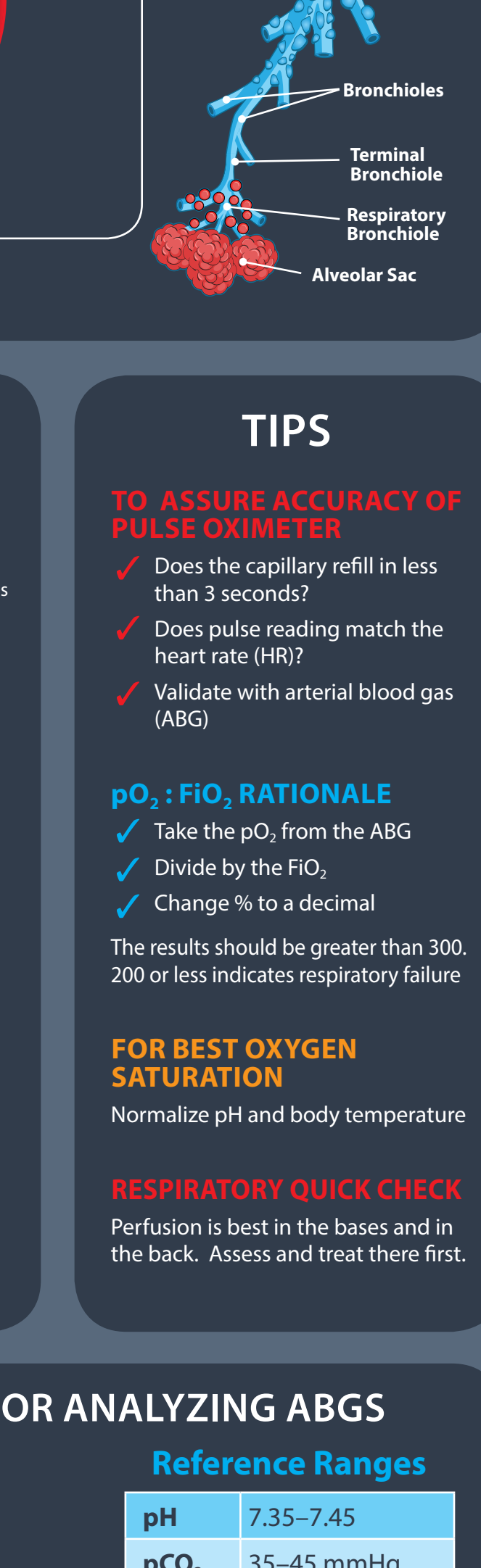
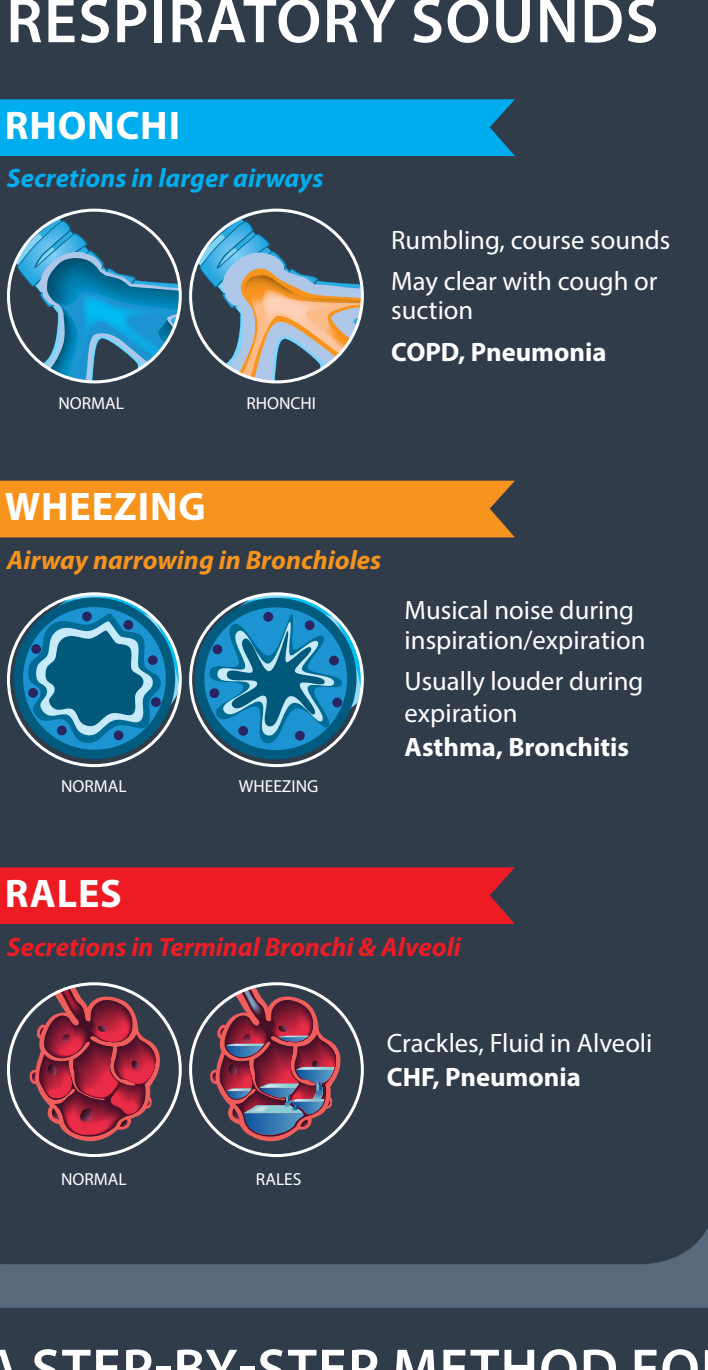


THE ASSESSMENT COMPANION

RESPIRATORY

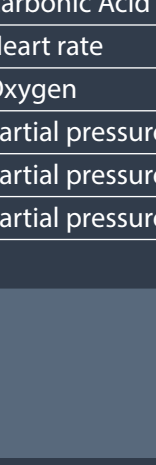
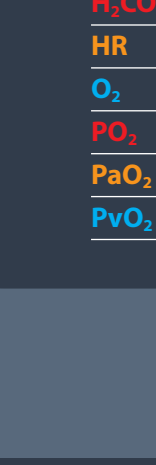
ANATOMY OF THE LUNGS



RESPIRATORY SOUNDS

RHONCHI

Secretions in larger airways



Rumbling, coarse sounds
May clear with cough or suction
COPD, Pneumonia

WHEEZING

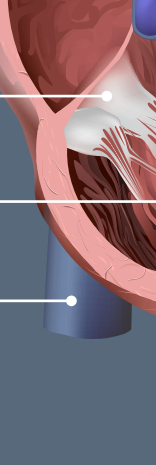
Airway narrowing in Bronchioles



Musical noise during inspiration/expiration
Usually louder during expiration
Asthma, Bronchitis

RALES

Secretions in Terminal Bronchi & Alveoli



Crackles, Fluid in Alveoli
CHF, Pneumonia

TIPS

TO ASSURE ACCURACY OF PULSE OXIMETER

- ✓ Does the capillary refill in less than 3 seconds?
- ✓ Does pulse reading match the heart rate (HR)?
- ✓ Validate with arterial blood gas (ABG)

pO₂ : FiO₂ RATIONALE

- ✓ Take the pO₂ from the ABG
- ✓ Divide by the FiO₂
- ✓ Change % to a decimal

The results should be greater than 300. 200 or less indicates respiratory failure

FOR BEST OXYGEN SATURATION

Normalize pH and body temperature

RESPIRATORY QUICK CHECK

Perfusion is best in the bases and in the back. Assess and treat there first.

A STEP-BY-STEP METHOD FOR ANALYZING ABGS

- 1 Is the pH out of range?
- 2 Is the pCO₂ normal?
- 3 Is the HCO₃ out of range?
- 4 Match the abnormal result with the pH
- 5 Does the PaCO₂ or HCO₃ go in the opposite direction of the pH?
- 6 Is the pO₂ and SO₂ out of range?

Reference Ranges

pH	7.35–7.45
pCO ₂	35–45 mmHg
HCO ₃	22–26 mEq/L
pO ₂	80–100 mmHg
SO ₂	95–100%

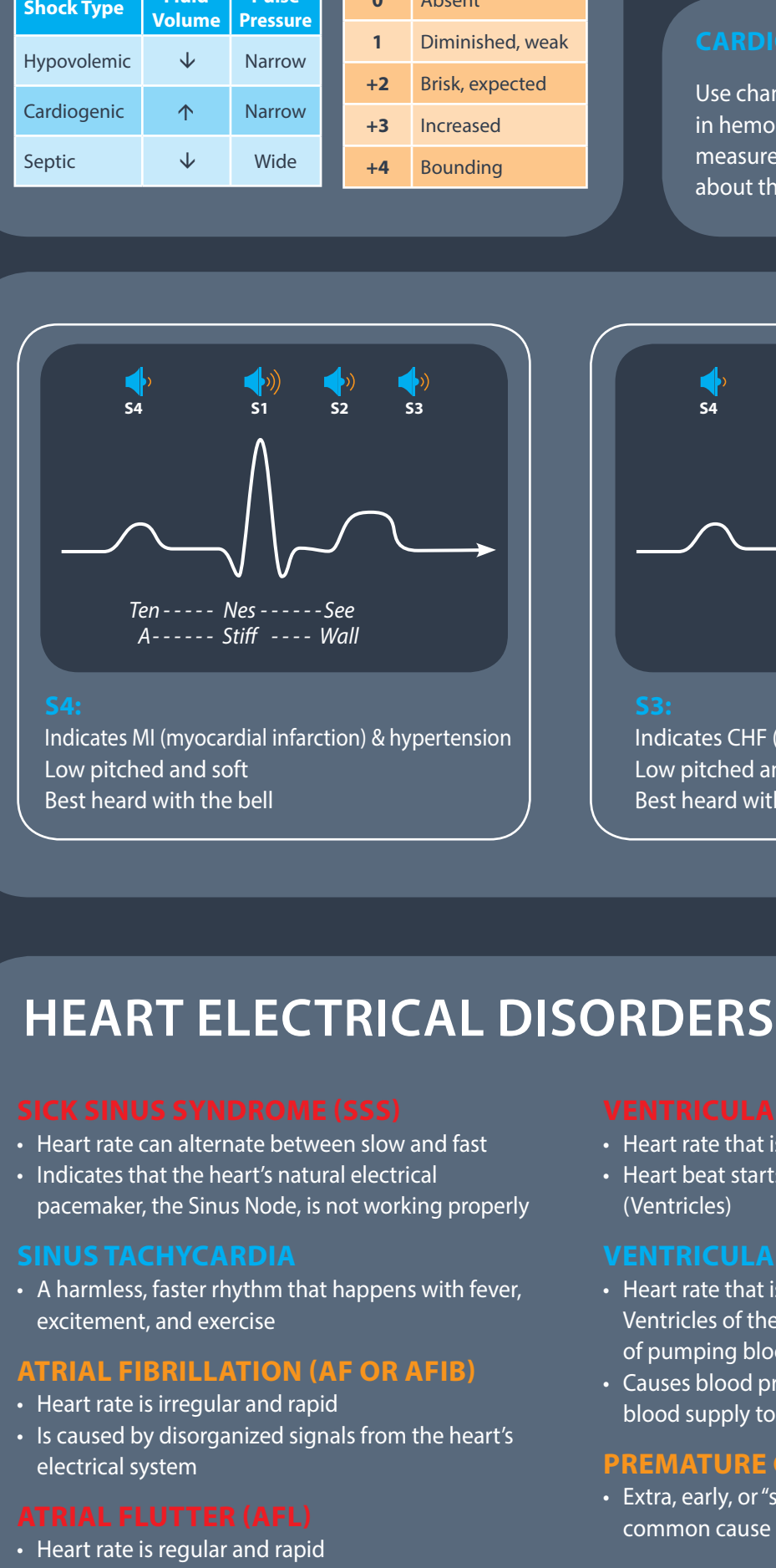
RESPIRATORY ALPHABET SOUP

ABG	Arterial blood gas
CO₂	Carbon dioxide
FiO₂	Fraction of inspired oxygen
HCO₃	Bicarbonate
H₂CO₃	Carbonic Acid
HR	Heart rate
O₂	Oxygen
pO₂	Partial pressure of oxygen
PaO₂	Partial pressure of oxygen in arterial blood
PvO₂	Partial pressure of oxygen in venous blood

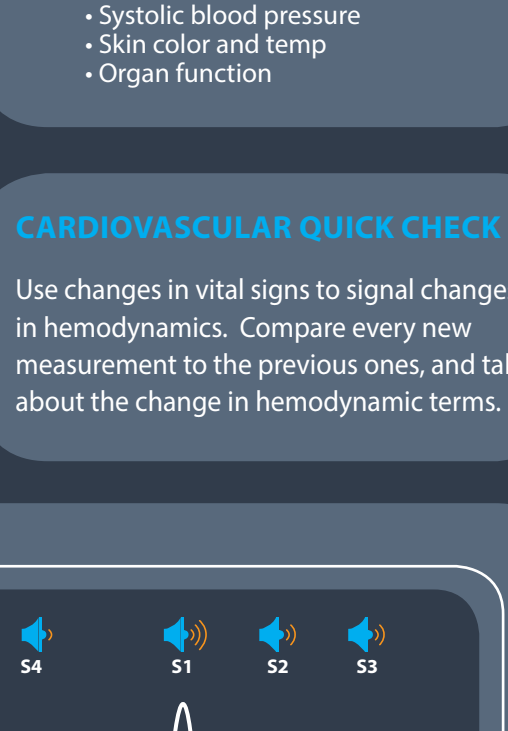
PCO₂	partial pressure of carbon dioxide
PaCO₂	Partial pressure of carbon dioxide in arterial blood
pH	Potential of hydrogen
PvCO₂	Partial pressure of carbon dioxide in venous blood
SO₂	Oxygen saturation
SAO₂	Oxygen saturation in arterial blood
SVo₂	Oxygen saturation in venous blood
TCO₂	Total carbon dioxide content

CARDIOVASCULAR

ANATOMY OF THE HEART



THE HEART WALL



The pericardial space (filled with pericardial fluid):

- Limits the movement of the heart
- Protects it from infections coming from other organs
- Prevents excessive dilation of the heart
- Lubricates the heart

ABNORMAL PULSES

HYAL, THREADY PULSE

Cause: Shock

BOUNDING PULSE

Cause: Hyperdynamic phase of sepsis
hypertension

PULSUS ALTERNANS (STRONG, WEAK)

Cause: Severe cardiac dysfunction

PULSUS PARADOXUS

Cause: Mechanical ventilation
Air trapping (asthma, COPD)
Cardiac tamponade

SHOCK			PERIPHERAL PULSES		
Shock Type	Pulst Volume	Pulse Pressure	0	1	2
Hypovolemic	↓	Narrow	0	Diminished, weak	
Cardiogenic	↑	Narrow	+2	Brisk, expected	
Septic	↓	Wide	+3	Increased	
			+4	Bounding	

FLUID VOLUME: (PRELOAD)

- CVP (0-8 mmHg)
- PAOP (5-12 mmHg)
- JVD
- Dependent edema
- Capillary refill
- I & O
- Daily weights

RESISTANCE: (AFTERLOAD)

- SVR (800-1400 dynes)
- Diastolic blood pressure
- Skin color and temp
- Capillary refill
- Organ dysfunction

PUMP PERFORMANCE (CARDIAC OUTPUT)

- CO (4-8 L/min)
- Systolic blood pressure
- Skin color and temp
- Organ function

CARDIOVASCULAR QUICK CHECK

Use changes in vital signs to signal changes in hemodynamics. Compare every new measurement to the previous ones, and talk about the change in hemodynamic terms.

HEART ELECTRICAL DISORDERS

SICK SINUS SYNDROME (SSS)

- Heart rate can alternate between slow and fast
- Indicates that the heart's natural electrical pacemaker, the Sinus Node, is not working properly

SINUS TACHYCARDIA

- A harmless, faster rhythm that happens with fever, excitement, and exercise

ATRIAL FIBRILLATION (AF OR A-FIB)

- Heart rate is irregular and rapid
- Is caused by disorganized signals from the heart's electrical system

ATRIAL FLUTTER (AFL)

- Heart rate is regular and rapid
- Is caused by a single electrical wave that circulates very rapidly in the atrium

JUNCTIONAL RHYTHM

- Occurs when the AV Node takes over as the primary pacemaker site in the heart either because the SA node has failed or the AV Node is going faster and over takes the SA Node
- Junctional rhythm: 40-60 beats per minute
- Accelerated junctional rhythm: 60-100 beats per minute
- Junctional tachycardia: greater than 100 beats per minute

VENTRICULAR TACHYCARDIA (VT)

- Heart rate that is regular and rapid
- Heart beat starts in the lower part of the heart (ventricles)

VENTRICULAR FIBRILLATION (VF)

- Heart rate that is regular and rapid which cause the ventricles of the heart to quiver uselessly, instead of pumping blood
- Causes blood pressure to plummet, cutting off blood supply to the vital organs

PREMATURE CONTRACTIONS

- Extra, early, or "skipped" beats are the most common cause of irregular heart rhythms

LONG QT SYNDROME (LQTS)

- Disorder of the electrical system

HEART BLOCK

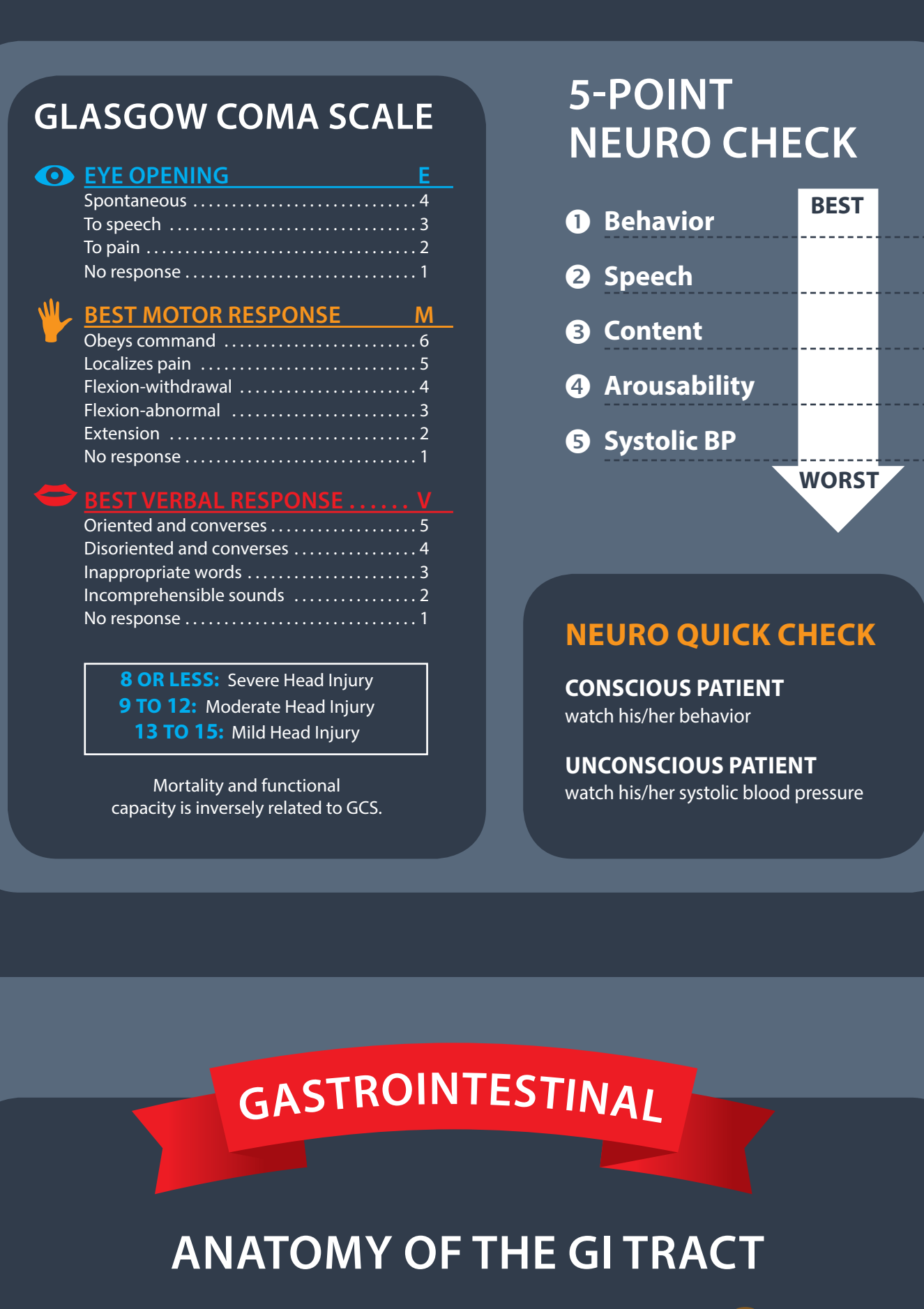
- Heart rate is too slow
- Caused when the electrical signals from the upper chambers of the heart (Atria) cannot travel to the lower chambers (ventricles)

SYNCOPE (FAINTING)

- A heart rhythm disorder that causes fainting or feeling as if one might pass out

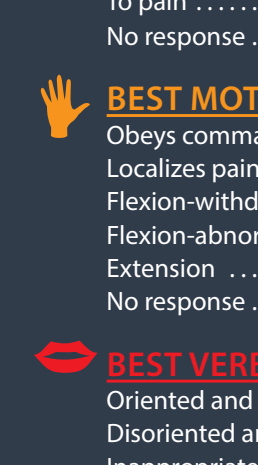
GENITOURINARY

ANATOMY OF THE URINARY SYSTEM



GU QUICK CHECK

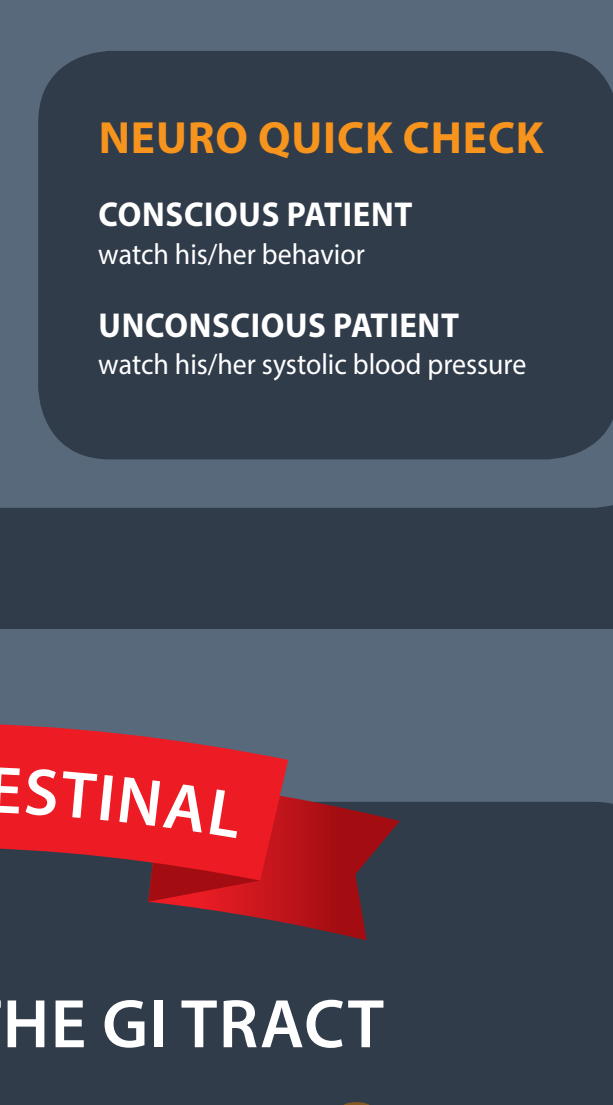
Decreased urine output could be from dehydration or acute renal dysfunction—check the creatinine clearance.



URINE COLOR INTERPRETATION

WHITE	Over hydration	SYRUP	Severe dehydration, liver dysfunction
PALE YELLOW	Normal	DARK BROWN	Severe dehydration, liver dysfunction
DARK YELLOW	Dehydration, vitamins	SMOKEY BROWN	Drugs
AMBER OR HONEY	Dehydration, vitamins	PINK OR RED	Blood, drugs, food
ORANGE	Dehydration, food, vitamins, liver dysfunction	BLUE OR GREEN	Food, bacterial infection, medications

NEPHRON



GLASGOW COMA SCALE

EYE OPENING	E
Spontaneous	4
To speech	3
To pain	2
No response	1

BEST MOTOR RESPONSE	M
Obeys command	6
Localizes pain	5
Flexion-withdrawal	4
Flexion-abnormal	3
Extension	2
No response	1

BEST VERBAL RESPONSE	V
Oriented and converses	5
Disoriented and converses	4
Inappropriate words	3
Incomprehensible sounds	2
No response	1

8 OR LESS: Severe Head Injury
9 TO 12: Moderate Head Injury
13 TO 15: Mild Head Injury

Mortality and functional capacity is inversely related to GCS.

5-POINT NEURO CHECK

	BEST
1 Behavior	
2 Speech	
3 Content	
4 Arousal	
5 Systolic BP	
	WORST

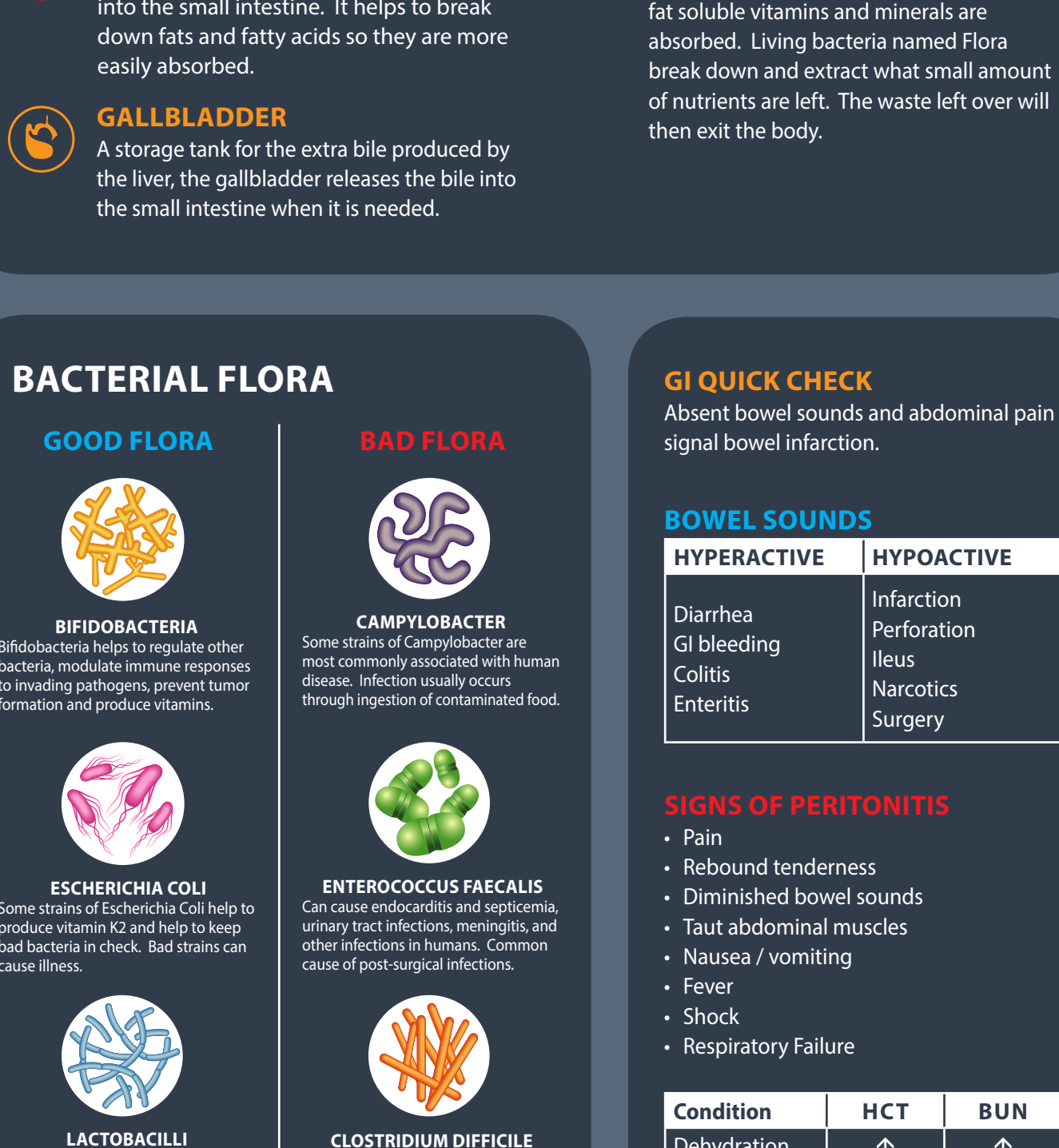
NEURO QUICK CHECK

CONSCIOUS PATIENT
watch his/her behavior

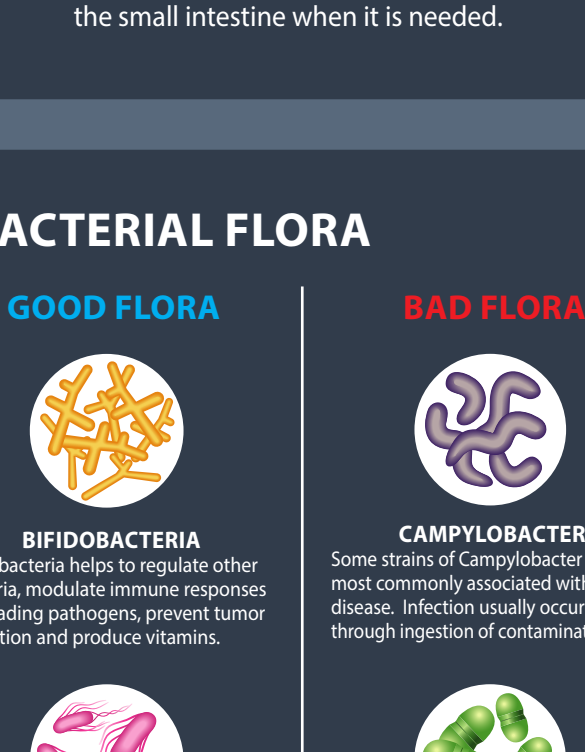
UNCONSCIOUS PATIENT
watch his/her systolic blood pressure

GASTROINTESTINAL

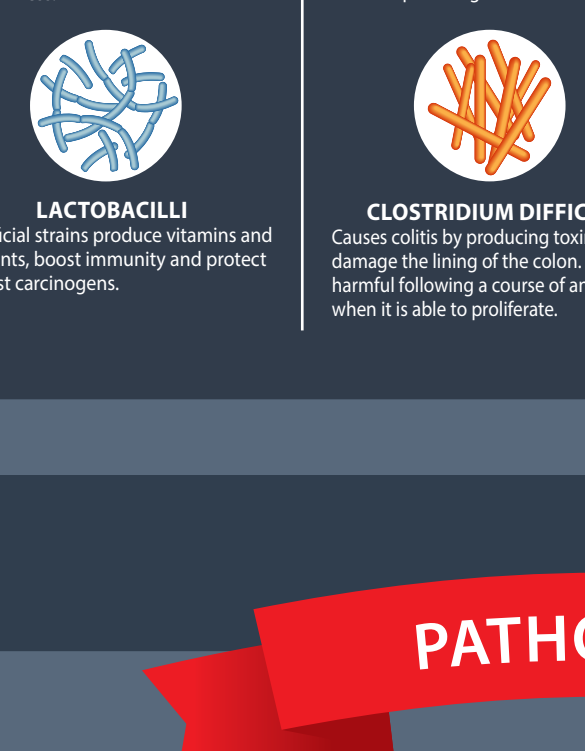
ANATOMY OF THE GITRACT



PANCREAS



INTESTINAL VILLI



GI QUICK CHECK

Absent bowel sounds and abdominal pain signal bowel infarction.

BOWEL SOUNDS

HYPERACTIVE	HYPOACTIVE
Diarrhea	Infarction
GI bleeding	Perforation
Colitis	Ileus
Enteritis	Narcotics
	Surgery

SIGNS OF PERITONITIS

- Pain
- Rebound tenderness
- Diminished bowel sounds
- Taut abdominal muscles
- Nausea / vomiting
- Fever
- Shock
- Respiratory Failure

Condition	HCT	BUN
Dehydration	↑	↑
GI Bleed	↓	Norm
Overhydration	↓	↓

PATHOLOGY

LABS TO WATCH

Basic Metabolic Panel

Normal Values	Normal Values
Glucose	70-100 mg/dL
Calcium	9.0-10.5 mg/dL
Sodium	135-145 mmol/L
Potassium	3.5-5.0 mEq/L
CO ₂	23-29 mmol/L
Chloride	95-103 mEq/L
BUN	8-20 mg/dL
Creatinine	0.7-1.2 mg/dL

Complete Blood Count

Normal Values	Normal Values
White blood cells (WBC)	4500-10000
Red blood cells (RBC)	4.2-6.1
Hemoglobin (Hb)	12.1-17.2
Hematocrit (HCT)	36-50%
Platelets	150,000-450,000
Mean corpuscular volume (MCV)	80-95
Mean corpuscular hemoglobin (MCH)	27-31

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