

ACID BASE CASES

Case 1

A 26 year old man with unknown past medical history is brought in to the ER by ambulance, after friends found him unresponsive in his apartment. He had last been seen at a party four hours prior.

ABG:	pH	7.25	Chem 7:	Na ⁺	137
	PCO ₂	60		K ⁺	4.5
	HCO ₃ ⁻	26		Cl ⁻	100
	PO ₂	55		HCO ₃ ⁻	25

Case 2

A 67 year old man with diabetes and early diabetic nephropathy (without overt renal failure) presents for a routine clinic visit. He is currently asymptomatic. Because of some abnormalities on his routine blood chemistries, you elect to send him for an ABG.

ABG:	pH	7.35	Chem 7:	Na ⁺	135
	PCO ₂	34		K ⁺	5.1
	HCO ₃ ⁻	18		Cl ⁻	110
	PO ₂	92		HCO ₃ ⁻	16
				Cr	1.4
Urine pH:	5.0				

Case 3

A 68 year old woman with metastatic colon cancer presents to the ER with 1 hour of chest pain and shortness of breath. She has no known previous cardiac or pulmonary problems.

ABG:	pH	7.49	Chem 7:	Na ⁺	133
	P _{CO} ₂	28		K ⁺	3.9
	HCO ₃ ⁻	21		Cl ⁻	102
	P _O ₂	52		HCO ₃ ⁻	22

Case 4

A 6 year old girl with severe gastroenteritis is admitted to the hospital for fluid rehydration, and is noted to have a high $[\text{HCO}_3^-]$ on hospital day #2. An ABG is ordered:

ABG:	pH	7.47	Chem 7:	Na^+	130
	PCO_2	46		K^+	3.2
	HCO_3^-	32		Cl^-	86
	PO_2	96		HCO_3^-	33

Urine pH: 5.8

Case 5

A 75 year old man with morbid obesity is sent to the ER by his skilled nursing facility after he developed a fever of 103° and rigors 2 hours ago. In the ER he is lucid and states that he feels “terrible”, but offers no localizing symptoms. His ER vitals include a heart rate of 115, and a blood pressure of 84/46.

ABG:	pH	7.12	Chem 7:	Na ⁺	138
	Pco ₂	50		K ⁺	4.2
	HCO ₃ ⁻	13		Cl ⁻	99
	PO ₂	52		HCO ₃ ⁻	15

Urine pH: 5.0

Case 6

A 25 year old man with type I diabetes presents to the ER with 24 hours of severe nausea, vomiting, and abdominal pain.

ABG: pH	7.15	Chem 7: Na ⁺	138
PCO ₂	30	K ⁺	5.6
HCO ₃ ⁻	10	Cl ⁻	88
PO ₂	88	HCO ₃ ⁻	11
		Cr	1.1

Urine pH: 5.0

Case 7

A 62 year old woman with severe COPD comes to the ER complaining of increased cough and shortness of breath for the past 12 hours. There are no baseline ABGs to compare to, however, her HCO_3^- measured during a routine clinic visit 3 months ago was 34 mEq/L.

ABG:	pH	7.21	Chem 7:	Na^+	135
	PCO_2	85		K^+	4.0
	HCO_3^-	33		Cl^-	90
	PO_2	47		HCO_3^-	34

Urine pH 5.5

Case 8

A 36 year old man with a history of alcoholism is brought to the ER after being found on the floor of his apartment unresponsive, soiled with vomit, and with an empty pill bottle nearby.

ABG:	pH	7.03	Chem 7:	Na ⁺	134
	Pco ₂	75		K ⁺	5.2
	HCO ₃ ⁻	19		Cl ⁻	90
	PO ₂	48		HCO ₃ ⁻	20

Urine pH 5.0