Case 1

A young woman with epilepsy suffers a generalized seizure in the waiting room of the Emergency Department. She had been waiting to have a laceration evaluated. Her seizure lasts approximately 45 seconds.

She is promptly brought to the treatment area, and she is in a post-ictal state

What acid-base abnormalities would you expect to see based on this information? Acidosis or alkalosis? Metabolic or respiratory?

BMP:

140	105	10
4.0	17	.7

78

ABG on room air: pH 7.14 / pCO2 45 / paO2 86

What is her acid-base status/disorder?

1. *Is this an acidosis or alkalosis?*

2. *Is the primary disturbance respiratory or metabolic?*

3. *What is the anion gap?*

4. *If AG is elevated, what is the delta-delta?*

5. *Is the degree of compensation what you expect for the primary disturbance?*

6. *Overall acid-base disorder:*

Are these lab values what you expected based on the clinical vignette?

Case 2

An otherwise healthy 65 y/o woman is admitted to the hospital with profound, bloody diarrhea and ultimately diagnosed with Salmonella enteritis.

In the ER, she was noted to be hypotensive and obtunded. After drawing labs, she received 2 liters .9NS.

Admission vitals: T 39, BP 85/45, RR 22, P 110.
Additionally, her exam is notable for diffuse abdominal tenderness.

While being reevaluated on the floor by the housestaff, she becomes orthostatic again – necessitating additional crystalloid and pressor support.

ER labs:

145	116	42	72
2	9	1.6	

pH 7.14 / 28 / 92 / 95% /

What is the acid-base disturbance?

1. *Is this an acidosis or alkalosis?*

2. *Is the primary disturbance respiratory or metabolic?*

3. *What is the anion gap?*

4. *If AG is elevated, what is the delta-delta?*

5. *Is the degree of compensation what you expect for the primary disturbance?*

6. *Overall acid-base disorder:*

What is the clinical condition?

Case 3

A 22 y/o male with asthma comes to the ER in the morning with increasing dyspnea. He states, "I'm having an asthma attack." His symptoms began last night after mowing his lawn. He has tried his albuterol inhaler every 1-2 hours without much success. His medical history is otherwise unremarkable, and he is not on any medicines.

Exam: Labored breathing with audible end-expiratory wheezing
He can speak in complete sentences.
VS: T 37.5 RR 22 P 110 BP 130/80
HEENT: accessory muscle use; no lymphadenopathy
CV: tachycardic, no murmur
Lungs: good air entry bilaterally, diffuse end-expiratory wheezing

His peak flow is 325. Baseline is 400. CXR: no infiltrate

Is an ABG needed in this clinical condition?

If drew an ABG, what would the results be?

Case 4

An otherwise healthy 24-year-old lady is admitted to your service with a three-day history of profuse, frequent diarrhea and diagnosed with gastroenteritis. She had two episodes of vomiting on the first day of her illness but none since then. She describes ~ 10 episodes of diarrhea per day. She is not on any medicines. She was noted to be orthostatic and tachycardic on exam.

Prior to administering IV fluids, what acid base status would you expect from her lab values?

Specifically, what would her:

1. ***bicarbonate (HCO3-) be?***

2. ***Chloride (Cl-)?***

3. ***pH (if an ABG were drawn)?***

Case 5

A previously healthy 32 y/o female is being evaluated in the ER because of shortness of breath for the past 6 hours. She has no pain, but she describes being anxious prior to a job performance review at the office this morning. She is not on any medicines.

PE: Anxious, fidgety, no respiratory distress
RR 15 T 37 BP 116/84 P 95
The remainder of the exam is normal

Initial labs:

134	98	10	95
4.2	25	.9	

pH: 7.24 / 41 / 96 / 24

What is the acid-base disorder or problem?

1. *Is this an acidosis or alkalosis?*

2. *Is the primary disturbance respiratory or metabolic?*

3. *What is the anion gap?*

4. *If AG is elevated, what is the delta-delta?*

5. *Is the degree of compensation what you expect for the primary disturbance?*

What is your clinical diagnosis?