

Objectives

Upon completion of this lecture the learner should be able to:

- Discuss the compensatory mechanisms for handling an excess of either a metabolic or a respiratory acid.
- Give typical clinical examples of compensatory mechanisms for a metabolic and respiratory acidoses and alkaloses.
- Discuss a system for rapid interpretation of acid-base / blood gas data.

EMC 360 - Acid Base

Interpretation of A - B Data

Evaluation of acid-base / blood gas data values

- Complicated
 - tricks
 - nomograms
 - base excesses or deficits
 - "golden rules"
 - formulas (0.0017 x observed pCO2 change)
- Simplified acid-base interpretation

EMC 360 - Acid Base

Simplified Acid-base Interpretation Start by using only one variable • Look at only the patient's given pCO2 - Ask everything about that variable • is there a respiratory problem? • what effect should this pCO2 have on the pH? - Then ask: is this ONLY a respiratory problem? • or is there also a metabolic component?

Simplified Acid-base Interpretation Step 1 Start by looking at the patient's pCO2 (only) - Ask is there a respiratory problem? yes or no? - If respiratory status is not normal (40) then ask is there a respiratory problem acidotic or alkalotic?

Simplified Acid-base Interpretation Step 2 After putting the pt. In a respiratory category acidosis / normal / alkalosis Then by looking only at the patient's pCO2 — predict [by using a simple table] what effect this pCO2 should have on the pH?

Effect of pC	O2 on ph	
respiratory acidosis	normal	respiratory alkalosis
рСО2 80 рН 7.2	40 7.4	2 0 7.6

Step Analysis of pCO2 + pH Step 3: Ask if there is a mismatch between the CO2 and the expected pH. If no, then this is a straight respiratory problem If yes, then a metabolic component must be

- present to examples that follow nations will have
- In the examples that follow, patients will have a variety of acid-base abnormalities.
 In other patients, the mismatch is caused by a

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Step Analysis of pCO₂ + pH

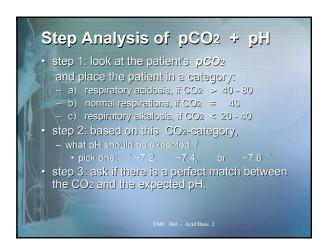
Step 3

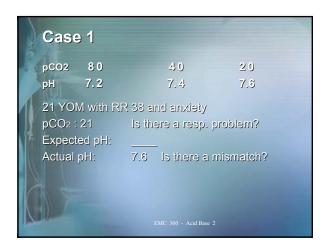
If there is a mismatch between the CO2 and the expected pH.

- Then this mismatch is caused by a metabolic component:
 - metabolic component will either worsen
 - or will improve the patient's respiratory condition.

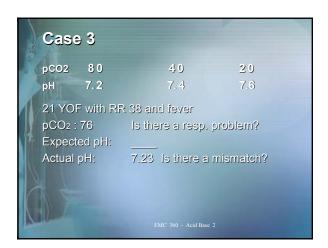
EMC 360 - Acid Base 2

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Case 2	
pCO2 80 pH 7.2	4 0 2 0 7.4 7.6
pCO ₂ : 18 Expected pH:	R 38 and abd. pain, N,V Is there a resp. problem? 7.1 Is there a mismatch?



CO2 80	40	20
H 7.2	7.4	7.5
Expected pH:	Is there a resp. 7.33 Is there a	
iotaai pi i.	2.55 13 11 21	momatom

CO2 80	4	0 .	20
H 7.2	7	. 4	7.5
1 YOF with R			
	Is there	a resp. pi	oblem?
Expected pH:			
Actual pH:	7.39 I	s there a	mismatch?

CO2	80		40	20
оН	7.2		7.4	7.6
51 YOF	in full	arrest, AL	_S is in p	rogress
CO2 :	40	ls ther	re a resp.	problem?
Expect	ed pH:			
Actual	nH.	7.62	le there	a mismatch?

pCO2	80	4	. 0	20
рН	7.2	7	4	7.5
		arrest, ALS		_
pCO2 :	60	ls there	a resp.	problem?
Expect	ed pH:			
Actual	pH:	7.12	s there	a mismatch?

