

Kidney Dis (Basel). 2017 Jan;2(4):170-186.

Disorders of Acid-Base Balance: New Perspectives.

Seifter JL, Chang HY2.

BACKGROUND:

Disorders of acid-base involve the complex interplay of many organ systems including brain, lungs, kidney, and liver. Compensations for acid-base disturbances within the brain are more complete, while limitations of compensations are more apparent for most systemic disorders. However, some of the limitations on compensations are necessary to survival, in that preservation of oxygenation, energy balance, cognition, electrolyte, and fluid balance are connected mechanistically.

SUMMARY:

This review aims to give new and comprehensive perspective on understanding acid-base balance and identifying associated disorders. All metabolic acid-base disorders can be approached in the context of the relative losses or gains of electrolytes or a change in the anion gap in body fluids. Acid-base and electrolyte balance are connected not only at the cellular level but also in daily clinical practice. Urine chemistry is essential to understanding electrolyte excretion and renal compensations.

KEY MESSAGES:

Many constructs are helpful to understand acid-base, but these models are not mutually exclusive. Electroneutrality and the close interconnection between electrolyte and acid-base balance are important concepts to apply in acid-base diagnoses. All models have complexity and shortcuts that can help in practice. There is no reason to dismiss any of the present constructs, and there is benefit in a combined approach.