Abstract:

The quantitative physicochemical model of human acid-base physiology filled a void that had developed between clinical acid-base analysis and general fluid physiology. Established approaches centred on the Henderson–Hasselbach (HH) equation allow a satisfactory exploration of respiratory perturbations but do not fully elucidate mechanisms of common non-respiratory ‘metabolic’ components. Though useful at the bedside, commonly used ‘rules of thumb’ that classify disturbances based on quantification of bicarbonate relative to CO2 have also fostered a language that often misrepresents bicarbonate physiology.

The physicochemical model is frequently perceived as too complex for bedside use, however a set of simplified screening questions based on Stewart’s model can be utilized to aid acid-base interpretation. Examples using this approach are included in an online appendix. Emphasis is placed on understanding the consequences of hypoalbuminaemia, volume, tonicity and chloride derangements as these are common in the care of intensive care unit patients. Aetiologies of acid-base disturbances are well described elsewhere and are not repeated here.
Article describes a simplified bedside approach to acid-base