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## Pitfalls in acid-base evaluation: Base excess and Stewart acid-base vs. the physiological method

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For almost a century, the Holy Grail for clinicians has been to accurately determine acid–base disturbances. During the 1960s, blood gas analysis became universally available, helping cardiorespiratory physiology flourish. Nevertheless, more than five decades later there is still debate about the best way to evaluate acid-base disorders. The base excess proved to be the first accurate index of the nonrespiratory component of acid–base balance, and the blood gas machine conveniently provides the value. Nevertheless, many physicians do not know how to interpret this value and the usefulness of the base excess has been questioned. Instead of base excess the six ‘rules-of-thumb’ was developed to calculate changes in the partial pressure of carbon dioxide or bicarbonate concentration for changes in the other. These rules describe the physiological compensation to acid–base changes to optimize acid–base homeostasis. In 1978 Peter Stewart challenged the bicarbonate-based approach. Stewart’s model has three independent controlling variables: the partial pressure of carbon dioxide, the strong ion difference, and the total weak-acid concentration. The proponents of Stewart’s approach believe that it not only offers a mechanistic explanation for the disorders but also provides the tool to make a more accurate diagnosis. Although nephrologists and renal physiologists have largely ignored Stewart’s approach, anesthesiologists and intensivists increasingly use it. Computer programs and applications for pda’s further facilitate its use. Physicians evaluating acid-base disorders on a frequent basis should be knowledgeable about the pitfalls of the three methods in patient management.

### Biography

Kenrick Berend became an internist at the Academic Hospital Utrecht in Holland in 1989. His main working area is general internal medicine and dialysis and is an external teacher on Curacao for students and physicians of several universities from Holland. He has given lectures on acid-base issues in several countries and published papers in reputed journals.

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