



have posed and answered these key questions. But after the trials, what next?

English hospitals reported more procedures for abdominal aortic aneurysm repair, with higher operative mortality (8.7%) than figures reported by the National Vascular Database (6.8%).⁵ A national registry could easily be useless if practitioners submit only good results. Making the funding of devices conditional on entry to the national register is a start, but more is required. To emulate the excellent result from these trials, a similar learning curve, interdisciplinary working, and selection for procedure should be required as conditions of funding.

A national registry could indeed be a major asset once key questions are settled by randomised controlled trials. The link of mandatory registration and mandatory protocol within the register is the key to the achievement of best practice. Both randomised controlled trials and national registries are needed for new interventional procedures.

We declare that we have no conflict of interest.

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GOLD MARK: an anion gap mnemonic for the 21st century

A *Lancet* Editorial¹ in 1977, referring to an article entitled “Clinical use of the anion gap”² opined: “In an age when all too often plasma-electrolyte measurements are ordered without any deliberate judgment being made as to the likely usefulness of the result, it is refreshing to have a reminder of the subtleties involved in the interpretation of this commonest set of clinical-chemistry tests”. We have discovered some new twists over the past 30 years and would like to share an easily remembered mnemonic aid.

The metabolic acidoses are generally separated into two categories on the basis of an anion gap calculation ($\text{Na}^+[\text{Cl}^- + \text{HCO}_3^-]$): the high-anion-gap metabolic acidoses, and the normal-anion-gap, or hyperchloraemic, metabolic acidoses. Two popular mnemonics are often used to remember the major causes of the high-gap metabolic acidoses. The first is KUSMALE (a useful misspelling of Adolph Kussmaul's name), which represents Ketoacidosis, Uraemia, Salicylate poisoning, Methanol, Aldehyde (paraldehyde), Lactate, and Ethylene glycol. The second is MUD PILES, representing Methanol, Uraemia, Diabetes, Paraldehyde, Iron (and Isoniazid), Lactate, Ethylene glycol, and Salicylate.

Metabolic acidosis due to excessive paraldehyde use has become exceedingly rare. Iron and isoniazid are just two of many drugs and toxins that cause hypotension and lactic acidosis (isoniazid can also generate a component of ketoacidosis). Three “new” organic anion-gap-generating acids and acid precursors have been recognised in recent years. They are D-lactic acid, which can occur in some patients with short bowel syndromes; 5-oxoproline (or pyroglutamic acid) associated with

chronic paracetamol use, often by malnourished women; and the anion-gap acidosis generated by high-dose propylene glycol infusions. Propylene glycol, the solvent used for several parenteral medications including lorazepam, phenobarbital, and others is metabolised to D-lactate and L-lactate.

Therefore we propose a new anion gap mnemonic for the 21st century: GOLD MARK. This acronym represents Glycols (ethylene and propylene), Oxoproline, L-lactate, D-lactate, Methanol, Aspirin, Renal failure, and Ketoacidosis. Mnemonic aids are only helpful if they are easily remembered and we believe GOLD MARK fits that requirement.

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