



PATIENT SAFETY

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Focusing on Clinical Biochemistry

Why so low?

A young man was admitted with history of proximal lower limb pain on a Friday evening. Bloods showed a sodium level of 120 mmol/L (reference range: 133–148). He was started on normal saline, maintained over the weekend. No bloods were done over the weekend. By Monday morning the patient was extremely confused. The sodium was then 99 mmol/L. The family were spoken to, and gave the history of acute intermittent porphyria, which is a known cause of the syndrome of inappropriate antidiuretic hormone production (SIADH). The correct treatment would have been fluid restriction and NOT provision of normal saline. It is always important to investigate causes before starting treatment. Patient records or next of kin may have important information when the patient is unable to give a medical history.

Fatal error

A patient underwent routine gynae surgery, but was very unwell on the ward immediately post-op. Sodium was noted to be 190 mmol/L (reference range: 133–148). This was rechecked on a new sample and confirmed. The patient died. Investigation showed that she had been prescribed 5% saline instead of 5% dextrose. Work with the clinical teams was undertaken to make sure they know about the risks of the wrong fluid prescription.

Alcohol confusion

In 2015, the units for alcohol concentration were changed nationally from mg/100 ml to mg/L. Results consequently appear x10 higher e.g. the driving limit changed from 80 mg/100 ml to 800 mg/L. It is important to add this as an autocomment on IT systems, in this and any other unit change to ensure clinicians are informed.

De trop...

Troponin T and Troponin I methods were used in the same Trust across different sites, but the methods have different reference ranges. The reference range for Troponin T is ≤ 14 ng/L, whereas it is ≤ 40 ng/L for Troponin I. Patients can be moved across sites, e.g. if the catheter lab is on one site where Troponin T is used, with potential for erroneous comparisons between results and impact on patient care.



In the same vein...

As for troponin, methods can vary across diagnostic platforms and when using different monoclonal antibodies. Results can be given that are not comparable with each other e.g. tumour markers CA125 or CA199 used in patient follow up and treatment. Another example is the investigation of viability of early pregnancy where two hCG tests are required 48 hours apart. It is essential in these circumstances that sequential samples are analysed using the same method for comparable results.

Malucis

Laboratory analysis measures total and adjusted calcium levels. In this setting the reference range is typically 2.2–2.6 mmol/L. Arterial blood gas analysers used in point-of-care settings can be used to measure iCa – ionised calcium – where the reference range is typically 1.1–1.3 mmol/L. This has the potential for erroneous comparisons, especially where it has been assumed that iCa results show low calcium, resulting in unwarranted calcium replacement. Make sure that this aspect of lab medicine is included in induction and training (avoid getting your calciums muddled up).