Reporting Laboratory Values in Patients on Chronic Dialysis

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Dear Sir,

In studies on dialysis patients, laboratory values are reported in several ways, common among which are mean $\pm$ standard error (SE), or range, mean $\pm$ standard deviation (SD). I suggest that the first way is potentially misleading and should be abandoned, whereas the second way may not always be adequate in indicating the magnitude of trends in laboratory values. As an example, I will use prehemodialysis serum potassium concentrations in one patient.

The subject of this report was a man born in 1932, with renal failure secondary to primary amyloidosis, who started chronic hemodialysis in June of 1982 and expired in February of 1985. Between February 1983 and February 1985, he was hemodialyzed 3 times weekly, 4 h per dialysis. During that period, his prehemodialysis serum potassium concentration was $3.8 \pm$ (SE)0.1 mmol/l. Normal serum potassium concentration for patients with intact renal function is 3.6–5.1 mmol/l. As reported above, this patient's data suggest excellent control of his serum potassium. However, for the same measurements, range was 2.2–5.7, and mean $\pm$ SD was $3.8 \pm$ 0.6 mmol/l ($n = 58$), suggesting a problem with hypokalemia. The magnitude of this problem was demonstrated clearly by frequency distribution analysis: 19/58 (32.8%) of the measurements were in the hypokalemic range (2.2–3.5 mmol/l), 38/58 (65.5%) in the normal range and 1/58 (1.7%) in the hyperkalemic range (5.7 mmol/l). This patient, who was anuric during the period reported, refused food and suffered from chronic starvation. During the same period, predialysis BUN levels were routinely (88% of measurements) less than 12 mmol/l and 37% of the predialysis serum phosphorus determinations were in the hypophosphatemic range, even though he was not receiving phosphate-binding agents. He died from inanition. Bath potassium concentration was between 3 and 5 mmol/l during the period reported.