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Effect of Albumin on Phenytoin Concentration: Are We Flogging a Dead Horse?

Phenytoin is one of the oldest medications used to treat epilepsy. It is widely accepted that monitoring phenytoin therapy is complicated because of its nonlinear kinetics. It is also known that phenytoin is highly bound to albumin and that changes in albumin concentration can affect phenytoin concentration.¹

However, clinical practice does not reflect this knowledge. An unpublished retrospective study performed at Ridge Meadows Hospital (a community hospital in Maple Ridge, British

Columbia, that operates under the umbrella of the Fraser Health Authority) showed that measurement of albumin level was not routinely ordered when measurement of phenytoin concentration was ordered.² Since the study was performed, pharmacists in the Fraser Health Authority have been granted authority to order laboratory tests when required to make decisions about medication management. This is a step forward for pharmacists, in that we no longer need to remind physicians to order measurement of albumin levels. However, this "solution" may still result in delayed decision-making and/or unnecessary venipuncture for patients, as pharmacists may not realize the need to measure albumin until after the sample for measurement of phenytoin has been drawn. A more efficient and proactive solution would be for albumin level to be automatically measured whenever phenytoin concentration is determined.

Yes, phenytoin is an old drug. Yes, we know all about how albumin affects its pharmacokinetics. But we can still make changes to improve the current system, thus making clinical pharmacy more efficient and effective.

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Sandoz / Corporate	234	—