



From: Prof YM Dennis LO  
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Date: 18 November 2013

To: All COSs of HA Hospitals  
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**Enhanced Diagnostic Service for Vitamin B12 Deficiency  
Implementation Date: 12 December 2013**

Total vitamin B12 (total B12) concentration is the current first-line diagnostic test to detect vitamin B12 deficiency. Accurate determination of vitamin B12 status is essential because of the latent nature of this disorder and the possible risk of irreversible neurological damage which may be prevented by vitamin supplementation. However, the diagnostic accuracy of total B12 to establish an early and reliable diagnosis of vitamin B12 deficiency has been debatable.

The determination of vitamin B12 status by measuring holotranscobalamin (also referred to as active vitamin B12 or active B12) concentration represents a new approach for diagnosing vitamin B12 deficiency. Active B12 consists of 10%–30% of total vitamin B12 and is the fraction of vitamin B12 bound to transcobalamin that can be taken up from the blood into the cells of the body. Therefore, it represents the biologically active form of this vitamin. Studies have assessed the diagnostic accuracy of active B12 in relation to vitamin B12 deficiency and reported comparable or modestly superior diagnostic accuracy of active B12 compared with total B12 based on receiver operating curve analysis.

With an aim to enhance diagnostic service for vitamin B12 deficiency, we shall introduce the active B12 immunoassay to replace total B12 assay for samples received by our laboratory on and after 12 December 2013. Test requesting procedure and specimen requirement (serum gel separator clot activator tube) will remain unchanged. The frequency of testing will be twice weekly. New locally-derived diagnostic cutoff will be provided in the laboratory report:

“Active B12  $\leq$  28 pmol/L detects vitamin B12 deficiency with a specificity of 95%”

If there is any enquiry on the above enhanced diagnostic service, please contact our Duty Biochemist at 2632-2685 / 2632-2331, or page through PWH Operator at 2632-2211.

Sincerely yours,

Prof YM Dennis LO