

iPhone Can Diagnose Thyroid Disease

Sep. 24, 2012 — An iPhone and specially-designed image analysis app is able to diagnose and manage the treatment of hyperthyroidism and hypothyroidism, according to new data presented at the 82nd Annual Meeting of the American Thyroid Association (ATA) in Québec City, Québec, Canada.

Hypothyroidism occurs when the thyroid gland produces too little thyroid hormone. Symptoms may include any of the following: feeling run down, slow, depressed, sluggish, cold, tired, having dry skin and hair, constipation, muscle cramps, or weight gain. Worldwide, the most common cause of hypothyroidism is lack of iodine in the diet. However, in iodine sufficient areas, such as the United States, most cases of hypothyroidism are caused by a condition called Hashimoto's thyroiditis, in which a patient's immune system attacks and destroys the thyroid.

Point-of-care TSH immunochromatographic assays (TSH assays) are widely used to screen for hypothyroidism. However, their acceptability is limited by the semiquantitative nature of the test format and inability to detect low TSH values, underscoring the need for alternative devices to screen for the disease.

Now, a team researchers led by Randy Polson, PhD, from the University of Utah has developed a device that uses an iPhone's LED flash, digital camera with collimating lens to optimize illumination and focusing, and a specially-designed app to collect an image of a completed TSH assays and, and convert the image into a quantitative TSH values. Using a light pipe and, they showed that an Apple iPhone was able to detect whole-blood TSH concentrations as low as 0.1 mIU/L.

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