

Term paper on transducers

[Health & Medicine](#), [Body](#)



In this unprecedented era shaped by humans, it is the main goal and commitment of every health care member to ensure and create the conditions for quality health for all. They must exercise the highest degree of vigilance in order to successfully provide the care needed under the unique circumstances our environment presents.

One main thing that assists much in the concept that provides excellent health for all is through the use of innovative and more highly developed technologies. The wider utilization of these technologies may dramatically improve healthcare provision making it more accessible and progresses the quality of care offered.

An example of these rapid developing technologies is the Ultrasound Imaging or Sonography. The device that converts vibrations into voltages and vice-versa is referred to as a transducer. This device contains several parts which produce waves, which are transmitted to the body for echoing and sent back to the ultrasound.

There are seemingly cluster of uses of the ultrasound, one of which is in the assessment of the thyroid gland, particularly when diagnosed with thyroid disease. In relation to being identified as having such diseases, Thyroid Peroxidase (TPO) antibody test may be suggested as to measure the level of antibody that is directed against thyroid peroxidase (TPO) in the blood. It may also be of great use in verifying the evident origin and root of the illness. Auto immune disorders such as Rheumatoid Arthritis, Pernicious Anaemia, Grave's and Hashimoto's Disease may be the indicative result when thyroid peroxidase (TPO) is present in the blood. In addition, person with no signs of thyroid problems may also be suggestive of future thyroid

problems or disease when diagnosed with a positive thyroid peroxidase (TPO) antibody test.

TPO is normally found in thyroid follicle cells in the thyroid gland where it catalyzes the iodination of Levothyroxine (T4) and Triiodothyronine (T3) in the biosynthesis of thyroid hormones. It is an enzyme that is very essential in the production of thyroid hormones that helps in controlling variety of body functions such as the regulation of body temperature and specially, the conversion of food into energy and heat. (Mayo Foundation for Medical Education and Research, 2012)

Normally, an ultrasound is used for thyroid a nodule evaluation which is performed through the use of high frequency transducers which are capable of solid and cystic nodule detections. This test helps in the determination of lumps in the neck area especially the thyroid and analysis of its appearance to validate if these lumps are benign or malignant. (Radiological Society of North America, 2012)

The broadly used worldwide then were those that captures and shows movement within the body in 2D technology , but now our fast changing technology produces an ultrasound that can process images in 3D and some case 4D wherein the movements inside are recorded.

The ultrasound along with its scanner that includes a computer and electronics, display screen and transducer probe that detects thyroid peroxidase (TPO) antibodies are its essential parts that are programmed to transfer the sound images to images. During the duration of an ultrasound, high frequency sound waves are transmitted into the body via the transducer probe which appears to be similar to a microphone affixed together with a

computer and a cord. As these muffled sound waves hit the specific tissues of the thyroid, they reflect and return the echoes back to the probe. The ultrasound machine calculates the resulting reflections and transforms them into the display screen. The upshot images are based on the frequency, amplitude, and the time consume for the sound signals from the patient to the transducer and then to the displaying screen. (Radiological Society of North America, 2012)

One good example of this high definition ultrasound is the Ultrasonix ultrasound system. Ultrasonix is a company that manufactures medical facilities and equipments which is based in British Columbia, Canada. They major in the advancement and production of diagnostic ultrasound systems and other medical equipments intended for a more trouble- free, uncomplicated plus more advanced utilization in the concept of providing valuable and superior health care.

The Ultrasonix ultrasound system is a device that has an accessible and comprehensible touch screen edge that flaunts only the purpose needed for an endocrinology assessment. In its high definition component, a more clear and enhanced picture of the assessed thyroid gland is supplementary visible and accurate. It also uses trapezoidal imaging that sees larger anatomical region of the intended part and panoramic imaging for a more complete and lucid representation.

(Ultrasonix, 2012)

Technology has proved its worth on being the major driver in the future direction of healthcare. Although the speed of changes has been rapid, adaptation to them has become the turning point in which quality care is

rendered. These new technology is doing amazing things for the medical patients today. And so, expects more in the future. So, there could be a lot a lot of advantages as well as drawbacks of these promising technologies. It may mean more power, flexibility and supple benefits at our fingertips. However, it could also denote a disorganized, precarious and risky choice. Yet we can never predict what is ahead of us. We just have to adapt to these changes but be less dependent for our own safety.

Works Cited

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