Global health has long been a concern for many and as healthcare expands its boundaries, spectrophotometry continues to play an active role in effective medical aid around the world. Spectrophotometry can "provide a platform for diagnosing bilirubin, hemoglobin, and glucose in the serum of the blood. These three tests were determined the most useful in the clinical settings of developing countries."[1] The challenge lies in finding affordable instrumentation that is both portable and durable.

Spectrophotometers as Simple Yet Effective Diagnostic Tools

One of the first diagnostic tests performed on newborns is the determination of bilirubin and hemoglobin in the blood. These early indicators alert medical staff to potentially dangerous imbalances which cause jaundice and other dangerous complications in infants. With early diagnosis and treatment, many of these complications are treatable and adverse effects can be reversed.

There are several different methods used to test the concentration of bilirubin and hemoglobin in blood samples, but most are labor intensive and not do provide a practical method for routine analysis.[2] Studies have shown that direct spectrophotometry offers a simple and rapid analysis that requires only minimal sample preparation and use.This same method of analysis can also be applied to glucose measurement which is critical in monitoring blood sugar levels in the diagnosis and treatment of diabetes. These series of test provide vital information for some of the most major ailments that face our world.

Advances in Technology Open New Doors to Possibilities

Today's spectrophotometers are highly sensitive, offering both rapid and accurate measurements for a number of various substances. These tools have revolutionized the world of biochemistry and medicine by increasing the speed of diagnostic testing and lowering the invasiveness of these procedures.[3] This technology is relatively inexpensive and only requires the use of light reflection and absorption measurements to effectively quantify changes in molecular compounds and blood chemistry analysis. The potential for spectrophotometry to be used worldwide as a tool for administering the three major clinical tests mentioned above could make a simple and effective difference in the treatment options available in underdeveloped countries.

Although spectrophotometry effectively meets the analytical needs of diagnostic testing and information needed to treat patients in third world countries, not all instrumentation is built to withstand the harsh elements of these areas. However, new advancements in spectrophotometers now offer both portable and durable options designed for field use in a variety of environments. The ability to take this technology abroad will offer a simplistic means of saving lives one quick and easy scan at a time.

Full article with photos available here:

https://www.hunterlab.com/blog/color-pharmaceuticals/using-spectrophotometry-in-medicine-a-worldwide-approach-to-medical-aid/