Health as a System

By Gunter Pauli

This article introduces a creative approach to health analysis as one of the 100 innovations that shape "The Blue Economy". This article is part of a broad effort to stimulate entrepreneurship, competitiveness and employment.

The Market

The world market for medical devices and diagnostic services was valued in 2010 at $286 billion. This diverse market covers both the equipment and the services provided including in vitro testing, imaging, endoscopy and energy-based therapies. Diagnostics, the service component has been estimated to reach +$200 billion. It is roughly estimated that 10 percent of the health care sector is spent on diagnostics. The market is characterized by a high growth, especially in developing nations. The Indian market for example, fueled by the arrival of a broad range of modern lifestyle illnesses including diabetes and cardiovascular diseases sees its home market expand at a rate of 20 percent per year. This is providing the platform for India to become the world's center for both equipment development and services.

Clinical lab testing is expected to reach the $100 billion mark by 2017. These diagnostics include testing for blood glucose, infectious diseases, clinical chemistry, cardiac markers, coagulation, cancer and fertility tests. The imaging equipment represents a major segment and fueled by technological breakthroughs provides a broad portfolio of diagnostic imaging systems, scanners, X-rays, radiology and breast imaging. This segment is expected to grow from $22.4 billion in 2000 to an estimated $56.3 billion business worldwide by 2012. The Point-of-Care (POC) diagnostics, which differentiates itself from the clinical diagnostics through external laboratory testing, enjoys a nearly 10 percent per annum growth between now and 2016 evolving from a $13.7 billion market in 2010 to $24.8 then. The United States represents the largest market in the world. Employment in the industry is increasing even in the industrialized world, in spite of the introduction of automated analyses. Employment in the US is expected to grow from 318,000 in 2006 to 362,000 a decade later.

The Innovation

While an aging population requires more diagnostics, the health care system is keen on reining in costs. At the same time the industry is searching for innovations that offer faster and easier analyses. Rapid testing kits, with digital reading is not only supported by demand from the clinical sector, also sports and public order agencies are requiring an immediate confirmation of the use of performance enhancing substances, or stimuli for the central nervous system. The fine needle aspiration biopsy is a rare invention that relies on design, nearly all innovations rely on complex chemistry. Whereas the performance of the tests itself
improves with sophisticated chemicals, the amount of waste management needed has resulted in the creation of an industry of its own: the incineration of hospital and laboratory waste streams.

Dr. Thomas Rau graduated from medical school in Bern, Switzerland, and specialized in rheumatic illnesses. In addition to graduating from medical school with also a license in the USA, he studied homeopathy and natural therapies. He came to the conclusion that the body can only function when the patient enhances the immune system first of all by reducing the stresses caused by bacterial infection and heavy metals. Surprisingly his first diagnosis is based on a 3-D rendering of the mouth. The presence of amalgam fillings, point to a leaching of heavy metals, and the appearance on the screen of root canal treatments highlight the presence of highly acidic bacteria in the deep cavities of the jaw. This test is complemented with a dark field microscopy, an effective technique that enhances contrast in biological samples such as blood. This technique shines light on a sample that will not be reflected inside the lens, thus creating a dark background while the objects appear light. This is a smart use of physics to enhance diagnostics.

This analysis offers the highly qualified observer POC diagnostics that connects the dental analysis with the activity of the white blood cells, the quality of the red blood cells, the presence of bacteria or even half digested protein. The power of the analytical system that Dr. Thomas Rau and his colleagues at the Paracelsus Center for Biological Medicine and Dentistry developed is the capacity to obtain a holistic picture of the person.

**The First Cash Flow**

Dr. Thomas Rau leads since 1992 the development of the Paracelsus Klinik in Lustmühle, close to St. Gallen in Switzerland. His approach to holistic medicine is setting new standards since he not only gains a detailed insight on the condition of the patient, he identifies the root causes that permit to evolve from treating the symptoms to resolving the problems putting the patient on a pathway of recovery. The portfolio of POC diagnostics which are displayed and understood by the patients, and later supplemented by laboratory tests, empowers the patient. She or he cannot only visualize the challenges that are being confronted, this approach permits a full understanding of the root cause and its relation to symptomatic effects. The visualization of broad infections in root canals, mapped on the meridians of the body can explain cramps in the back, the presence of acidic bacteria in the blood can point to dire state of a root even causing local fevers in excess of 39 degrees Celsius which may not be picked up by the average measurement of traditional body temperature.

After immediate corrective actions, including minor topical surgeries like the removal of root canal treated teeth, and amalgam fillings, the patients have access to a logic that permits the shift in behavior. The team at Paracelsus will propose guidelines for food that will change the
diet. And while there are many diets prescribed to lose weight, this diet can be tailored to
the specific conditions, taking one's health (and happiness) into one's own hands. The
Paracelsus Klinik has become a reference in the world of health care and its interconnected
and systemic approach makes it a benchmark for health care in a Blue Economy.

The Opportunity
The availability of POC diagnostics has changed the lives of diabetic patients who have an
immediate control over their condition. The latest breakthroughs of this integrated approach
is that it allows to evolve from curative medicine to preventive medicine. Whereas it will take
years to have the knowledge and the experience of Dr. Thomas Rau, we also have to realize
that the large majority of the population simply does not know how their body functions. The
POC diagnostics permits us to map our behavior from eating to sleeping, and gain a
pragmatic understanding of how decisions that we take every day actually impact our quality
of life.

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The Blue Economy