

# The Promise of Biotech

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In the future, ICT will become integral to all aspects of healthcare, predicts Roger E Wyse, Managing Director of Burrill & Company (picture left) and an acclaimed plant scientist and international business consultant with more than 27 years of experience.

As such, the IAP expert highly recommends that Malaysia, via the MSC, nurture ICT-based healthcare. Taking the advice of Wyse and other life sciences experts, the MSC has already singled out biotechnology as a key priority area and integrated healthcare into its Flagship Applications Action Plan.

The ICT applications in medicine will be pervasive, notes Wyse. True, the MSC has identified tele-consultation as a key service in rural hospitals and clinics, but there is so much more to ICT in medicine.

The range of applications is tremendous and boggles the mind. For instance, ICT can facilitate healthcare management by storing and processing massive databases ranging from genomics to gene expression to patients' records. ICT makes more accurate diagnostics possible in real-time with telemetry, image transfer and image analysis. ICT can also aid R&D in areas such as data acquisition, target identification, leads, lead optimization, and metabolic profiling, and is thus a natural tool. And ICT can ease tight resources and stretched infrastructure in healthcare delivery by providing real-time in-home patient surveillance.

The use of ICT will also make it possible to address some of the most pressing challenges facing modern healthcare. The never-ending pressure to reduce costs can be relieved through ICT; ICT raises efficiency and productivity levels and will relieve the current vicious cycle where pharmaceutical firms are surviving by merger and cost reduction, which in turn affects morale, innovation and productivity. ICT will also improve margins due to its ability to enhance productivity; currently, margins for leading pharmaceutical companies are under siege due to increasing competition from generic drugs and the ongoing loss of blockbuster drugs as patents expire.

More importantly, ICT's usefulness in research and biotechnology could help stimulate the pipeline for new drugs that are in dire need. Currently, the drug discovery process is highly inefficient, says Wyse. The time-consuming and expensive process costs

\$500 – 800 million annually and 10,000 lead compounds must be tested to get just three-to-four drugs. Even then, these drugs are typically one-size-fits-all. Thus, there is a demand for personalised solutions. The use of ICT could deliver these personalised solutions in a cost-effective fashion, making it feasible to service even smaller markets. The adoption of ICT could also help the industry seek prevention and cures for more complex diseases, which are currently under the radar because traditional research into new drugs would be uneconomical.

Of course, adopting an ICT-oriented approach to healthcare will not be easy. Wyse advocates a New Systems Approach, which will require the convergence of technologies and approaches, and combine the wisdom and skills of biology, applied mathematics, physics, software engineering, computer science and nanotechnology.

Nevertheless, the complexity of realising ICT-based medicine has not fazed investors. Giant organisations with deep pockets have already sensed the promise in marrying ICT and healthcare, and have jumped on the bandwagon with alacrity. Big international players such as IBM Life Sciences are investing heavily in cutting-edge applications and solutions. Areas of commercial interest currently include medical labs imaging, clinical genomics, life sciences R&D, healthcare providers' payer transaction services, pharmaceuticals regulatory compliance, and scientific and medical devices.

For the consumer, the up-and-coming prevalence of ICT in modern healthcare will be beneficial as it will promote the rise of personalised medicine, where healthcare is tailored to meet individual needs and biology. In the paradigm shift to personalised medicine, Wyse envisions an environment where genetic testing becomes routine, diseases will be understood at a molecular level, patient populations at risk for ADR will be identified, patients are accurately targeted through clinical trials, and healthcare moves to predictive, preventative care with pre-symptomatic Dx and Rx routines.

In short, sums up Wyse, ICT will become integral to all aspects of modern healthcare. It is a sorely-needed catalyst for a beleaguered industry: ICT will help us understand the biology of disease better, stimulate the discovery of new drugs, and spearhead personalised medicine, better data collection and analysis, and efficient healthcare management.

*By: Nazatul Izma Abdullah*