

Roche Personalised Healthcare – in brief

Background

Personalised Healthcare is based on the observation that patients with the same diagnosis react to the same treatment in different ways: While a drug can be highly effective for one patient, the same drug might not show the desired results when given to a second patient with the same diagnosis. Disease-related as well as disease-independent individual characteristics influence the way drugs work, and treating all patients diagnosed with a certain disease with a broad-brush approach disregards those differences.

In other words, conventionally practiced healthcare is not as effective as it could be, with a considerable number of patients receiving treatment that is inappropriate for them, treatment that might even cause adverse reactions in some cases. Personalised Healthcare thus has the potential to increase the efficacy and safety of treatment. It is an approach which capitalizes on our increasingly sophisticated understanding of differences among patients, the molecular basis of disease and of how medicines work. Personalised healthcare (PHC) is not a new concept. There are already a number of good examples of how Personalised Healthcare has successfully been implemented in medical practice, and a number of Personalised Healthcare solutions are available (examples below). However, in recent years, our knowledge of the human body and of disease mechanisms has considerably increased, leading us to the conclusion that Personalised Healthcare approaches will become increasingly important.

Roche Pioneering Personalised Healthcare

Roche is convinced that Personalised Healthcare is a key enabler for further improvements in medicine. This will enhance the safety and efficacy of medicines and will thus improve patients' lives, their health, quality of life, and survival. Therefore, our prime objective is to provide Personalised Healthcare solutions which deliver superior options for diagnosis and treatment to clinicians and patients. Roche aims at tailoring medicines as closely as possible to patients' needs. As one of the world's leading healthcare companies, combining our strengths in pharmaceuticals and diagnostics, our company is uniquely positioned to deliver Personalised Healthcare.

Over the last few years, Roche has embarked on a systematic approach that interweaves our diagnostic and pharmaceutical expertise to pave the way for Personalised Healthcare. Our goal is to provide healthcare professionals with more powerful diagnostic tools and with targeted treatments based upon new insights, at the molecular level, as to how disease arises.

Benefits of Personalised Healthcare

Personalised Healthcare has enormous potential to make healthcare better, safer and more cost-effective. While the full potential of Personalised Healthcare will only be realized in a stepwise

fashion, we already have a number of successful examples, showing a clear shift away from the "one size fits all" approach.

By taking the individual characteristics of patients and their diseases (e.g. cancer subtypes) into account, Personalised Healthcare has the potential to:

- Improve understanding of disease diversity and subtypes
- Predict which patients will most likely benefit from treatment – helping to avoid treatment without benefit and therefore enhance cost-effectiveness
- Aid the development of safer and more effective treatments, thus reducing the risks and costs of side effects
- Provide the diagnostic tests which help identify patients who are most likely to respond to a specific treatment
- Improve medical outcomes and quality of life of patients

Challenges in developing Personalised Healthcare

Personalised Healthcare holds great promise for patients, and expectations are high. However, it is not a new concept – it has evolved over time and will continue to do so. Carrying out the necessary research is still a complex undertaking and will take time. It will not always be possible to develop Personalised Healthcare solutions which improve current standards of care or to develop tests which identify those patients most likely to respond.

Despite these challenges, Roche is committed to doing everything in its power to make this potential a reality for as many new treatments as possible.

Outlook

Roche is uniquely positioned to make Personalised Healthcare a reality. Roche has the expertise in molecular biology and clinical research and the experience and tools of a large and successful diagnostic and pharmaceutical company in-house. We are committed to the systematic pursuit of Personalised Healthcare approaches throughout the lifecycle of our products.

Some examples of Personalised Healthcare in Roche's portfolio include:

Breast Cancer: Measuring the presence of a growth factor in breast cancer cells with specific tests identifies patients who are likely to respond to a therapy that specifically targets this growth factor.

Skin cancer: It all started with the identification of a mutation that results in a poor prognosis for patients with skin cancer. Screening patient's tumors for this specific mutation can help to select those patients who will benefit most from a specific drug - currently in development - that specifically targets this mutated protein. A combined diagnostic test and drug have high potential for greater treatment efficacy with minimal toxicity for patients

Hepatitis C: A number of tests make response-guided therapies possible. They help to single out patients who can benefit from significantly shortened treatment duration (4 months instead of the usual 6-12 months) with full therapy benefits and a reduction of unnecessary drug exposure.