

“What is
**personalised
medicine?**”

“Let us help you
understand”



Personalised Cancer Medicine: Fact Sheet

Cancer as a Worldwide Problem

Despite advances made in diagnosis and treatment over the last 20 years, cancer is still the second leading cause of death.

Personalised Medicine: General Definition

Personalised management is considered as the future of cancer care: medicine aiming at giving patients the best treatment according to their personal medical history, their physiological status, and the molecular characteristics of their tumours.

Recent Approach to Cancer

Until recently researchers and clinicians thought that all cancers deriving from the same site were biologically similar and they classified the disease based on cell type (as determined by microscope assessment), size and presence/absence of regional nodes or distant metastases, as well as other features that may be observed on the tumour sample.

Surgery has been, and still is, the cornerstone of treatment for the majority of cancer patients, together with chemotherapy and radiation therapy. These treatments may have drawbacks and side effects, particularly chemotherapy and radiotherapy, which, by killing cells that divide rapidly, kill cancer cells but also heavily affect healthy cells, resulting in partial efficacy and unwanted side effects.

New Evidence in Cancer Biology

It is now clear that tumours derived from the same organ can differ in extremely important ways, although the “old” diagnostic parameters are still essential elements for treatment decisions.

In recent years, our understanding of tumour biology has improved significantly. One step forward is represented by the possibility to classify cancers based on critical molecular targets identified by the high-quality translational research of the last decades.

What is Targeted Therapy?

Drugs specifically acting against molecular targets in cancer cells – called targeted therapies – have been developed and are used to counteract some types of cancer in selected patients, but many targets still need to be discovered and many drugs must yet be developed or improved.

An example of targeted therapy

One example of targeted therapy is the identification in women with breast cancer of the HER2 target, whose presence or absence gives the physician the indication to prescribe a particular therapy. Despite this great development it has been observed that unfortunately only one half of women with HER2-positive breast cancers respond to anti-HER2 therapies, calling for the need to further understand the biology of tumours to better target the tumour.

What Needs to be Done From Now On

It is so essential to pursue efforts in cancer research and gather comprehensive information on each tumour in order to be able to identify all involved targets and hence determine the most appropriate treatment for each tumour and patient – be it used to cure, to slow down the growth of cancer cells, or to relieve symptoms.

What Patients Should be Aware of

Important information about the patient's disease can be identified by tissue and blood sampling. This means obtaining one or more samples from the patient's tissues and tumour.

These samples can undergo various examinations. Despite possibly delaying treatment, these examinations are extremely valuable to characterise the tumour and thus determine the most appropriate treatment.

The time at which samples are taken depends on the cancer type and stage of the disease. Biological samples can indeed be very useful in the initial phases of disease; however, it is also very important for patients to know that they can be just as useful in case cancer comes back, but it may also happen that if cancer returns a new sample is needed. Patients have to make sure that their donated biological samples will be kept at a biobank that can be accessed any time.

In addition, patients help future patients when they give permission to use their blood and tissue samples in experimental research. However, the need for patients to re-consent every time their data is used is a hurdle that is currently limiting researchers' efforts.

Patients should be aware that personalised medicine is based on testing in molecular diagnostic laboratories and therefore it might not be available in all medical centres.

What Patients Should Look For While Receiving Treatment

The optimal management of personalised care is based on a trusting relationship between the patient, the physician, and – importantly – the multidisciplinary team taking care of him/her. A holistic approach should take into consideration not only the biological characteristics of the tumour but also the patient's physiological and psychological status over their lifetime.

Some Challenges that Need to be Solved

The challenges of personalised treatments include other aspects, such as the right of every patient to gain access to highly effective and affordable targeted therapies and the need to raise awareness among the medical community as well as among patients and their care providers.

A Need for Education and Research

It is only through targeted education and continuous advancement in research that the goal of personalised medicine to provide the “right treatment to the right patient at the right time” will be achieved.



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Patients are the driving force and inspiration behind our oncology-related events, educational programmes, and the reason why oncologists are constantly pushing the edge of science to revise existing therapies and find new treatment options. Patient activities fulfil one of ESMO's most important objectives – to disseminate knowledge to cancer patients, their caregivers, advocacy groups and the public.

This Fact Sheet is a companion to the ESMO Guide for Patients on Personalised Cancer Medicine, and it aims to summarise the key issues that are discussed in that guide.

For more information on the Patients Guide Series and other resources for patients, please visit esmo.org/Patients