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A Snapshot of Personalized Medicine in Palliative Care

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Palliative care is an interdisciplinary care system that addresses the physical, emotional, social, and spiritual needs of patients and their families facing serious illness. It includes a team of medical professionals who work together to improve patient overall quality of life. While almost half of those who die in the US receive hospice services, many hesitate to enrol early due to the requirement to forgo curative treatment. To meet this challenge, unlike hospice care which may require forgoing curative treatment, palliative care services can be provided alongside curative treatments. When disease-modifying treatments are no longer an option, the traditional roles of medical team members change, with palliative medicine experts taking on a larger role in patient care. This comprehensive care can include managing pain and symptoms, providing social services and counselling, and assisting with daily living activities and spiritual support, among other services. Overall, palliative care services aim to enhance existing care services and involve additional support from family and community groups.¹

The EU Health Ministers in December 2015 defined personalized medicine as:

“A medical model using characterization of individuals’ phenotypes and genotypes (e.g. molecular profiling, medical imaging, lifestyle data) for tailoring the right therapeutic strategy for the right person at the right time, and/or to determine the predisposition to disease and/or to deliver timely and targeted prevention.”²

Personalized medicine tailors medical treatment and care to individual patients based on their unique characteristics such as genetics, lifestyle, and environment. Such interventions are more effective and have fewer side effects compared to a one-size-fits-all approach. For example, in the management of pain in palliative care, traditional practices may prescribe a standard dosage of pain medication for all patients with advanced cancer, without accounting for factors such as genetic variations and individual preferences for pain relief.³

In recent decades, palliative care and oncology have developed together to meet the complex needs of cancer patients. Indeed, many palliative care specialists aim to work with oncologists to ensure comprehensive care for patients with advanced-stage cancer. This comprehensive care can include improving patient comfort, improving symptom management, and optimizing end-of-life care. The integration of palliative care in cancer treatment must be tailored specifically to each cancer type. For example, if a patient has an ALK fusion with advanced non-small-cell lung cancer, immediate anti-ALK therapy should be prioritized, even if the patient is in poor health. This may result in extended survival and multiple treatment options, reducing the need for early palliative care. On the other hand, if a patient is diagnosed with a more aggressive form of cancer like SMARCA4-deficient ovarian or lung carcinoma, early palliative care may be necessary despite the patient’s initial good health due to the poor prognosis. This method emphasizes the importance of personalization and timing in incorporating palliative care, aligning with the broader goals of precision medicine in oncology.⁴ There are also other ways in which personalized medicine intersects with palliative care:

1. Tailored pain management: a tailored pain management approach in palliative care involves using a combination of medications and non-pharmacological interventions, such as physical therapy, massages, or acupuncture, to help manage pain effectively. On the other hand, personalized medicine involves using a person's genetic makeup to tailor their medical interventions and treatments. In pain management, personalized medicine in palliative care will focus on the identification of genetic mutations or changes that influence the disease progression or drug metabolism. By understanding a person’s genetic predispositions, the multidisciplinary team caring for the patient can optimize pain management interventions to better suit the patient’s individual needs, leading to improved pain control and overall well-

being.⁵ One example of personalized medicine leading to better pain management outcomes in palliative care is a study conducted by Wong et al. (2022), showing how genetic testing for variations in the cytochrome P450 (CYP) enzymes, which play a significant role in the metabolism of opioids, can improve pain management in hospice patients. By identifying patients with specific CYP genetic variations, the hospice team was able to personalize pain management strategies and adjust medication dosages accordingly. The results of the study showed that by tailoring medication dosages based on genetic differences, patients experienced improved pain control with fewer side effects, hospitalizations, and ER visits. This study suggests that personalized medicine techniques that involve genetic testing can improve palliative care and lead to better outcomes.⁶

2. Patient-centred decision making: personalized medicine emphasizes a shared decision-making approach that involves patients, their families, and healthcare professionals collaborating to make decisions about patient care. In palliative care, it involves understanding the patients' wishes, values and preferences regarding treatment options and end-of-life decisions. Promoting patient autonomy and improving the overall quality of care is an important aspect of patient-centred care and palliative care.⁷ An example of personalized medicine facilitating understanding patients' values and preferences is the case study of the CancerLinQ platform developed by the American Society of Clinical Oncology. This is a big data platform, which helps oncologists understand patients' values and preferences by analysing real-world data to tailor treatment plans based on individual characteristics and preferences. By considering factors such as treatment side effects, quality of life, and treatment goals, this results in more patient-centred care that aligns with each patient's unique needs.⁸

Personalized medicine empowers doctors to tailor treatments to individuals by considering the unique interplay between an individual and their disease. It is a constantly advancing, interdisciplinary field with broad implications.³

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