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AI and Pharma: What's Ahead?

Precision medicine, also called personalised medicine, makes use of genomics as well as data about the patient's lifestyle and environment, to develop targeted therapies.

The precision medicine market has shown rapid growth in recent years – by more than 10% annually – thanks in large part to advances in bioinformatics. Medical experts and researchers increasingly use bioinformatics tools for analysing and mining "big data", which helps them with rapid identification of new drug targets, for example. In particular, oncology is one area where precision medicine has started to play a significant role.

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The introduction of the first chimeric antigen receptor (CAR)-T cell (CAR-T) therapies in 2017 was, according to experts, "the next leap forward" in precision medicine. These immunotherapies are designed to boost the patient's own immunity to combat tumour cells.

Researchers and drug manufacturers often rely on genomic data to determine which patients will most likely respond to immunotherapy. Genomics is also helpful in customising immunotherapy for a given patient.

Notably, molecular profiling technologies, such as next-generation sequencing, have become integral to drug development and patient selection. Molecular tumour characterisation, meanwhile, requires both multidimensional data from laboratory and imaging tests, as well as advanced software and computational methods for analysing these data.

Experts say the emergence of computational precision oncology is associated with both opportunities and challenges, from validation and translation to regulatory oversight and reimbursement.

These experts also urge cancer drug manufacturers to focus on data and digital technologies that can help them transform a complex, individualised treatment into a commercial product. Noting the manufacturing challenges that plagued the launch of Kymriah (tisagenlecleucel), the experts said that even pharmaceutical giants have struggled with meeting label specifications for commercial use.

"Increasingly, we are seeing advanced technologies – such as artificial intelligence and machine learning – being incorporated into the drug discovery and development process. This underscores the critical need for a multidisciplinary approach to precision medicine, from discovery at the bench all the way through to delivery at the bedside, to help ensure that more patients can access the right therapy at the right time, and the right price," Peter Larson, executive medical director for haematology-oncology at Premier Research, points out.

Source: contractpharma.com
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