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Perspective: Embracing Personalized Healthcare Across the Cancer Care Continuum

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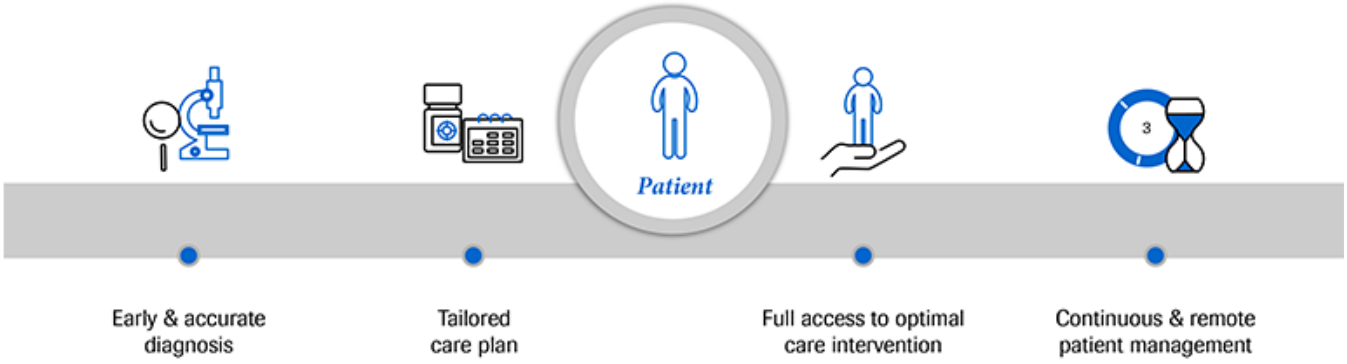
Talks and presentations at the virtual ESMO congress, held from Sept. 16 to 21, demonstrate that the field of cancer research is heading into a new era of tailored treatments. The treatment armamentarium is expanding to accommodate new immunotherapies and molecularly guided therapies at both advanced and earlier stages of disease, but translating pivotal data into approved therapies that provide meaningful benefit for each and every patient is not yet a reality. Innovative solutions coupled with effective policy change are required to address this unmet need.

Precision oncology is a topic generating much interest in the community: the pre-ESMO Personalized Healthcare in Oncology virtual symposium, sponsored by Roche, explored how it could improve each stage of the patient care continuum, while searching for "precision" in the ESMO 2021 virtual program showcases new data about precision oncology across cancer indications. Personalized healthcare in oncology is evolving beyond the application of prognostic and predictive biomarkers into a more holistic approach, closing gaps across the care continuum and optimizing outcomes. However, data-driven practice with action from policymakers, regulators, and payors is required to successfully embed the concept in community clinics.



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Recent results in targeting optimal care

Research presented at the ESMO Congress 2021 highlights recent success, unmet needs, and future opportunities in moving toward optimal personalized care.

A retrospective analysis presented by Lenz *et al.* highlighted the increased uptake of comprehensive genomic profiling (CGP) in patients with metastatic colorectal cancer (mCRC), before first-line therapy initiation. Using the Flatiron Health Database, de-identified electronic health record-derived data from a sample of 18,679 patients with metastatic colorectal cancer (mCRC) was collected from 2013—2020. A moderate increase in the rate of *RAS* testing was noted (from 40.6 percent to 55.3 percent), while there was a greater uptake in *BRAF* (from 11.0 percent to 51.7 percent) and microsatellite instability (MSI) testing (from 19.7 percent to 76.0 percent). The advent of targeted therapy for *BRAF*-mutated mCRC and cancer immunotherapy for MSI-high mCRC may have contributed to these trends. The study also revealed that the use of next-generation sequencing (NGS) increased across all biomarkers. Despite these trends, testing rates in mCRC were still relatively low when compared with other cancers, such as advanced non-small cell lung cancer (NSCLC).

Although the frequency of testing between different cancer types varies, the availability of effective, targeted treatments — for example, in mCRC and NSCLC — is increasing, which exemplifies the benefit of identifying targeted genomic alterations. However, many other malignancies such as carcinoma of unknown primary (CUP) are still underserved by their current standard of care.

CUP has a poor prognosis due to a dependence on chemotherapy, according to ESMO guidelines. Results based on molecular profiling by Foundation Medicine's CGP testing of the CUPISCO trial population, reported by Westphalen *et al.* and featured in the ESMO press program, found that approximately 30 percent of the patients with CUP carried a potentially targetable genomic alteration. The data also showed that patients with CUP could be clustered through molecular profiling. With further validation, these results may support the development of new clinical approaches and approved treatment options for patients with CUP. The first global CUP Awareness Week, led by patient organizations and featuring presentations from some physicians involved in the CUPISCO trial, ran from Sept. 20 to 24 and provided valuable insights into progress and remaining challenges in CUP.

Supporting an early, accurate diagnosis

Speeding slow diagnostic processes up can have a critical impact on patient survival, as the risk of death increases approximately 10 percent with each month that treatment is delayed, according to research published in the British Medical Journal. The impact of COVID-19 on already overstretched pathology services highlights this serious concern in healthcare delivery.

Embracing digital pathology tools could help improve the speed and accuracy of cancer diagnosis. Advances in diagnostic technology, including digitization of pathology slides and artificial intelligence capable of detecting and quantifying disease, may speed up treatment initiation and improve patient outcomes.

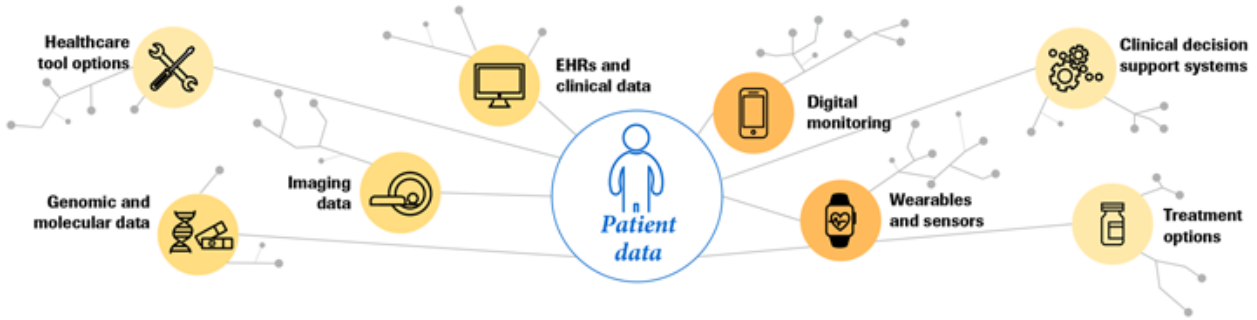
Blood-based biopsies could also be used alongside these tools to support treatment selection and to allow for monitoring of the response to the treatment. In the community setting, the technology can allow clinicians to perform CGP before, during, and after treatment with only a blood sample. Additionally, sequential liquid biopsies may unlock spatial and temporal tumor heterogeneity to inform treatment decisions that could ultimately prolong a patient's life.

Some guidelines, including from the National Comprehensive Cancer Network, already recommend the use of liquid biopsy in certain situations across breast, esophageal, gastric, NSCLC, prostate, and pancreatic cancers, and the increased use of such innovations for the appropriate patients could help to reduce the mental, physical, and budgetary strain on workforces and healthcare systems in the future.

Embracing a data-driven approach

Collecting real-world data from patients treated in the community setting and at the clinic will also be critical to achieving the promise of personalized care and should not be underestimated. While traditional clinic visits only provide a discrete snapshot of a patient's condition, technical advances such as wearable sensors and apps for collecting patient-reported outcomes simplify capturing real-time information to support treatment decisions.

Beyond supporting an individual patient's care continuum, real-world data can galvanize ongoing research. By collecting individual patient data, investing in electronic medical record structures, forming molecular tumor boards, and joining registries or global CGP databases, clinicians can contribute to the identification of clinically relevant genomic alterations. Insights from global CGP databases hold predictive and prescriptive potential and can provide enhanced intelligence for regulators, reducing drug approval timelines and expanding access.



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Shining a spotlight on policy

The European Alliance for Personalized Medicine recently hosted a roundtable discussion at ESMO, defining the healthcare ecosystem and exploring the need for change. The participants reached a consensus on the urgency for multi-stakeholder collaboration, and on the value of data in translating innovative solutions into clinical routine for the benefit of patients.

The healthcare system has limited resources and payors, and policymakers must be confident that precision oncology will efficiently deliver improved outcomes in general practice. Real-world data of sufficient quality, complementing randomized clinical trials (issued from collaboration between clinicians and pharmaceutical companies), can be utilized by payors to assess benefits and risks, leading to more sustainable cost-effectiveness decisions in the wider healthcare system.

An effective personalized healthcare system requires investment in an infrastructure that marries advances in data and technology with transformative changes in delivery and policy. This includes alignment in diagnostic test and treatment availability, quality assurance of centralized testing facilities, wider data collection and sharing, and stakeholder education and decision support. Some of these solutions have already been endorsed at the EU-level in policy frameworks (e.g., the EU Beating Cancer Plan), but the next step is to ensure pathways for implementation at the EU member state level and in other regions worldwide.

What next?

If personalized healthcare for all is to become a reality, genomic testing should no longer be considered solely as a companion diagnostic. Generating and sharing data across the care continuum can help patients achieve optimal outcomes while reducing complexity, potential discordance, and costs across healthcare systems.

Access to personalized healthcare requires collaboration across the stakeholder spectrum of the healthcare system. All stakeholders must commit to improving the integration of genomic testing and digital solutions in daily practice and advocate for supporting changes in healthcare policy.

For more information on personalized healthcare in oncology, visit the Roche Personalized Healthcare hub.

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