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ASCO Annual Meeting 2023: Precision Oncology Achieving Widespread Adoption

Earlier this month, the American Society of Clinical Oncology (ASCO) hosted its 59th Annual Meeting, drawing nearly 50,000 attendees from around the globe. The conference is the main oncology event of the year, focusing on the diagnosis and treatment of cancer. It hosts healthcare providers and companies as they present clinical readouts on their investigational oncology treatments. Global X attended this year's presentations, which focused on improved screening and diagnostic methods; how to increase patient access to precision oncology; and the widespread adoption of digital health in the treatment of cancer patients. In this piece, we highlight some of the most exciting developments.

Key Takeaways:

- CAR-T therapy was once limited to being a treatment of last resort for specific cancers, but recent data point to its potential efficacy in a much wider patient population, possibly opening the door to better outcomes and rapid revenue growth.[1]
- New treatments may be shifting the paradigm toward a tumor-agnostic future where a cancer's genetic and molecular features take precedence over where a tumor is located, accelerating the rate at which patients could receive lifesaving treatments.[2]
- Early detection through improved diagnostics is key to improving patient outcomes. Liquid biopsy and artificial intelligence technologies are on the cutting edge.

CAR-T Treatments: Expanding Reach Into Earlier Treatment of Cancer

The CAR-T treatment space has come a long way since the first CAR-T FDA-approval in 2017.[3] Chimeric antigen receptor (CAR) T-cell therapy is a way to get immune cells – a type of white blood cell – to fight cancer by changing them in the lab so they can find and destroy cancerous cells. There are now six commercially available CAR-T therapies, all approved for the treatment of blood cancers, though they are often used only after other treatments have been unsuccessful.[4] Given CAR-T therapies' relatively new presence in the oncology space, they are usually used for patients that have already received four or more failed treatments.

New data presented at ASCO show CAR-T therapies could have improved response rates in patient populations that have undergone fewer pretreatments, significantly expanding the pool of patients that could benefit from such therapies. Along with ongoing efforts to help scale manufacturing capabilities, treating patients earlier is expected to play a key role in the CAR-T industry potentially reaching 2028 sales of $16.97 billion, up from just $2.69 billion in 2022.[5]

APPROVED CAR-T TREATMENTS GAINING MOMENTUM

Source: National Cancer Institute. (n.d.). CAR-T cells: engineering patients' immune cells to treat their cancers. Accessed June 14, 2023.; Evaluate Pharma. (n.d.). L1X5 (CAR T-Cell Therapy Antineoplastics): Worldwide | Overview. Accessed June 20, 2023.

Treatment	Sponsor	Launch	Forecasted 2028 Sales (M)	Approvals
Kymriah	Novartis	2017	$552	B-cell acute lymphoblastic leukemia B-cell non-Hodgkin lymphoma
Yescarta	Gilead	2017	$2,438	B-cell non-Hodgkin lymphoma Follicular lymphoma
Tecartus	Gilead	2020	$64	Mantle cell lymphoma B-cell acute lymphoblastic leukemia
Breyanzi	Bristol Myers Squibb	2021	$1,826	B-cell non-Hodgkin lymphoma
Abecma	Bristol Myers Squibb	2021	$1,740	Multiple myeloma
Carvykti	Johnson & Johnson	2022	$3,374	Multiple myeloma

Legend Biotech and Johnson & Johnson received Food & Drug Administration (FDA) approval last year for Carvykti, their CAR-T therapy for Multiple myeloma, but only following four or more previous treatments.[6] The firms presented data at ASCO from the CARTITUTE-4 trial, showing Carvykti performed better than the current standard of care in patients who have undergone one to three prior treatments. In the study, Carvykti reduced the risk of disease progression or death by 76%, compared to just 49% from the current standard of care.[7] Eighty-five percent of patients treated with Carvykti saw at least some tumor reduction, with 73% of patients experiencing a complete response (CR), meaning that all signs of cancer disappeared in response to the treatment.[8] Carvykti brought in $103 million in sales in 2022 and is projected to bring in $3.4 billion in 2028, aided by its potential use in a larger patient pool.[9]

Recent efforts by pharmaceutical and biotechnology firms also point to CAR-T's potential to replicate its success beyond oncology. Most efforts thus far have centered around hematological cancers, with increased attention in proving CAR-T's potential in solid tumors. Early-stage clinical trials, however, are now seeking to examine CAR-T's possible role in treating autoimmune disorders. Notably, Bristol Myers Squibb and Novartis are currently running simultaneous phase 1/2 studies for CAR-T treatments in lupus, with a host of smaller biotechnology firms like Cabaletta Bio and Cartesian Therapeutics also studying the technology's efficacy in disorders like Crohn's, ulcerative colitis, and amyloidosis.[10] Shortly after ASCO, AstraZeneca announced a development deal with Quell Therapeutics to collaborate on the development of cell therapies for type-1 diabetes and inflammatory bowel disease (IBD).[11]

Tissue-Agnostic Treatments Are Making Precision Oncology a Reality

AstraZeneca and Daiichi Sankyo have gathered significant momentum in the HER2-mutated treatment space across breast, gastric, and lung cancers with their drug, Enhertu. New data presented at ASCO, however, suggest the drug could be beneficial for all HER2-positive tumors, regardless of their location. Expanded approval for Enhertu would further enhance its market opportunity and play a key role in its estimated 2028 sales of $8.2 billion, up from $1.6 billion in 2022.[12]

HER2 genes are involved in normal cell growth, but they can mutate to become overexpressed, potentially causing cancerous cells to grow and spread quickly. AstraZeneca and Daiichi Sankyo revolutionized the HER2-positive breast cancer space with their drug, Enhertu, which the FDA first approved in 2019.[13] The firms have since received expanded approval in gastric and lung cancers and recently gained another green light for the treatment of patients with low expression levels of HER2, following a presentation at last year's ASCO. For more information on Enhertu's success in patients with low levels of HER2 expression, see ASCO Annual Meeting 2022: An Innovation Showcase in Cancer Treatment.

The two firms are now moving towards a potential tumor-agnostic approval for Enhertu, which would allow treatment based on the cancer's genetic and molecular features, without regard to the cancer type or where it originated. Historically, cancer drugs have been tested and approved based on where the cancer starts in the body. Six tumor-agnostic treatments have been approved by the FDA for certain genetic mutations found in various cancers, though no tumor-agnostic treatments are currently approved for HER2 mutations.[14] These mutations can cause cancer cells to become overexpressed and spread rapidly. The treatments specifically target these mutations to inhibit their effects, thereby reducing the spread and growth of cancer cells. A potential approval in tumor-agnostic HER2 would further advance the focus on personalized or precision medicine for cancer treatment. It would also help solidify a shift in how cancer treatments are developed, assessed, and approved.

AstraZeneca and Daiichi's DESTINY-PanTumor02 study, presented at ASCO, showed Enhertu shrank tumors in 37.1% of participants across a range of HER2-expressing cancers, many of which have no approved HER2 therapy.[15] In patients with high levels of HER2 expression, 61.3% experienced tumor shrinkage.[16]

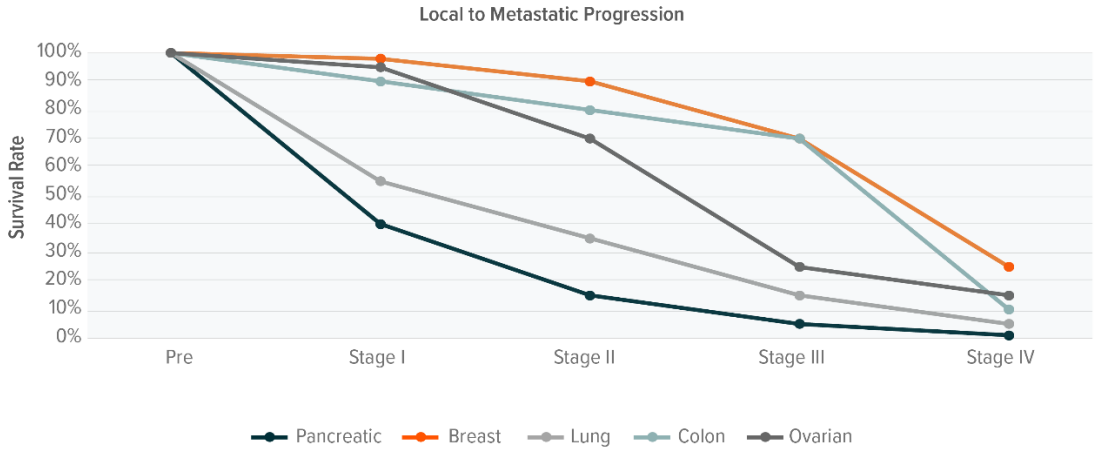
The trial included patients with biliary tract, bladder, cervical, endometrial, ovarian, and pancreatic cancers. Individually, these represent relatively small patient populations, but collectively they could result in a vast new market for Enhertu. Response rates across tumor types were reported at 22%, 39%, 50%, 57.5%, 45%, and 4%, respectively.[17]

New Screening and Diagnostic Alternatives Are Top of Mind

A key focus at ASCO continues to be improving screening and diagnostic options for cancer patients. Using current standard of care, only about 25% of cancers are detected via screening.[18] The remaining 75% of cancers are detected when the patient is symptomatic, and most likely in a later stage of cancer.[19] Currently, an estimated 57% of lung cancer cases are diagnosed at stage III.[20] In pancreatic cancer, 53% of cases are diagnosed at stage IV.[21] Understandably, survival rates are drastically improved for patients the earlier they are diagnosed. Widespread hereditary testing and a wider, more effective selection of non-invasive screening options propose to change this dynamic.

SURVIVAL BY CANCER STAGING

Source: Global X analysis with information derived from: Cancer Research UK. (n.d.). Your cancer type. Accessed June 20, 2023.; Johns Hopkins Medicine. (n.d.). Pancreatic cancer prognosis. Accessed June 20, 2023.



Liquid biopsies, which remained an ever-present theme at ASCO, will likely be a key to achieving early detection. Liquid biopsies are tests done with a blood sample to look for cancer cells or pieces of DNA from tumor cells that are released into the blood. These can be particularly useful to find cancer at an early stage, where the patient is still unsystematic and would otherwise not be diagnosed. At ASCO, diagnostic firm GRAIL presented data for its Galleri blood test, which can detect over 50 cancer types. The Simplify study, led by the University of Oxford, showed the test had a positive predictive accuracy of 75%.[22] The test was able to rule out cancer with a predictive efficacy rate of approximately 98%, indicating that around 2% of patients with a negative result actually had cancer.[23] Overall, the test correctly revealed cancer 66% of the time.[24] Liquid biopsies as a multi-cancer early detection (MCED) tool are still relatively new, though ongoing efforts from diagnostics firms seek to drive widespread use. For more information on liquid biopsies, see Liquid Biopsy: A Pathway to Earlier and Less Invasive Cancer Detection.

We also saw significant focus on improving existing screening methods to predict the presence of cancer more accurately. One study presented at ASCO showed that artificial intelligence (AI) can better predict breast cancer risk than one of the standard clinical models in the U.S. Five different AI programs were tested to assess data from mammograms that showed no visible signs of cancer. All five programs were able to predict five-year breast cancer risk from the negative mammograms better than the Breast Cancer Surveillance Consortium (BCSC) risk model.[25] In the 10% of women with the highest risk of breast cancer, the top-performing AI model correctly predicted 28% of cases, compared to the 21% predicted using the BCSC model.[26]

Conclusion

As with every ASCO, we saw encouraging milestones for cancer diagnoses and treatments, though we were particularly excited by the emphasis on precision oncology throughout the meeting. The structural shifts in diagnosing and treating cancer are not only encouraging from a patient perspective, but also present a compelling investment opportunity. In our view, minimally invasive and accurate early-detection tools, broader access to innovative treatments, and harnessing the power of AI to improve patient outcomes all have the potential to fuel growth at both legacy healthcare companies and promising upstarts.

Footnotes

1. Journal of Clinical Oncology. (2023, June 7). First phase 3 results from CARTITUDE-4: Cilta-cel versus standard of care (PVd or DPd) in lenalidomide-refractory multiple myeloma.
2. ASCO Daily News. (2023, June 7). DESTINY-PanTumor-02: trastuzumab deruxtecan has activity against a range of HER2-expressing solid tumors.
3. National Cancer Institute. (n.d.). CAR-T cells: engineering patients' immune cells to treat their cancers. Accessed June 20, 2023.
4. Ibid.
5. Evaluate Pharma. (n.d.). L1X5 (CAR T-Cell Therapy Antineoplastics): Worldwide | Overview. Accessed June 14, 2023.
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21. National Library of Medicine. (2015). Systemic therapy in stage IV pancreatic cancer: a population-based analysis using the National Cancer Data Base.
22. Cancer Research UK. (2023, June 12). ASCO 2023 roundup: Blood tests, drugs and exercise.
23. Ibid.
24. Ibid.
25. Ibid.
26. Ibid.

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