THOUGHT LEADERSHIP

JASPER COLIN
DATA TO DECISION

Are we seeing Democratization of innovative cancer therapies?

This paper will attempt to understand the benefits and challenges in the space and what it means for the ones on the receiving end of the innovation.

Cancer has been a major health issue worldwide, affecting millions of people and causing significant mortality rates.

IN 2022

609,360

cancer deaths occurred in US, including **350 deaths per day** from lung cancer, the leading cause of cancer death.

1,918,030

new cancer cases were diagnosed in US, the equivalent of about **5250 new cases each day**.

The global cancer burden is expected to increase, and as such, there is a growing need for research and development (R&D) to discover innovative therapies to manage the disease.

In recent years, there has been a significant increase in investment in cancer therapy innovation. According to a report by the American Association for Cancer Research (AACR), in 2020, the National Cancer Institute (NCI) invested approximately $6.5 billion in cancer research. The top ten pharmaceutical corporations spent more than $100 billion on R&D in 2020, much of it on cancer medicines. Spending has increased as well as private investment.

According to data by Jasper Colin, global spending on cancer medications increased **from $192 billion** in 2022 to **$219 billion** in 2023. The amount is anticipated to increase further and reach **$390 billion** in 2030.

Cancer treatment has seen significant advancements in recent years, with the emergence of targeted therapy, precision medicine, and immunotherapy. These approaches offer unique benefits and limitations, and their effectiveness varies depending on the cancer type and stage.

With all of the FDA approvals, it should not be surprising that the market for innovative therapies is rapidly expanding.

Jasper Colin's recent report suggests that by 2025, the global market would reach...

$84.6 Bn	$217.6 Bn	$126.9 Bn
Precision therapy	Targeted therapy	Immunotherapy

Targeted therapy involves the use of drugs that target specific molecules or proteins in cancer cells, which enables the cancer cells to be destroyed while leaving healthy cells intact. This approach has been effective in treating some types of cancer, such as breast cancer and lung cancer.

Precision medicine involves using a patient's genetic information to tailor their cancer treatment plan, enabling doctors to identify the most effective drugs and dosages for each patient.

Immunotherapy, on the other hand, is a newer treatment approach that stimulates the patient's immune system to recognize and destroy cancer cells.

These therapies are still being developed further to achieve the unthinkable goals.

Targeted Therapy is advancing rapidly for patients with **rare or hard-to-treat cancers**, such as pancreatic cancer. Another promising development is the **use of nanotechnology** to deliver targeted therapies directly to cancer cells.

EXAMPLES OF

Targeted precision therapies	Immunotherapies
Tyrosine kinase inhibitors (TKIs), Monoclonal antibodies, and Immunotoxins.	**Checkpoint Inhibitors, CAR-T cell therapy, and Cancer vaccines.**

> **Dr. Roy Herbst**, Chief of Medical Oncology at Yale Cancer Center, has underscored the need for continued research and development of precision therapies to improve outcomes for patients.

Precision Therapy's present research is investigating novel methods to detect cancer drivers, including liquid biopsy that detects circulating tumor DNA in blood samples, and **gene editing** techniques like **CRISPR** that may fix genetic mutations to prevent cancer growth. One promising area of research is the development of **personalized cancer vaccines**, which could help train the immune system to specifically target a patient's unique cancer cells.

	PRECISION THERAPY	TARGETED THERAPY	IMMUNO THERAPY
How it works	Focuses is on identifying specific genetic mutations driving cancer	Targets proteins that control how cancer cells grow	Patient's immune system is stimulated to fight cancer cells
Effectiveness	Yields over 50% patient treatment success	Improve survival rates by up to 50% for breast cancer	Improve survival rates by up to 40% for melanoma
Cost	**$8500** per year	**$100,000** per year	**$150,000** per year
Promising area of research	Liquid biopsy & gene editing	Nanotechnology	Personalized cancer vaccines
Side effects	Hair loss, intestinal damage, nausea	Liver problem, diarrhea, skin rash	Autoimmune effects
Limitations	Cancer cell develop resistance	Cancer cell develop resistance	Tailored and expensive
Cancer types treated	Many, including breast, lung, and colon cancer	Wide range, including lung, breast, and colorectal cancer	Many, including melanoma, lung, and bladder cancer
FDA-approved drugs	100+	30+	20+
Success rate	50%	80%	>50%

Going forward, **these innovative therapies are transforming the field of cancer treatment, offering new hope to patients and their loved ones.**

Continued investment in R&D in these areas is essential to unlock their full potential and transform the landscape of cancer treatment for generations to come. It is time to invest in the future of cancer treatment and to ensure that patients receive the best care possible.

PRECISION THERAPY

With the use of precision medicine, medical professionals may offer and plan customized care for their patients based on the unique genes, proteins, and other components of each patient's body. This method is often referred to as personalized medicine or personalized care.

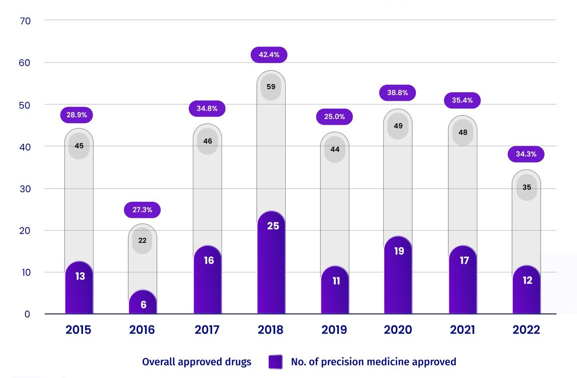
For the patient population that they are intended to treat, medicines created to treat conditions with certain genetic traits are **more effective, which increases market success and brand recognition.**

Personalized medicines will now make up more than a quarter of the new drugs the agency has approved in the last seven years after the agency approves 12 further personalized medicines in 2022.

This number shows a recent strong growth. **Less than 10 percent** of the new therapies licensed annually were customized medications just ten years ago.

Even the huge number of novel treatments designated as personalized medicines in 2021 does not fully capture the expanding array of tailored medications that are now accessible to physicians and their patients.

Precision Medicines FDA Approvals



Source: USFDA

In addition to the novel cell-based therapies and the personalized NMEs,

the FDA authorized a number of significant new personalized medicine indications for current medications and medication combinations in 2021.

Sizhen Wang**, Co-founder and CEO, Genetron Health has emphasized the potential of precision therapies to transform the treatment of cancer, stating that* ***"Precision oncology is the best new weapon to defeat cancer".

The United States remains the industry leader in precision medicine. A trend that will persist in the years to come, despite setbacks in medical research caused by a greater emphasis on COVID-19. Due to this, the US may test treatments that could be used globally because it is a global leader in precision medicine.

The market for precision medicine is currently neither monopolistic, where only one or a small number of significant companies dominate, nor is it perfectly competitive, with many significant companies competing. Invading the market and introducing new technologies are a number of large corporations, including **Pfizer** and **Novartis**, as well as mid-sized and smaller businesses. This is beneficial for spreading precision medicine advancements because a competitive environment is more likely to produce **affordable solutions** without the need for **regulatory intervention.**

Benefits

- Precision medicine yields over **50% patient** treatment success.
- Precision medicine tools enhance **decision-making** and prevent delays.
- Precision medicine **saves time** by sequencing bacteria from blood samples.
- Physicians prescribe drugs tailored to **genetics, lifestyle, and history.**
- Pharmacogenomics advances with **precision medicine.**
- Precision medicine will help practitioners decide what tests are **necessary**.

Although advancements and breakthroughs in the field of precision medicine are guiding healthcare to move away from **one-size-fits-all, trial-and-error medicine**, and towards the **use of molecular information** to improve patient outcomes and increase the effectiveness of healthcare, continual advancement cannot be assumed.

Limitations

- The high cost associated with precision.
- The risk of genetic discrimination and protecting the privacy of an individual's genetic information.
- Access and availability of genetic testing.
- Reimbursement from third-party payers for these targeted drugs is also likely to become an issue.
- Misinterpretation of genetic and health data.

Industry Insiders

Stakeholders

Policymakers

must support measures that promote the development of customized medicine in order to make sure that **researchers and developers keep creating ground-breaking diagnostics and treatments for the benefit of patients and healthcare systems.**

There is no doubt that
precision medicine is here to stay!

TYPES OF CANCERS

can be treated with
Precision Type

- Colorectal cancer
- Breast cancer
- Lung cancer
- Esophageal cancer
- Stomach cancer
- Certain types of leukemia
- Certain types of lymphoma
- Melanoma
- Ovarian cancer
- Thyroid cancer

TARGETED THERAPY

Targeted therapy is a type of cancer treatment that targets proteins that control how cancer cells grow, divide, and spread. It is the foundation of precision medicine.

Scientists study the genes of tumors to craft targeted therapies. They focus on certain proteins that are calling the shots on cancer cells' growth and spread while leaving healthy cells alone. Next, they create drugs that can attack these proteins like a hammer to a nail.

Thirty-one different types of cancer can be treated with **290 FDA-approved targeted therapy** medications as of March 6, 2023.

Targeted therapy can be used together with other treatments like chemo, hormones, and immunotherapy. Although not all cancers can be targeted yet, the field is booming, and tons of new therapies are currently in clinical trials.

Benefits

Targeted therapy **delivers toxins** that only kill cancer cells without harming healthy cells.

Targeted therapy **cuts off the blood supply to the tumor** and prevents the formation of new blood vessels.

Recently, Jasper Colin conducted a **comprehensive study** to gain deeper understanding of the market challenges for cancer drug makers. A survey questionnaire was administered to **200 physicians, 100 patients, and 50 payors** to gather data on their experiences and perceptions of targeted therapies. Additionally, semi-structured interviews were conducted with **20 physicians, 10 patients, and 5 payors** to gain a deeper understanding of the challenges. The data collected through the survey and interviews were analyzed using statistical techniques and content analysis.

THE STUDY REVEALED THAT

Physicians faced challenges in informing their patients about targeted therapies.

23%

The Likert scale score showed that only 23% of physicians felt that their patients were **fully informed about targeted therapy**.

Patients faced challenges in accessing targeted therapies due to high costs and lack of insurance coverage.

34%

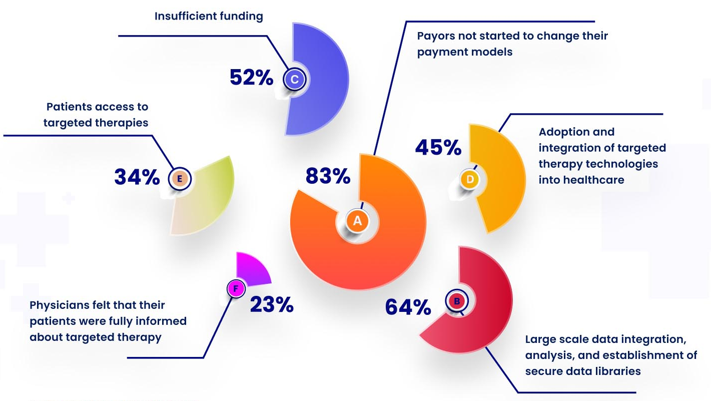
The Likert scale score showed that only 34% of patients believed that they had **access to targeted therapies**.

Payors faced challenges in adapting their payment models to cover the cost of targeted therapies.

83%

Likert scale score showed that 83% of payors had not started to change their **payment models**.

Market challenges for cancer drug makers | % of participant who agree



Source: Jasper Colin Medi-Insights Study 2022

The findings of this study have significant implications for physicians, patients, and payors. The study highlights the **need for improved communication** between physicians and patients to ensure that patients are fully informed about targeted therapies. The study also emphasizes the need for increased insurance coverage for targeted therapies to **improve patient access.** For payors, the study highlights the need to adapt their **payment models** to cover the cost of targeted therapies.

Limitations

Targeted therapy will not work if the tumor does not have the specific genetic change or protein that the drug targets.

There is also a possibility that the tumor will not respond to the drug even if patients have the specific genetic change or protein that the drug targets.

There is a lack of long-term efficacy data. Because targeted therapy is a relatively new approach.

Drugs for some targets are hard to develop.

Targeted therapy can nevertheless have adverse effects such as exhaustion, nausea, and skin rashes.

IMMUNO THERAPY

Immunotherapy is a kind of treatment in which a patient's immune system is stimulated to fight cancer cells. There are different types of immunotherapies. These include monoclonal antibodies, checkpoint inhibitors, and vaccines. Some types of immunotherapies are also called targeted treatments or biological therapies. It is no longer the newest cancer treatment technique. Oncologists now use it as a standard treatment for a wide range of cancers.

Benefits

Comparing immunotherapy to other cancer treatment methods, it often produces positive effects in select malignancies.

Immunotherapy can improve the efficacy of other cancer therapies.

Immunotherapy has fewer side effects because it targets the immune system and not all the cells in the body.

Immunotherapy is an exciting and innovative treatment option for cancer patients, but its development and implementation are not without challenges. Recently, Jasper Colin conducted a survey questionnaire, which was administered to **250 physicians, 150 patients, and 100 payors** to gather data on their experiences and perceptions of immunotherapy.

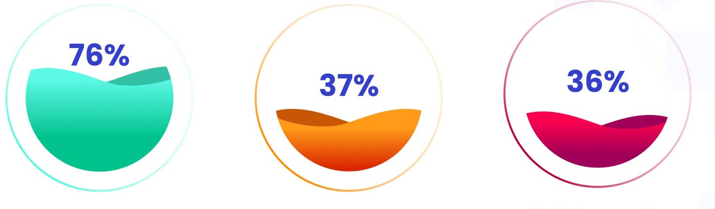
THE STUDY REVEALED THAT

Physicians faced challenges in identifying patients who would benefit from immunotherapy.

The study also found that patients faced challenges in accessing immunotherapy due to high costs and lack of insurance coverage.

Payors faced challenges in adapting their payment models to cover the cost of immunotherapy.

LIKERT SCALE SCORE



Payors not started to change their payment models

Physicians felt confident in identifying patients who would benefit from immunotherapy

Patients access to immunotherapy

The study highlights the need for improved

Physicians felt that their patients were fully informed about targeted therapy

diagnostic tools, increased insurance coverage, and the adaptation of payment models to overcome these challenges. The study underscores the importance of continued investment in research and development to bring effective immunotherapy treatments to market while addressing the challenges faced by physicians, patients, and payors.

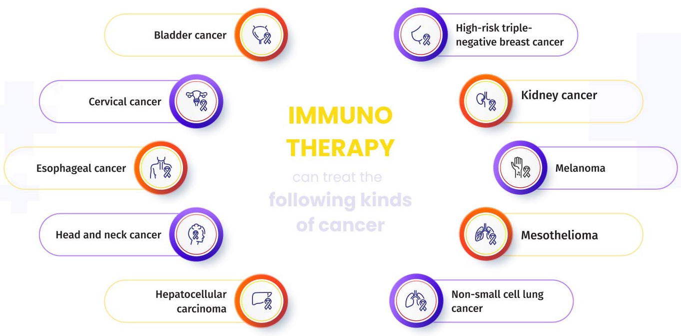
Limitations

1

Sometimes immune cells mistakenly attack healthy cells. This phenomenon is known as an immune-related adverse effect, or irAE.

2

Immunotherapy takes longer to work as compared to other cancer treatments available.



IMMUNO THERAPY can treat the following kinds of cancer

- Bladder cancer
- Cervical cancer
- Esophageal cancer
- Head and neck cancer
- Hepatocellular carcinoma
- High-risk triple-negative breast cancer
- Kidney cancer
- Melanoma
- Mesothelioma
- Non-small cell lung cancer

Way forward

While precision therapy, targeted therapy, and immunotherapy represent important steps forward in the treatment of cancer, **the reality is that their impact will be limited** if patients cannot access these treatments due to cost or other factors. It is imperative that the healthcare industry continue to work together to find innovative solutions to these challenges and ensure that all patients have access to the treatments they need to fight this devastating disease.

Now the question arises:

Which stakeholders will need to act to make innovative therapies a reality?

The interaction between various stakeholders will determine how innovative therapies become commonplace;

Patients will participate to varying degrees, but the most vigilant and knowledgeable ones will demand what is best for them based on the results of their tests, particularly in areas like cancer where survival is at stake.

Physicians will face significant educational and practical challenges as the patients they see and the fact that new innovative therapy science is discovered every week. With payers rewarding them for outcomes achieved rather than just the sale of their products, industry is already integrating innovative therapies into their R&D strategies and will focus more on finding the right patients for their therapies.

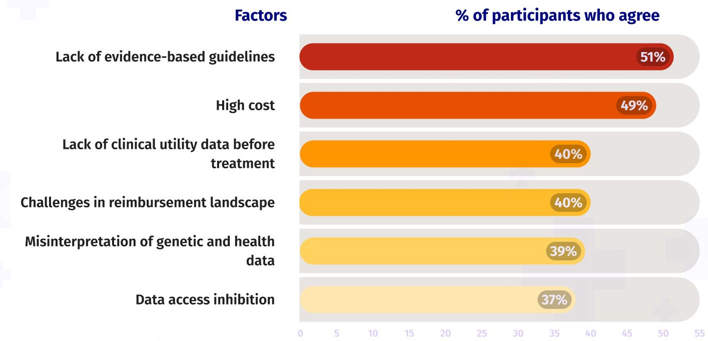
Payers themselves are probably the most skeptical at this point, fearing, with some justification, ever-escalating prices. However, if they are given options that incorporate targeted diagnostics, targeted treatments, and tracking digital tools, they will also embrace the new era. Less instances of them paying for ineffective treatment will result, and because of more focused prevention, there may be fewer treatment episodes overall.

> *Cyriac Roeding, CEO, Co-Founder, Earli*
>
> *"In a hundred years from now, it will be hard to imagine that back in 2022 we didn't know whether we had cancer growing somewhere in our bodies or not. That our bodies weren't automatically scanned for any problems every night while sleeping. That there were no "molecular nanoparticle spies" constantly roaming and monitoring our bodies to send up a flag when they encountered a malignancy. And that patients were even sent home without treatment after lesions were detected in their lungs because no one could tell if the lesion was malignant or benign".*

Overcoming these Challenges

In order to tap into the **multi-billion-dollar** market for innovative therapies, industry players need to navigate regulatory requirements and develop effective pricing strategies to remain competitive in the market.

Per Jasper Colin Medi-Insights, there is an overwhelming need for evidence-based guidelines by providers and ways to increase market access to encourage the efforts in this space:



Source: Jasper Colin Medi-Insights

Jasper Colin Medi-Insights data shows that in addition to regulatory requirements and pricing strategies, market players in the healthcare industry also face other challenges. One of these is the lack of clinical utility data before treatment. This means that there may be limited information available about the effectiveness and potential risks of certain treatments. This can make it difficult for healthcare providers to make informed decisions about which treatments to offer to their patients, and for pharmaceutical companies to demonstrate the value of their products.

Another challenge in the healthcare industry is the reimbursement landscape. Reimbursement policies can be complex and vary from country to country, which can make it difficult for market players to navigate. Additionally, changes in reimbursement policies can impact the profitability of products and affect market access for new products.

The incorrect interpretation of genetic and health data is another problem for market participants in the healthcare. Advances in technology have enabled the collection and analysis of large amounts of data, including genetic data.

However, interpreting this data accurately can be challenging and errors can have significant consequences. Ensuring the accuracy of data and avoiding misinterpretation is crucial for the safe and effective use of healthcare products.

Overall, market players in the healthcare industry face a range of challenges beyond regulatory requirements and pricing strategies. Addressing these challenges requires collaboration across the industry and a commitment to ongoing innovation and improvement. By doing so, market players can help to improve patient outcomes and drive long-term growth and success.

Conclusion: Innovative cancer therapies have the potential to revolutionize cancer treatment, but the availability of these therapies, patient access, and the ROI of these therapies are critical issues that must be addressed. Pharmaceutical and biotech companies must continue to invest in research and development to bring innovative therapies to market, while policymakers, healthcare providers, and insurers must work together to ensure patient access to these therapies. Finally, stakeholders must continue to evaluate the ROI of innovative cancer therapies to ensure that patients receive the best possible care at an affordable cost.

To know more about cancer related innovative therapies and market views, reach out to **Jasper Colin.**

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TMT
Thought Leadership

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