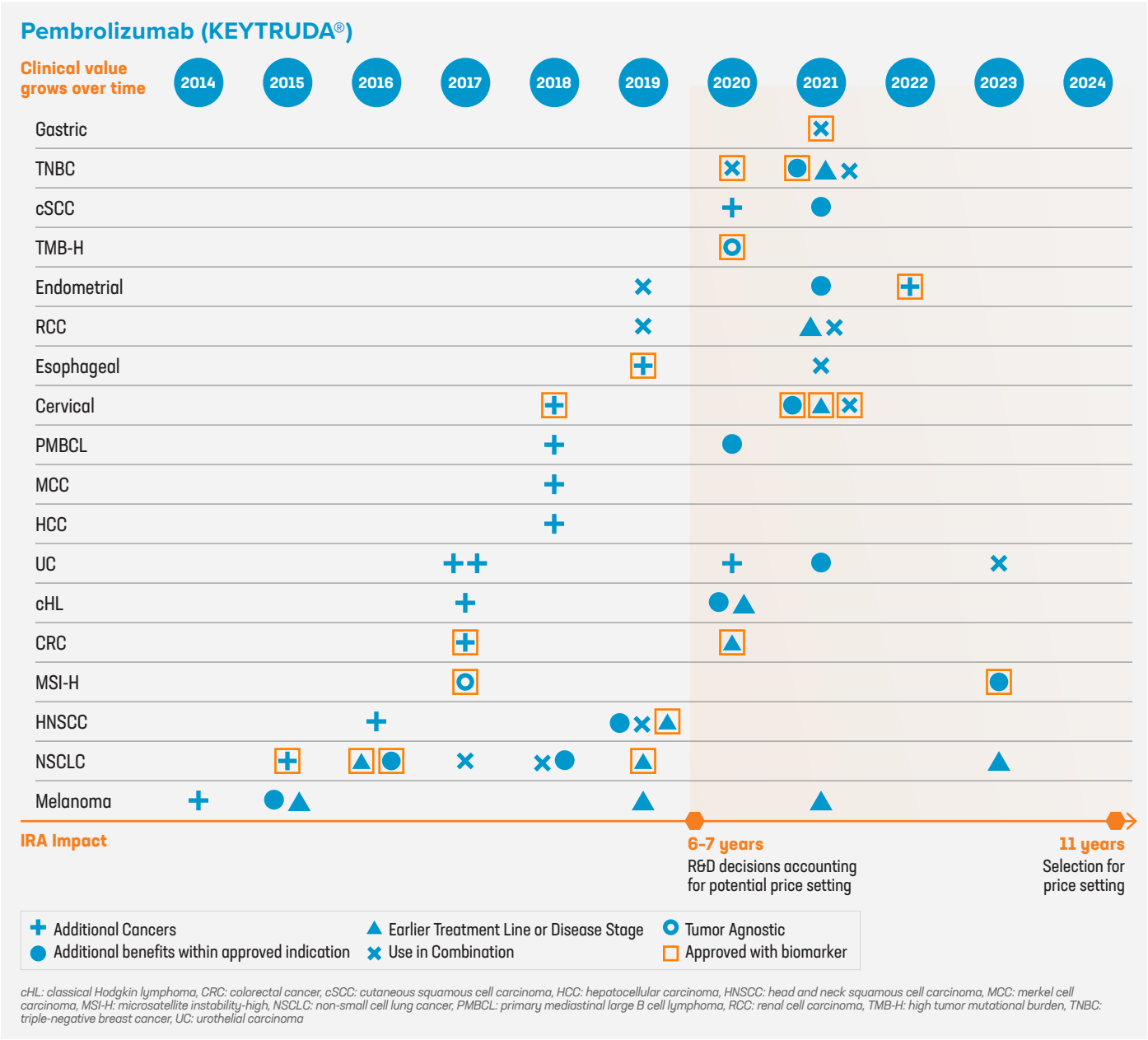
Pembrolizumab | KEYTRUDA®

In 2014, pembrolizumab became the first FDA-approved anti-PD-1 therapy, a type of immunotherapy called an immune checkpoint inhibitor.[1] This treatment class blocks certain checkpoints of the immune system, such as PD-1, to help activate a patient's own immune system to detect and fight cancer cells.[2] Immune checkpoint inhibitors like pembrolizumab have revolutionized oncology care and fundamentally changed outcomes for certain groups of patients with cancer.[3]

Since the initial approval to treat advanced metastatic melanoma, pembrolizumab has been studied extensively in common and rare cancers and has transformed the way many cancers are treated. Multiple clinical studies have demonstrated that pembrolizumab improves survival in advanced diseases as a single agent or in combination with other therapies.[4] Continuing research has also revealed the importance of factors, such as biomarkers, that identify patients most likely to benefit from treatment with pembrolizumab.

As of early 2023, pembrolizumab had earned approvals in 35 indications across many tumor types and as a tumor-agnostic therapy, with more than 1,600 clinical trials across a wide variety of cancers and treatment settings.[5] The breadth and depth of approvals and the size of this clinical program underscore the importance of ongoing research and the potential clinical value still to come for this practice-changing cancer treatment.



cHL: classical Hodgkin lymphoma, CRC: colorectal cancer, cSCC: cutaneous squamous cell carcinoma, HCC: hepatocellular carcinoma, HNSCC: head and neck squamous cell carcinoma, MCC: merkel cell carcinoma, MSI-H: microsatellite instability-high, NSCLC: non-small cell lung cancer, PMBCL: primary mediastinal large B cell lymphoma, RCC: renal cell carcinoma, TMB-H: high tumor mutational burden, TNBC: triple-negative breast cancer, UC: urothelial carcinoma

Select Approvals

Additional Indication (October 2015): Granted accelerated approval for the treatment of patients with metastatic NSCLC (mNSCLC) whose tumors express a high level of PD-L1, a protein involved in the body's immune response, and whose cancer has progressed on or after chemotherapy treatment.[6,7] For patients with certain other tumor mutations, disease progression after certain targeted therapies must happen prior to receiving pembrolizumab. Clinical data showed four out of 10 patients had significant tumor shrinkage in response to treatment.[6]

Earlier Treatment Line (October 2016): Approved for the treatment of patients newly diagnosed with certain mNSCLC whose tumors express high levels of PD-L1. A clinical study showed that patients on pembrolizumab were 40% more likely to be alive than those on chemotherapy. This data demonstrated pembrolizumab's superiority in newly diagnosed patients, and the trial was stopped early to give patients still on chemotherapy the opportunity to receive pembrolizumab.[8] Lung cancer is the leading cause of cancer death in the US, and treatments that extend life, like pembrolizumab, are critically important.[9]

Tumor Agnostic (May 2017): Granted accelerated approval for the treatment of adult and pediatric patients with unresectable or metastatic microsatellite instability-high (MSI-H) or deficient mismatch repair (dMMR) solid tumors—biomarkers indicating potential response to treatment across numerous cancer types—that have progressed following prior treatment and have no remaining treatment options. Pembrolizumab became the first-ever FDA-approved tumor-agnostic therapy, representing a major breakthrough in precision medicine and a revolutionary approach to cancer treatment. Clinical data showed approximately four out of 10 patients responded to pembrolizumab, with 78% percent of those patients responding for six months or longer.[10]

Label Update, Dosing Schedule (April 2020): Granted accelerated approval to a new six-week dosing regimen across all currently approved adult indications as an alternative to the previous three-week dosing regimen. This approval offers doctors the option to reduce how often a patient must visit the clinic to receive their infusions, which was valuable to address the unique challenges of cancer patients during social distancing measures recommended during the COVID-19 pandemic. The new dosing regimen created flexibility to help adhere to planned treatment schedules.[11]

Additional Value Demonstrated in Approved Indication and Expansion into Earlier Treatment Line (October 2020): Converted accelerated approval in late-line classical Hodgkin lymphoma (cHL) to traditional approval and broadened its use to earlier treatment lines, which includes the treatment of adult patients with cHL who have progressed after first-line treatment, as well as pediatric patients with cHL that has stopped responding to treatment or cHL that has returned after two or more therapies.[12,13] Clinical trial data showed patients were 35% more likely to live without their cancer getting worse than those on another treatment, a particularly meaningful improvement compared to a historically poor prognosis.[13]

Singular FDA Indication, Earlier Disease Stage (July 2021): Approved as the first immunotherapy for the treatment of patients with high-risk early-stage triple-negative breast cancer (TNBC), first in combination with chemotherapy prior to surgery, and then continued as a single agent after surgery. This new indication built upon a prior FDA approval in metastatic TNBC in combination with chemotherapy for patients expressing a certain biomarker.[14,15] TNBC is an aggressive cancer and makes up approximately 10–15% of breast cancer diagnoses. It has a high rate of recurrence and is more common among younger women and black women. Clinical data showed patients on this treatment regimen saw a 37% decrease in the risk of certain kinds of disease progression—specifically events indicating the cancer has returned or worsened—or death when compared to only chemotherapy prior to surgery.[15,16]

Additional Indication, Use in Combination (August 2021): Approved, in combination with lenvatinib, for the treatment of patients with advanced renal cell carcinoma (RCC). Clinical data showed that patients taking this combination were 34% more likely to be alive versus a standard of care treatment at the time. Almost one in three patients with renal cancer are diagnosed with metastatic disease with a 5-year survival rate of only 13%, so this approval marked an important new treatment option that may extend life for RCC patients.[17]

Additional Value Demonstrated in Approved Indication, Earlier Treatment Line, Use in Combination (October 2021): Approved, in combination with chemotherapy, with or without bevacizumab, for the treatment of PD-L1+ cervical cancer patients with persistent, recurrent, or metastatic disease. In the US, less than one in five patients diagnosed with advanced cervical cancer live more than five years. Clinical data showed patients were 36% more likely to live on the chemotherapy-based treatment regimen when combined with pembrolizumab than without it. Additionally, the FDA converted to traditional approval the 2018 accelerated approval of pembrolizumab as a single agent for the treatment of patients with PD-L1+ recurrent or metastatic cervical cancer whose cancer progressed on or after chemotherapy.[18]

Indication Expansion, Earlier Disease Stage (December 2021): Approved for the adjuvant treatment of patients 12 years and older with certain stages of melanoma following surgery. This approval expanded the label to include pediatric patients and patients with an earlier stage of melanoma, allowing more patients the opportunity to help prevent melanoma recurrence. In a clinical study, patients treated with pembrolizumab after surgery were 35% more likely to be alive without signs of cancer than patients who received no treatment.[19]

Earlier Disease Stage (January 2023): Approved for the adjuvant treatment of patients with certain types of NSCLC following surgery and chemotherapy. Patients who received pembrolizumab in addition to chemotherapy following surgery were 27% more likely to be alive without signs of cancer than patients who did not receive pembrolizumab. Additionally, the median survival for patients taking pembrolizumab was nearly two years longer without disease progression than those patients who did not take pembrolizumab.[5]

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