Programmed cell death protein 1 (PD-1) is a protein on the surface of T-cells that plays a role in cell death, but in recent years has become the target of many novel cancer therapies due to the ability of tumor cells to express this protein and evade immune attack. Now known as “immune checkpoint inhibitors,” six drugs that target PD-1/PD-L1 have gathered approvals for 70 indications in the US and 28 indications in the EU since the first-in-class launch in late 2014. Although immune checkpoint inhibitors have similar indications in the US and EU, the PD-1/PD-L1 inhibitors have biomarker-restricted indications which differ slightly between regions. Higher expression of PD-L1 can predict response to PD-1/PD-L1 inhibitors. However, it does not always predict responses in all patient populations due to patient-specific factors as well as tumor microenvironments. Additionally, there are technical differences and differences in screening thresholds for various assays, which further complicate the predictive ability of the biomarkers. Therefore, the decision for health authorities to restrict indications of PD-1/PD-L1 inhibitors depends on additional factors such as treatment landscape and available therapies.

The objective is to compare the approved indications for PD-1/PD-L1 inhibitors that are linked to specific PD-L1 thresholds in the United States prescribing information (USPI) and summary of product characteristics (SmPC).

Comparison of PD-1/PD-L1 inhibitors was made based on drug labeling from the FDA and EMA websites. Drugs included in the analysis were currently marketed PD-1/PD-L1 inhibitors in the US and EU approved between September 2014 to September 2020. These include the following, listed in order of initial approval date: pembrolizumab, nivolumab, atezolizumab, avelumab, durvalumab, and cemiplimab.

Methods

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