

Standard dosage for one lung cancer treatment may be too high

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A new study published in the *Journal of the National Cancer Institute* indicates that the customary pembrolizumab dose for treatment of metastatic non-small cell lung cancer may be higher than is needed for effective treatment.

In October 2016, [pembrolizumab](#) became the new standard of care for firstline treatment of patients with metastatic non-small cell lung cancer whose tumors express programmed death ligand 1 in at least 50% of cells.

The standard dosage for pembrolizumab was based the KEYNOTE 024 trial. The dosage used in the trial was 200 mg for all patients (fixed dosing) every three weeks. As a result, this was the dose recommended by the Food and Drug Administration. Multiple studies have demonstrated equivalent efficacy with lower weight-based doses (personalized dosing), however. The objective of this study was to compare the economic impact of using personalized dosing (2 mg/kg) vs fixed dosing (200 mg).

Researchers suspected that using the FDA-approved dose of 200 mg for all patients may be an unnecessarily high dose, given that the average weight in the United States is 82 kg. In an era of value-based cancer care, avoidance of drug wastage is of paramount importance. If dosed at 2 mg/kg, an appropriate dose for the average American adult would be 164 mg.

Researchers performed a budget impact analysis to compare fixed dosing with personalized. They calculated the target population and weight of patients who would be treated with pembrolizumab annually. Using survival curves they estimated the mean number of cycles that [patients](#) would receive. Using the Medicare average sales price, researchers calculated the difference in cost between personalized and fixed dosing.

The results of the study indicated that the total

annual cost of pembrolizumab with fixed dosing is \$3.4 billion, but with personalized dosing it would be \$2.6 billion. The use of personalized dosing would likely lead to a 24.0% annual savings, some \$825 million.

Using dosing manipulations such as that described for pembrolizumab could be one way for payers to improve value within the current system. Although some [cancer](#) drug prices have increased in recent years, the price of pembrolizumab has remained fairly constant every quarter for the past six quarters at around \$46 per mg.

More information: Daniel A. Goldstein et al, A Pharmacoeconomic Analysis of Personalized Dosing vs Fixed Dosing of Pembrolizumab in Firstline PD-L1-Positive Non-Small Cell Lung Cancer, *JNCI: Journal of the National Cancer Institute* (2017). [DOI: 10.1093/jnci/djx063](https://doi.org/10.1093/jnci/djx063)

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