Title

Cisplatin shortage results in substitution of more expensive treatments: Drug cost analysis

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Letter to the Editor

Cisplatin shortage results in substitution of more expensive treatments: Drug cost analysis

Dear Editor,

In 2023, cancer patients globally were affected by severe anti-cancer drug shortages. One medication, cisplatin is on the World Health Organization's list of essential medicines, given its ability to cure certain cancers (e.g. testicular, adjuvant lung), and has suffered severe shortages, attributable to a supplier of cisplatin materials closing down due to quality concerns [1,2.] The U.S. Food and Drug Administration (FDA) listed cisplatin in short supply on February 10 [3].

The American Society of Clinical Oncology (ASCO) rapidly provided clinical guidance on alternative treatments in cases of platinum shortage. ASCO recommends six disease-specific alternatives for urothelial, breast, gastrointestinal, gynecologic, head and neck, and small cell lung cancers [4]. Yet, these alternative treatments may have less established clinical efficacy, and they might cost more than regimens containing platinum. Here, we investigate the cost difference in cancer treatment regimens when cisplatin is not available, and alternatives are substituted.

This retrospective cross-sectional economic evaluation identified cancer treatment regimens from the ASCO clinical guidance. The costs of each agent were extracted from the Micromedex RED BOOK database. The cost of treatment regimen was the total cost with the number of cycles indicated. If the treatment was approved to be given until disease progression or toxicity, the treatment cost was calculated based on the median number of cycles received in the clinical trial. A theoretical weight of 80 kg or body surface area of 1.8 m square was used when appropriate. The cost of the drug was rounded up to the nearest vial size. Our study was not submitted to IRB review because it involved only the analysis of publicly available cost and dosing data.

We examined 41 cancer treatment regimens from 3 tumor types (head and neck, small cell lung, and urothelial cancers). Seven of the treatment regimens were for head and neck, 13 were small cell lung, and 21 were for urothelial cancers. Eleven of the regimens included cisplatin and 30 regimens were alternative treatments for cisplatin.

The average cost of a regimen containing cisplatin across tumor types was $30,656 and the average cost of a substitution regimen across tumor types was $77,599 – a difference of $46,943, on average. Substitution regimens had higher costs on average in urothelial and head and neck cancer by $74,007 and $79,719, respectively. The regimens in small cell lung cancer containing cisplatin had a higher cost by $9397 because those regimens included maintenance use of a checkpoint inhibitor.

The Figure shows the comparison of cost of cisplatin containing regimens and the recommended substitution.

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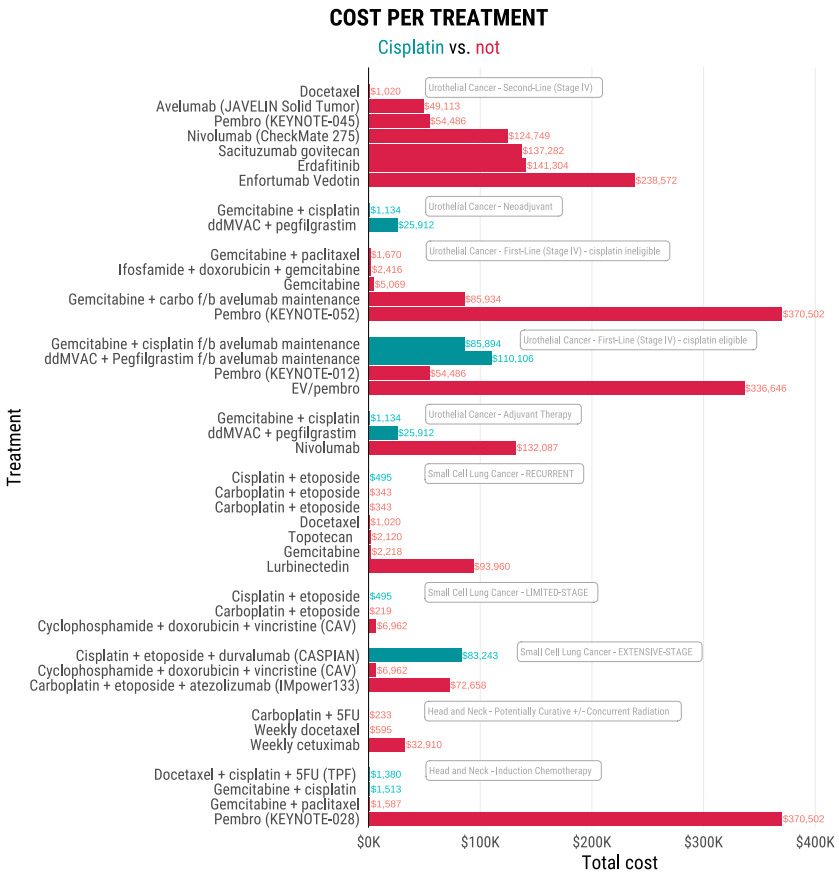

When cisplatin is in shortage the average increase in price per patient, when adhering to ASCO substitutions, was $46,943. In addition to its impact on the quality of patient care, drug shortages inflate prices for payers.

Economists argue that shortages are in part due to lack of incentive in the drug marketplace. Our results suggest that substitution is incredibly costly, highlighting that at least some of these dollars could be reallocated to support platinum manufacturing to ensure steady supply and still result in cost savings to payers.

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CRediT authorship contribution statement

Michael Lam: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing. **Timothée Olivier:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Supervision, Writing – original draft, Writing – review & editing. **Vinay Prasad:** Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing. **Alyson Haslam:** Conceptualization, Data curation, Formal analysis, Project administration, Supervision, Writing – original draft, Writing – review & editing. **Jordan Tuia:** Resources, Supervision, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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