

Chemo drug may cause significant hearing loss in longtime cancer survivors

June 28 2024



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An interdisciplinary study led by researchers at the University of South

Florida and Indiana University has uncovered significant findings on the long-term effects of one of the most common forms of chemotherapy on cancer survivors.

Published in *JAMA Oncology*, the [study](#) tracked a cohort of testicular [cancer](#) survivors who received cisplatin-based chemotherapy for an average of 14 years, revealing that 78% experience significant difficulties in everyday listening situations, negatively impacting their quality of life.

This [collaborative research](#) is the first to measure real-world listening challenges and hearing loss progression in cancer survivors over a long period of time.

"It's important that we understand the real-world effects of patients' sensory problems and if we can understand that, then we can develop better therapeutic strategies and [preventive measures](#) to improve the long-term quality of life for cancer survivors," said Robert Frisina, distinguished university professor and chair of the USF Department of Medical Engineering.

Cisplatin is commonly used in chemotherapy treatments for a variety of cancers, including bladder, lung, neck and testicular. It is administered intravenously and affects various parts of the body.

However, the ears are particularly vulnerable as they have little ability to filter out the drug, causing it to become trapped. This leads to inflammation and the destruction of sensory cells that are critical for coding sound, causing [permanent hearing loss](#) that can progressively get worse well after cisplatin treatments are completed.

Lead author Victoria Sanchez, associate professor in the USF Health Department of Otolaryngology Head & Neck Surgery, said that despite

the known risks, there's a nationwide lack of routine hearing assessments for patients undergoing chemotherapy.

"Most patients still do not get their hearing tested prior to, during or after chemotherapy. Our study highlights the need for regular auditory evaluations to manage and mitigate long-term hearing damage."

The research team found higher doses of cisplatin led to more severe and progressing hearing loss, especially in patients with risk factors, such as high blood pressure and poor cardiovascular health. They also experienced increased difficulty hearing in common environments, such as a loud restaurant.

"It will be critically important to follow these patients for life. Their current median age is only 48 years, and eventually they will enter the years at which age-related hearing loss also begins to develop," said Dr. Lois B. Travis, Lawrence H. Einhorn Professor of Cancer Research at Indiana University School of Medicine and a researcher at the IU Melvin and Bren Simon Comprehensive Cancer Center.

This research is part of The Platinum Study, an ongoing research effort led by Dr. Travis to study cisplatin-treated testicular cancer survivors.

The hope is that this study will inspire further investigation into alternative chemotherapeutic protocols and preventive measures, such as FDA-approved drugs to prevent or reduce hearing loss.

"This research gives oncologists the information they need to explore alternative treatment plans that could reduce the long-term side effects, such as altering the dosages and timing of the cisplatin in the treatment, when that could be an appropriate option," Frisina said.

Innovative solutions, such as [Pedmark](#), a new FDA-approved injection

that mitigates cisplatin-induced hearing loss in children, represent promising steps forward, according to Frisina.

"We want to protect our hearing or treat a hearing loss if hearing damage occurs," Sanchez said. "Hearing allows us to connect to the world we love. Staying connected through conversations with family and friends, enjoyment of music and entertainment, staying safe and finding pleasure in our vibrant surroundings. Promoting optimal hearing for overall wellness is essential for healthy living."

[According to the American Cancer Society](#), in addition to cisplatin, other platinum chemotherapy drugs, such as carboplatin, cause damage to the cochlea in the inner ear and lead to hearing loss. The risk of damage is greater with higher doses of chemotherapy.

More information: Victoria A. Sanchez et al, Comprehensive Audiologic Analyses After Cisplatin-Based Chemotherapy, *JAMA Oncology* (2024). [DOI: 10.1001/jamaoncol.2024.1233](https://doi.org/10.1001/jamaoncol.2024.1233)

Provided by University of South Florida

Citation: Chemo drug may cause significant hearing loss in longtime cancer survivors (2024, June 28) retrieved 17 July 2024 from <https://medicalxpress.com/news/2024-06-chemo-drug-significant-loss-longtime.html>

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