

Young children with cancer face an especially high risk of hearing loss from chemotherapy drug

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The chemotherapy drug cisplatin is an effective cancer treatment for many children with cancer, but unfortunately it can cause permanent hearing loss. Results from a new study show that the hearing of very young children is impacted early during treatment and is affected to a greater extent than that of older children. The findings are published by Wiley early online in *Cancer*.

Previous studies have shown that up to 60% of children treated with cisplatin suffer from [hearing](#) loss. To evaluate the course of cisplatin-related hearing loss, Dr. Bruce Carleton, PharmD, an investigator and director of the Pharmaceutical Outcomes Program at BC Children's Hospital in Vancouver, British Columbia, and his colleagues examined data from 368 Canadian childhood cancer patients who received cisplatin and underwent a total of 2,052 audiological assessments. All patients were off cisplatin within three years of initiating the medication.

Three years after starting therapy, 75% of patients ≤ 5 years old and 48% of patients > 5 years old had experienced cisplatin-related hearing loss. At three months and one year after initiating therapy, 27% and 61% of patients ≤ 5 years old had experienced cisplatin-related hearing loss, respectively. A higher total dose of cisplatin at three months, co-prescriptions of the chemotherapy drug vincristine, and a longer duration of concomitantly administered antibiotics exacerbated cisplatin-related hearing loss over time.

The authors noted that the underlying mechanism explaining the higher occurrence of cisplatin-related hearing loss in young children remains unclear, but maturing structures within the ear might be more vulnerable to the toxic effects of cisplatin.

"Audiological monitoring at each cycle of cisplatin treatment will allow research to advance more quickly to find the mechanistic basis of why

younger children are more vulnerable to hearing loss and how best to protect hearing while being given this life-saving therapy," said Dr. Carleton, who is also a professor at the University of British Columbia's Faculty of Medicine and director of the Provincial Health Services Authority's Therapeutic Evaluation Unit.

Penelope Brock, MD, PD, MA, of Great Ormond Street Hospital in London, authored an editorial that accompanies the study. She said that the work "comes from an excellent international collaboration between audiologists and oncologists and brings new insight into this extremely serious life-impacting direct effect of [cisplatin](#) on [children](#)."

September is [Childhood Cancer Awareness Month](#).

More information: "The cumulative incidence of cisplatin-induced hearing loss in young children is higher and develops at an early stage during therapy compared to older children, based on 2,052 audiological assessments." Annelot Meijer, Kathy Li, Beth Brooks, Eva Clemens, Colin Ross, Sharad Rassekh, Alex Hoetink, Martine van Grotel, Marry van den Heuvel-Eibrink, and Bruce Carleton. *Cancer*; Published Online: September 7, 2021, [DOI: 10.1002/cncr.33848](https://doi.org/10.1002/cncr.33848)

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