

## WHAT IS OTOTOXICITY?



The 5-year survival rate for childhood cancers due to major treatment advances is now 85% or higher.<sup>1</sup> Cisplatin-based therapy is an indispensable component of treatment for pediatric solid-tumor cancers; however, an unfortunate side effect of cisplatin-based chemotherapy is irreversible ototoxicity (or hearing loss). Ototoxicity is caused by irreversible damage to hair cells in the cochlea. This damage is generally dose-dependent, bilateral (affecting both ears), and can be progressive.<sup>2,3,4</sup>

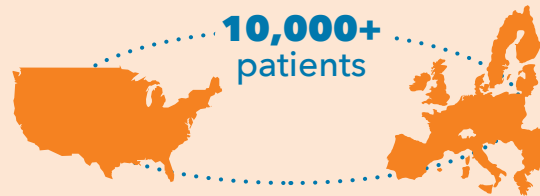
From the very first treatment cycle, pediatric patients can suffer cisplatin-induced ototoxicity that may progressively worsen even after treatment ends.<sup>5</sup>

## WHO DOES IT AFFECT?

Approximately **5,000 children** (≤18 years) are diagnosed with a solid tumor and eligible for treatment with a platinum-based chemotherapy every year in the United States, and a similar number in Europe.

Approximately **70% of these patients** (~3,500 in the US) are diagnosed with non-metastatic, localized disease.<sup>6</sup>

Annual incidence of pediatric solid tumor cases eligible for platinum-based therapy in both U.S. and EU markets



Hearing loss can be seen in **~60 percent of children** treated with cisplatin and can be as high as **90 percent**.<sup>5,8</sup>

## HOW IS IT TREATED?



Previously, intervention only occurred after hearing loss had been detected, and does not return normal hearing.

The most common management strategy is the **use of lifelong hearing aids**, which do not completely reverse hearing loss and require replacements every 3-5 years and may also require amplification technology.<sup>4,7</sup>

Some children receive **difficult to manage cochlear (inner ear) implants**, which remain suboptimal in the direct recovery of hearing function and may also require replacement during an individual's lifetime.<sup>8</sup>

## Studies have shown that hearing loss has a profound impact on children's learning and development at all ages



Despite recommendations, many pediatric cancer patients are not consistently monitored for hearing loss. Only 45% of patients have been documented to require hearing aids.<sup>12</sup>



Parents report children with hearing loss being held back a grade, problems with reading, math, attention and need for special education twice as often.<sup>12</sup>



Nearly 1 in 5 (18%) considered at-risk for hearing loss do not have hearing tests during follow-up.<sup>13</sup>



More than half (57%) of patients do not have full audiological monitoring before, during, and after treatment.<sup>13</sup>



Hearing loss is associated with lower IQ, phonetic decoding, and reading comprehension.<sup>12</sup>



Those with serious hearing loss are at an increased risk of not marrying, not graduating from high school, not living independently and unemployment.<sup>12</sup>

## The cost of cisplatin-induced ototoxicity

Most insurance plans don't cover hearing aids and a pair of hearing aids can cost around \$6,000.<sup>9</sup>

A recent study within the Canadian health system estimated the total present value **lifetime costs** in the range of **\$445,000 to \$560,000** for patients with **severe hearing loss**, measured until the age of 64.<sup>10</sup>

**In addition to the financial costs, ototoxicity takes a significant psychosocial and developmental toll on pediatric patients.<sup>11</sup>**

## REFERENCES

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