



## Key facts

- ❖ An estimated 30% to 40% of children who are deaf or hard of hearing have an additional disability
- ❖ Approximately 2% of children who are deaf or hard of hearing have an autism spectrum disorder
- ❖ Learning disabilities may be under-diagnosed in children with hearing loss
- ❖ On average, children with additional disabilities have poorer outcomes than those with hearing loss alone

## Prevalence of additional disabilities

The rate of the coexistence of additional disabilities or medical conditions with hearing loss (comorbidity) in children is high. Most estimates suggest that between 30% and 40% of children with hearing loss have one or more additional disabilities.<sup>1 2</sup>

Coexisting conditions include cognitive disabilities, learning disabilities, cerebral palsy, autism spectrum disorders, behavioural-emotional disorders, and visual impairment. Studies have reported that the frequency of additional disabilities is similar across all levels of hearing loss, pointing to the need for children with mild or unilateral losses, as well as those with more severe losses, to receive thorough medical and developmental evaluations.<sup>3</sup>

The diverse and complex needs of deaf or hard of hearing students with additional disabilities create challenges for teachers of the deaf.<sup>4</sup> Educational planning and service provision require a transdisciplinary model, often with multiple specialists and extensive collaboration among teachers and other professionals, as well as families. Person-centred planning is considered to be the most effective method of education and service provision. Person-centred planning means that the child's individual needs and strengths, rather than disability categories, drive educational placement, curriculum models and teaching strategies.<sup>5</sup>

## Causes of additional disabilities

The high rate of additional disabilities is because many of the risk factors for hearing loss also involve other developmental conditions. Researchers have estimated that the rate of additional disabilities is highest in genetic syndromic deafness, where the hearing loss is part of a syndrome, such as Usher Syndrome or CHARGE. The rate is lowest in children with genetic non-syndromic deafness or with undetermined causes. Non-genetic, or environmental, causes of hearing loss such as infections during pregnancy, premature birth, and low birth weight can also cause additional disabilities.

### **Autism spectrum disorders**

An estimated two per cent of children with permanent hearing loss also have autism spectrum disorders (ASD). This rate is up to two times greater than for children without hearing loss.<sup>7 8</sup> These disorders tend to be diagnosed later in children with hearing loss. Diagnosis is difficult because both conditions can involve delays in speech, language and social development, and because the testing used to identify ASD is inappropriate for use with deaf or hard and hearing children. It is important for clinicians to recognise that the core features of ASD, such as atypical communication and social interaction and restricted and repetitive behaviours, should not be attributed to language delays due to hearing loss.<sup>9</sup> Children living with both hearing loss and ASD have complex learning needs. There is limited research currently available on best teaching practices for this population.<sup>10</sup>

### **Learning disabilities**

Specific learning disabilities, including dyslexia, dyspraxia, and auditory processing disorder, are at least as prevalent in children with hearing loss as in hearing children. Achievement difficulties may be due to not only the perception difficulty of the hearing loss, but also the processing difficulty of a learning disability. Learning disabilities can go unrecognised in children who are deaf or hard of hearing, but should be considered and investigated when academic progress is poor.<sup>11 12</sup>

### **Deafblindness**

Children are termed deafblind when they have both a hearing and a visual impairment. Most children with this diagnosis have some functional vision or hearing. However, the dual sensory loss generally causes complex communication and educational needs that require very specific approaches and strategies.<sup>13</sup> Specific intervention models have been developed for children who are deafblind.<sup>14</sup>

### **Outcomes for children with additional disabilities**

The presence of additional disabilities is a strong predictor of poorer auditory and speech language outcomes in deaf or hard of hearing children. Children with autism spectrum disorders, cerebral palsy, and cognitive disabilities tend to have the poorest outcomes. Much depends, however, on the severity of the disability.<sup>1</sup>

The candidacy criteria for cochlear implants have widened in recent years, and increasing numbers of children with additional disabilities are being implanted. Outcomes for these children are variable, but are generally poorer than outcomes for implanted children without additional disabilities.<sup>15 16</sup> Some children with severe or complex developmental delay have demonstrated little progress in auditory abilities even after several years of cochlear implant use. However, others with mild or moderate developmental delay have benefitted as much as children without additional disabilities.<sup>2</sup> Parents of implanted children with a wide range of disabilities have reported benefits outside of speech and language abilities, such as enjoyment of music, response to environmental sounds, and increased quality of life.<sup>17</sup>

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