

Use of radio aids in the early years – key messages and FAQ

National Deaf Children's Society briefing

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Key messages

Research commissioned by the National Deaf Children's Society shows that radio aids technology that provides deaf children with additional amplification can have a big impact in the early years. Results show, for example, that use of radio aids led to 144% more conversations between the parent and the child when in the car and 88% when outdoors.

Communication between parents and children is an essential ingredient for good language and communication development. However, everyday situations, such as when in the buggy or in the car, can be a noisy minefield for many deaf children, making it impossible for them to hear their parents. Government data shows that around half of deaf children (48%) fail to reach the expected level in communication and language by the age of 5.

The research shows that, by allowing children to hear their parents' voice clearly and directly, above any background noise, radio aids can help promote parent-child communication.

Despite these clear benefits, many local authorities do not make radio aids available to parents of pre-school deaf children to use at home.

We're now calling on all local authorities and the Department for Education to ensure that every child who could benefit from one is given access to a radio aid at the earliest possible opportunity.

FAQ

Why do we think radio aids are so important in the early years?

The early years is a critical phase for the development of language and communication and parents and early years settings play a vital role in ensuring this happens.

However, hearing aids and cochlear implants do not restore normal hearing and for many hours of the day deaf children are in places where the level of background noise is such that the benefits of these listening devices are limited. Analysis of children's hearing aids has found that children under the age of four spent almost a quarter of their day in noisy environments.¹

Communication can also be challenging in situations that other parents may take for granted, such as in the car or when children are in buggies where face-to-face communication is difficult.

This means there are times when additional amplification, such as that provided through radio aids, is needed to enable children to hear their parents more clearly and with greater ease, above any background noise.

What did the research say on benefits of using radio aids with preschool deaf children?

Daily activity logs by parents found that radio aids were found to be beneficial in 84% of everyday situations, particularly in preschool groups or in outdoor or noisy situations.

¹ Jones, C., and Launer, S. *Pediatric Fittings in 2010: The Sound Foundations Cuper Project*.

Listening evaluations showed that listening improved by 18 percentage points in noisy situations and 19 percentage points when listening at a distance.

Use of innovative LENA devices, which analyse the listening and language environment of the child, also showed large increases when using radio aids in adult communication, conversational turns and child vocalisations in most situations. For example, there was a 144% increase in conversational turns when in the car and 88% when outdoors. There was also an increase of 72%, for example, in child vocalisations at nursery when using the radio aid.

Interviews with parents confirmed that radio aids facilitated more two-way interactions and spontaneous communication.

“Speech-wise she is picking up on more, she is using more language because she can hear what we are saying more. She is definitely more vocal with it on, more likely to communicate,”

“I think the first time I had it on, I was in the car with him, I actually had a normal conversation with him. It was so bizarre!”

“When you are playing Hide and Seek, you build up the anticipation. A hearing child would be very excited and giggling [...] Before he would hide and he had no idea where (Grandma) was until she got there, so just building up the anticipation made the game more exciting, which all of his (hearing) brothers would experience. He hadn’t experienced that before (using the radio aid)”

“It stops her being insular and on her own. Over that distance, if there was background noise, she wouldn’t hear us talking without it. It’s nice for her to know that we are around her”

“Because he was sat in the back of the car, he couldn’t hear or see our face, so he was almost completely isolated [...] out initial response (to the radio aid in the car) was that it was fabulous!”

In summary, the research shows that everyday situations which other parents can take for granted but which were a noisy minefield for deaf children - such as being in a buggy outdoors or in the backseat of the car – become much more manageable when using radio aids, opening up new opportunities for parent-child interactions.

What is LENA?

LENA or Language ENvironment Analysis are small devices which are worn on a child and which record all speech and environmental sounds around a child. The data provides us with accurate information on the real-life language and listening environments that children are exposed to.

For the purpose of this research, the LENA devices enabled us to compare parent-child communication on days that a radio aid was or wasn’t used.

We have purchased a number of devices and are now piloting how they can be used more widely by services for deaf children.

Will using radio aids lead to good language and communication development?

The research only tracked deaf children over a 4-6 month period and was not a controlled study, so we are not able to say definitively that using radio aids will lead to good language and communication development.²

However, our research clearly shows that radio aids can lead to increased parent-child interaction. We already know from other research that this is a key predictor for later language and communication development. So we can be confident about the overall positive effects of using radio aids at this critical early years period for language development.

How was the research carried out?

The research was based on a sample of 13 deaf children over a 4 to 6 month period.

The research used a number of methods to identify potential benefits of using radio aids with preschool deaf children including recordings from LENA devices, parent surveys of everyday activity and interviews.

We commissioned the Ear Foundation to carry out this research.

Where can I read the research report?

This can be downloaded from www.ndcs.org.uk/research.

Any limitations or issues to report?

The sample size is relatively small. In addition, 8 families had started and then dropped out of the research for various reasons, including not having the time to participate, not being happy with the radio aid itself or not seeing any benefit from the radio aid.

Other parents recognised the benefits of using radio aids but preferred the radio aids to be wireless and as small and unobtrusive as possible. That the devices did not always have a battery locking compartment was also cited as a concern³.

We're calling on all manufacturers of radio aids to consider these issues and make improvements to the design and features of radio aids.

Many parents still felt that these challenges were outweighed by the benefits of early radio aid use.

What does the research recommend?

The research recommends that local authorities and the Department for Education ensure that all preschool deaf children have access to a radio aid.

Local authorities should ensure that they are meeting quality standards by making sure that every deaf child is considered for a radio aid at the same time they are fitted for a hearing aid. We call on local authorities to review their policy and protocols on use of radio aids to ensure this happens.

It also recommends that:

² Ethical considerations mean that we are not able to carry out controlled studies of use of radio aids with preschool deaf children – i.e. it would clearly not be appropriate to deny a child a radio aid when we are confident that this would benefit them.

³ Phonak have now released tamperproof options to their integrated receiver https://www.phonak.com/content/phonak/us/en/hearing-aids/phonak-sky-g/jcr_content/mainpar/downloads/productdownloadspar/download_3/file.res/User_Guide_Sky_Q.pdf

- 1) That all parents have the information they need to make informed choices about the use of radio aids with preschool deaf children
- 2) That professionals are aware of the latest technologies
- 3) That manufacturers consider if any improvements can be made to the design and features of radio aids to address some of the concerns raised by parents

Why don't local authorities already provide radio aids to preschool deaf children?

Many local authorities appear reluctant to provide radio aids to pre-school deaf children, for use within the home or an early years setting, for a range of reasons including costs, insurance arrangements and concerns over appropriateness of use with very young children.

We hope that local authorities will revisit their policy on these issues in light of this new research which show the real benefits of using radio aids, even with very young children. We believe parents should be given the information they need to make informed choices over whether and when their child should be fitted with a radio aid.

Are local authorities legally required to provide radio aids to deaf children?

Local authorities and education settings are required, under the Equality Act 2010, to provide auxiliary aids (such as radio aids) as a reasonable adjustment. We believe that the research confirms that the potential benefit of radio aids in the early years is such that it is now increasingly difficult for local authorities to argue that it would not be a reasonable adjustment to provide this technology.

Guidance by the Department for Education states that: *“where there is a centrally organised visual or hearing impairment service it may be reasonable for the local authority to provide more expensive aids or support through that service but not reasonable for an individual school to have to provide them”*.⁴ We agree with the Government that it is more cost-effective if local authorities retain funding for radio aids, rather than funding being delegated to schools and early years settings.

Which local authorities do/don't provide radio aids to preschool deaf children?

We know from [CRIDE 2016](#) that 54% of services in England did not, at that time, make radio aids available to pre-school deaf children. Of those that did make available, some referred to certain eligibility criteria (such as requiring families to take out insurance).

Is it realistic to expect local authorities to meet these costs?

We recognise the funding costs involved in making radio aids available more widely. However, we believe that this research shows the clear benefits. We also believe that early intervention to support a child's language and communication development will lead to savings later if it means a child will need intensive support later to catch up.

We hope that the research will help services in making the case locally for additional funding or reallocation of resources, where needed.

We believe that local authorities can use the [Special Provision Capital Fund](#) to purchase radio aids for use in the early years. This fund can be used for any capital funding on any education-based provision for children and young people aged from 0 to 25 where this meets local needs.

⁴ Department for Education. *The Equality Act 2010 and Schools*. 2014.

Where services don't have the budget to fund radio aids for use with preschool deaf children, we would encourage them to raise this issue with commissioners within their local authority. Local authorities have a duty, under section 27 of the Children and Families Act, to keep SEN provision under review.

Can the Special Provision Capital Fund really be used to purchase radio aids?

As the Department for Education [explanatory note](#) sets out, local authorities are free to use the Special Provision Capital Fund for any capital funding on any education-based provision for children and young people aged from 0 to 25 where this meets local needs. The funding is not ring-fenced.⁵ We are calling on the Department to review the criteria for the Fund to make it easier for local authorities to apply.

The [Department for Education website](#) indicates how much funding local authorities have been given for the Special Provision Capital Fund. It also provides further guidance on how the Fund works. For example, local authorities are required to consult with families in planning how the Fund should be spent, and to then publish their Plan on the Local Offer. They are not required to 'apply' to the Department for Education to agree how the Fund will be spent.

We believe this research shows there is a strong need for greater access to radio aids in the early years, to help improve language and communication in deaf children.

Can we ask parents to cover the cost of radio aids through the child's Disability Living Allowance?

No. The law is clear that schools or local authorities cannot ask families to cover the cost of things that would be regarded as reasonable adjustments under the Equality Act 2010. Radio aids can be seen as auxiliary aids and public bodies have a reasonable adjustment to provide these to disabled people. Whether the family claims Disability Living Allowance is therefore irrelevant.

Separately, we want to see the provision of radio aids joined up with provision of and maintenance of any other hearing technology that children are using. If families buy their own radio aids, there is a risk it won't be joined up and the health/education bodies won't be able to support or maintain.

We recognise that families do sometimes purchase equipment themselves. However, local authorities must not suggest or expect families to do so.

Should every pre-school deaf child be fitted with a radio aid?

[New quality standards on the use of personal radio aids](#) state that every deaf child should be considered for a radio aid at first hearing aid fitting.

We also believe that parents should have the opportunity to pilot a radio aid with their child, at different ages, if they wish.

As this research shows, there are many benefits to using radio aids with preschool deaf children. Parents should be supported to make an informed choice in this area.

When is the right age to fit radio aids?

This will vary according to individual children and the views and wishes of the parents.

⁵ <https://www.theyworkforyou.com/wrans/?id=2018-01-18.123684.h&s=deaf#g123684.q0>

[New quality standards on the use of personal radio aids](#) state that every deaf child should be considered for a radio aid at first hearing aid fitting.

We recognise that it may make sense for some children to become established hearing aid or cochlear implant users (or for a stable cochlear implant map to be in place) before a radio aid is introduced. However, this can usually happen reasonably quickly. We do not believe there should be any more of a delay in fitting a cochlear implanted child with a radio aid than with a child with a hearing aid.

Some professionals feel that a radio aid should not be fitted until a child can give feedback on the quality of sound. We do not agree – we believe it is possible to subjectively measure and identify if and how a child is benefiting from a radio aid through observation and professional judgement.⁶

We believe that parents should be given balanced information about radio aids so that they can make informed choices over when the right time is to try a radio aid with their child. As this research shows, there are many benefits to using radio aids with much younger deaf children than is currently the case in many areas.

What do we mean when we say local authorities should review their policies and protocols? How?

We suggest that local authorities review their approach to whether and how radio aids are issued to preschool deaf children in light of this research but also with reference to the quality standards for use of personal radio aids.

Even when local authorities already issue radio aids to preschool deaf children, we ask that they review any eligibility criteria that may be in place or any other issues raised by the report, such as on the user-friendliness of devices.

We also ask that local authorities ensure parents are able to access information on the use of radio aids in the early years in a way that allows them to make an informed choice over whether to try and use a radio aid with their child.

Is it OK for services to require parents to insure radio aids for use at home?

No. We do not believe that it would be reasonable or fair to deny a child a radio aid that would benefit them simply on the basis of their parents' insurance arrangements. We believe that the provision of radio aids to preschool deaf children should be seen as a reasonable adjustment under the Equality Act. The research shows the benefits that come from using radio aids in terms of promoting parent-child communication, with the potential this has for the future language and communication development.

We encourage services to work with parents to ensure they are aware of the need to take good care of radio aid devices.

We are aware that some parents have been asked to insure radio aids against loss or damage as a condition of the FM system being made available outside school hours. It may be possible to add radio aids to home contents insurance at no additional cost to parents. However, this should not be a requirement. Parents must not be forced to insure their child's radio aid, and pressure must not be put on families to

⁶ The Comprehensive Handbook of Pediatric Audiology (2011 p558-9) states that:

"Behavioral verification of FM systems using speech perception measures is a recommended option when an appropriate sound-field test environment is available. Although behavioral verification is not a substitute for electroacoustic verification for HA+FM and FM-only systems, it remains the primary method of verification for FM systems coupled to cochlear implants. When using speech perception tasks to verify FM system performance, testing should be completed under listening conditions that are representative of the child's typical listening environments. Priority is given to testing in noise. The child's performance when the FM microphone is not active (unaided, hearing instrument only, cochlear implant only) is compared to performance with the FM microphone active under the same noise conditions. The vocabulary and language level of the child must be considered when choosing this verification option."

insure it. Equipment purchased by the local authority remains the local authority's property. Ultimately, it is therefore the local authority's responsibility to make provision for repair or replacement of broken or lost equipment as required.

More information is set out in our position statement [Insurance and Replacement of Hearing Aid Equipment](#).

Our policy is to only issue radio aids where we are confident parents can take responsibility for this – is this OK?

We agree it's important that as much care as possible is taken with radio aids. At the same time, it's important that 'barriers' aren't put in place that would otherwise stop deaf children from accessing radio aids when it would support their spoken language and communication during the critical early years. It's important that services take as much time as needed to discuss concerns with parents and support families in using radio aids properly and with care.

Our policy is to ask parents to purchase these devices for home use – is this OK?

We believe that the provision of radio aids in the early years should be seen as a reasonable adjustment by the local authority and as a way of enabling them to fulfil their duties to remove disadvantage experienced by disabled children. We believe that the research confirms that the potential benefit of radio aids in the early years is such that it is now increasingly difficult for local authorities to argue that it would not be a reasonable adjustment to provide this technology.

This is also a basic issue of fairness. Whether deaf children access radio aids should depend on whether they would benefit from this, and not on whether their parents can afford it.

Our policy is to only allow radio aids for use in schools – is this OK?

Research is clear on the importance of early intervention. Early intervention to support a child's language and communication development will lead to savings later if it means a child will need intensive support later to catch up. Additionally by using radio aids earlier children and their families have used the technology for a period of time before entering school meaning they are familiar with its use, the best times to use it etc. This will help reduce the impact of dealing with new technology during the early stages of school.

Our research suggests that radio aids can help to promote deaf children's language and communication during the critical early years and so support deaf children's later education.

Radio aids are used in schools because it is recognised that it is needed to help deaf pupils listen and learn through what can be hostile listening environments. However, we know that much learning happens outside of school and in the early years, particularly in terms of language development. We also know that the listening environment in the home can often be just as challenging.

Our policy is to prioritise the availability of radio aids according to the level of hearing loss – is this OK?

We know that difficulties hearing clearly in background noise and over distance are experienced by all deaf children due to the limitations of hearing aids and cochlear implants, regardless of the level of the child's hearing loss. It's important to look at each deaf child as an individual and their hearing ability in different environments, rather than apply blanket policies.

What are we looking for in a local policy/protocols document?

The policy should meet the [new quality standards on the use of personal radio aids](#) in particular the first quality standard which states that every deaf child should be considered for a radio aid at first hearing aid fitting. As this goes on to state: *“This position requires that providers ask why a deaf child should not be considered as a potential candidate for a personal radio system, rather than which child should.”*

The policy should also:

- Ensure parents have access to the information they need to make informed choices about when to try a radio aid with their child
- That they have the opportunities to try a radio aid at different ages
- That they receive training and support
- That insurance is **not** a condition of being allowed to use radio aids in the home
- Ensure there are no unreasonable barriers in place for parents. For example, whilst it’s fine to require children to be stable users of their hearing aid/cochlear implant, this should not lead to unnecessary delays. Observation can be used to determine if a child is a stable user, rather than waiting until the child can verbally confirm this.

We are currently looking for examples of policies/protocols which we hope to be able to share.

There are cheaper alternatives out there, such as the mini-mic/Bluetooth technology

We believe that there are benefits of both remote microphone and Bluetooth streaming devices⁷ giving access to speech and connectivity to mainstream technologies. However, as far as we are aware, there is no robust evidence on the benefits of remote microphone or Bluetooth streaming devices and the extent to which they are a reliable alternative to radio aids. In particular, we are concerned that:

- Sound quality may not be as good
- There are technical challenges in setting up and connecting devices
- Signal range is shorter
- Signal-to-noise ratio is less good
- Can’t be used with multiple devices/listeners (e.g. where more than one child is using devices to listen to a single teacher)

The below table provides a wider summary of these issues.

What’s the difference?		Why is this important?
Battery life	Streamers generally have a shorter battery life than radio aids	Ensuring the child has access to teacher/parent/instructor’s voice without running out of battery
Range	Streamers generally work over a shorter range than radio aids do	Ensuring the child has access regardless of where they are in the classroom. For example: Cochlear’s original Mini Microphone streamer only has a range of a few metres and doesn’t automatically reconnect if a child went outside that range. The new Mini Microphone 2X has a wider range though.

⁷ Remote microphones (such as the mini-mic) use 2.4 GHz digital technology to stream information directly to the hearing aid. Bluetooth uses a proprietary protocol that when used in two devices enables them to “talk” to one another. Hearing aids don’t currently contain Bluetooth, which is why we have Bluetooth streamers – picking up the Bluetooth signal and then streaming it to the hearing aid where it is picked up by the telecoil or FM receiver.

Background sound	Streamers don't monitor background noise levels and hence don't adjust the sound output in relation to this.	Ensuring the child has access to clear sound
Microphone quality	Streamers' microphones are generally considered to be of a lower quality, less powerful, and not as sophisticated compared to radio aids	Ensuring the child has access to clear sound of good quality.
Mute button	Streamers' microphones don't have a mute button. Alternatively they may have a small mute button (for example the Cochlear Wireless Mini Microphone 2+) and it may be hard to tell whether the microphone is muted or not.	Ensure that the teacher/parent/instructor monitors what they share with the child. For example: A visible mute button on a radio aid helps to remind the teacher/parent/instructor to switch it off when going into staff meetings (or the toilet!)
Directionality	Streamers' microphones are generally omni-directional, so they don't focus on one person's voice but capture all sound going into the microphone. Radio aids often have different microphone settings and the latest radio aids have an automatic microphone function which conveniently switches one setting (e.g. directional) to another (e.g. omni-directional) depending on how the radio aid is used.	Ensure the child has access to the sound they should have access to. For example: if a lot of environmental sounds are amplified it can be very hard to hear the teacher/parent/instructor's voice.

For younger children, it's important that any hearing technology be reliable and stable, particularly as children may be less likely/able to report any issues or problems. Given these issues and concerns, we would recommend that radio aids be used instead of remote microphone or Bluetooth devices. Older children should be able to report issues and be given information and support that allows them to make choices about which technologies best suit their needs.

We also believe there is a lack of accessible and practical information on the use of such devices.

Where services are using remote microphone or Bluetooth devices, we would encourage them to share any evidence/data they have on the benefits from their own practice.

There are safety concerns about use of radio aids in the early years - use of radio aids means that batteries can't be locked so that young children can't access/eat them?

Where an integrated hearing/radio aid is being used, it should be possible to secure the battery so that it is tamperproof and that young children can't access it.⁸

⁸ Please see below links on fitting a tamperproof receiver for the Roger 18, 19 and MLI:
<http://www.phonaknhs.co.uk/research/video-gallery/video/tamperproof-your-sky-q-sp-up-hearing-aid-with-roger-or-mlis/>

Otherwise, radio aids usually work by adding a 'shoe' to the bottom of the hearing aid. When this is done, this means that the battery on the hearing aid is no longer tamperproof. This can be a safety concern and this should be made clear to parents.

In any event, no child should ever be left unsupervised whilst wearing their hearing aids, whether at home or in nursery settings. Regardless of battery locks, the other parts of the hearing aid are a choking hazard for small children – including, in particular, the radio aid shoe, which the child would have to remove to get to the battery.

Parents should be given information and support on how to use radio aids effectively and how to watch out for this concern. It should be borne in mind that one of the justifications that many parents of deaf children use for claiming Disability Living Allowance is that their child needs constant ongoing supervision.

More detailed information is available in [our briefing](#) on usage of radio aids with under 3s.

Children need to be able to learn how to listen through background noise – radio aids will make this harder?

We don't accept this argument. In the same way that children do not learn to swim by being thrown in at the deep end, children do not learn to listen and understand speech through background noise by being constantly exposed to difficult listening environments without any additional support.

Being able to hear well in background noise is something that develops with time. A hearing child can't understand speech in background noise as well as an adult until about the age of 12 years. Some children never really develop this skill and grow into hearing adults with poor listening skills in background noise.

Children only have a limited amount of time to learn language. If we delay giving them access to language because "they need to learn to listen in noise" then they will simply grow up to be deaf young adults with a poor ability to hear in background noise AND poor language. If we give them access to great spoken language early then we improve their chances of being a deaf young adult with good language, albeit with a poor ability to hear in background noise (for which they could continue to use radio aids, etc).

Even so, deaf children do not use radio aids all the time and there will still be opportunities to listen in background noise (often to little benefit). In addition, radio aids can be fitted so that both the microphone of the hearing aids and the microphone of the radio aid both switched on together so that children have access to noise around them, as well as hearing the speakers voice at a level that benefits them. This has been common practice/policy for many years when fitting radio aids to children.

What's happening in the rest of the UK?

Northern Ireland

In Northern Ireland radio aids are provided by the Education Authority rather than by local councils.

We want the Education Authority to ensure parents of those pre-school deaf children who could benefit from radio aids at home can both access this equipment and the necessary information to make an informed choice on their use.

The Equality Act does not apply in NI, this means only those deaf children with statements have a legal guarantee to auxiliary aids and services (such as radio aids) when required in school. We would like a legal guarantee to be extended to all deaf children. More information is available [here](#).

Scotland

Scottish Local Authorities should ensure parents of those pre-school deaf children who could benefit from radio aids at home can access this equipment and have the necessary information to make an informed choice on its use.

Our Getting It Right From the Start campaign in Scotland is calling for improved support for deaf children in the early years. We want additional investment in specialist services, Scottish Government endorsed early years guidance for deaf children, improved local accountability and better monitoring of deaf children's outcomes. More information is available [here](#).

Wales

In Wales, the Welsh Government has recently passed the Additional Learning Needs and Education Tribunal (Wales) Bill. Under this new legislation, pre-school learners with additional learning needs will be entitled to a support plan. The Welsh Government is currently working on key regulations and documentation to support the implementation of the new support plans. The National Deaf Children's Society Cymru will continue to liaise with the Welsh Government during this time and will be stressing the importance of ensuring that such plans cover the use of technological support and radio aids in the home environment.

More information about the reforms can be found at

http://www.ndcs.org.uk/help_us/campaigns/our_current_campaigns/wales/additional_learning.html

What information resources are available for parents?

We have lots of information on our website about radio aids and how they can be used in different situations.

www.ndcs.org.uk/family_support/technology_and_products/technology_at_school/index.html

This page talks about use of radio aids in the car, and features a short video from a real-life case study.

www.ndcs.org.uk/family_support/technology_and_products/technology_at_home_and_out_and_about/communicating_with.html

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