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Final report Hearing Loss Prevention Project

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Executive Summary

Ear disease and hearing loss is endemic among Indigenous children and contributes to preventable hearing loss that all too often has a lifelong impact. Ear disease is most prevalent during the ages young children attend childcare and there is a potential for childcare workers to help prompt early treatment of ear disease. Unfortunately, there is little awareness of ear disease and hearing loss among workers in the childcare sector. Greater awareness among child care workers about ear disease and hearing loss, as well as their causes, has the potential to prompt more and earlier interventions to treat ear disease. This early treatment may assist to prevent ear disease becoming a persistent condition that all too often leads to permanent hearing loss.

This project aimed to foster greater early treatment of ear disease as well as minimise adverse communication outcomes of hearing loss among young children. In order to refer children for treatment there needs to be an awareness of which children are likely to have a current hearing loss. This project identified behavioural indicators in childcare of young children's hearing loss to help childcare workers prompt early referral. As well as general behavioural indicators being identified, additional age specific indicators were also developed after feedback from workers in the sector that this was needed.

In this component of the project accessible resources (plain language, highly visual and strength focused) were created on ear disease and hearing loss aimed at the early childhood sector. These resources were designed to encourage action among Indigenous childcare workers and their families to prevent hearing loss and mitigate its impact on communication and child development. The resources developed and distributed (primarily through web based resources www.lookafterkidsears.com.au) have been very positively evaluated by professionals in a number of sectors.

The second major component of the project examined the risks of excessive noise exposure among Indigenous people as well as creating and distributing hearing conservation materials based on the identified risks that were found. The findings of this component of the project were quite alarming. It is generally thought that there are limited risks of excessive noise exposure in households. However, the findings of this project identified certain factors in Indigenous households that created higher risks of excessive noise exposure than exist in non-Indigenous households. Indigenous people often live in crowded households where many people have hearing loss because of childhood ear disease. When people with hearing loss are congregated together they tend to create high noise levels – they seek listen loud and create competing escalating noise. The relatively recent availability

of inexpensive electronic devices that enable a critical mass of people with existing hearing loss to 'listen loud' in crowded households created a 'tipping point' of risk. There are many households where even young children face the risk of 'passive' but excessive noise exposure, analogous to risks involved in passive smoking. The repeated exposure of quite young children to excessive noise creates risks of early onset sensori neural hearing loss among Indigenous children.

This identified risk of excessive noise exposure suggests an impending 'second wave' of noise induced hearing loss (NIHL), adding to the existing 'first wave' of ear disease related hearing loss in Indigenous communities. A hearing conservation program, targeting Indigenous families where there is a high risk of excessive noise exposure, has been developed and distributed through this project. However, it was identified that more research and active intervention are urgently needed to address this issue

In relation to specific requests for further information:

Stage 1 Action research

Observable distinctive behaviors associated with current conductive hearing loss in childcare settings were explored by an action research process.

This involved

- 1) Conducting interviews with families of children with known history of ear disease and hearing loss to identify a range of possible behavioural indicators of hearing loss – see appendix 1 for a list of these.

Determining which of these behavioural indicators of hearing loss were most reliable by conducting hearing tests and tympanometry on young children in childcare settings and comparing these results with childcare worker survey responses. This process yielded the seven following indicators:

- Does not talk much?
- Do they use actions and point more?
- Do they take longer to tell things?
- Do you often need to call out loud to get their attention?
- Do they like to do things their own way?
- Do they sit close to TV or music?
- Are they hard to understand?

The project also sought to develop indicators of good listening skills after Indigenous workers and families expressed a strong preference for a strength based rather than solely a deficit approach to listening, ear disease and hearing loss.

See (<http://www.lookafterkids.com.au/cms/family/hearing-loss-around-the-world.html>). It was identified that an important motivational approach to communicating issues of ear disease and hearing loss with Indigenous families involved discussing the positive outcomes of good hearing preliminary to discussing hearing problems and ear disease. This discussion of the benefits of good listening served to motivate families to preserve or restore good hearing. It was found that families did not easily engage with the typical 'problems only' focus used in this area; comments were made that families were constantly bombarded by 'negative health messages' in a variety of areas. In particular ear disease as a not easily observable condition whose outcomes were often only

apparent in the distant future. Therefore the issue needs to be introduced through a focus on 'why is listening important' in order to motivate action to prevent ear disease.

(<http://www.lookafterkidsears.com.au/cms/family/hearing-loss-around-the-world.html>)

Feedback from childcare workers also expressed a desire for more age specific indicators of good hearing and hearing loss. A review of available possible age specific indicators of hearing difficulties was undertaken and workshops with Indigenous childcare workers evaluated these as well as identifying culture and context specific indicators – for example in remote communities which are serviced by small plane the ability to discern the sound of a distant plane was an indicator of good hearing. (<http://www.lookafterkidsears.com.au/cms/useful-resources/hearing-checklists.html>)

Stage 2

Information from the review of literature and the above analysis were used to develop the plain language, highly visual, hearing conservation resource materials that are available on the website (see <http://www.lookafterkidsears.com.au/cms/family/too-much-noise.html>).

Stage 3

Dissemination of materials – the major source of ongoing dissemination is the web-based materials. Information on dissemination through downloads is provided later in the document. Information was also disseminated through professional forums and conferences as outlined later in the document.

Evaluation and review

Ear disease component

Ongoing review and evaluation was undertaken in different components of the project. Within the team a Yolngu woman (Alison Wunungmurra) acted as a cultural and communication consultant. She provided, firstly, critical input into Indigenous perspectives and motivations around ear disease and hearing issues and, secondly, provided feedback on the content of communications developed in resources. She also consulted with local Indigenous communities on communication issues.

In the development of childcare materials Batchelor Institute of Indigenous Tertiary Education (BIITE) childcare workers provided an important review and evaluation component. These students, who came from around Australia, provided feedback on the content of resources as well the manner of presentation. They also made suggestions on content needed. Draft resources were also presented to in a series of workshops to Families as First Teacher (FaFT) workers who also provided review, evaluation and recommendations.

Excessive noise component

In the excessive noise component of the project evaluation and review was provided by the following people:

Lou Leidwinger an experienced remote area audiologist provided audiological input as well as review of audiological and tympanometry results and interpretation and comment on final resources.

Stuart McClaren, a New Zealand based noise expert, who also provided expert input and evaluation and review on noise specific components.

Dr Mathew Callaway, a Darwin based audiologist, provided technical advice on noise measurements and provided evaluation input.

How have the projects objectives been met

Objective	Comment
Discover social indicators of hearing loss	Yes, general social indicators have been identified as well as age range specific identifiers. See above and (http://www.lookafterkidsears.com.au/cms/useful-resources/hearing-checklists.html)
Identify how to train early childhood workers in indicators	Yes, training processes developed in conjunction with Childcare workers and BIITE staff. A key element of this was identified that an important motivational approach to communicating issues of ear disease and hearing loss with Indigenous families involved discussing the positive outcomes of good hearing preliminary to discussing hearing problems and ear disease. This discussion of the benefits of good listening served to motivate families to preserve or restore good hearing by addressing ear disease. Website materials reflect this learning. See (http://www.lookafterkidsears.com.au/cms/family/hearing-loss-around-the-world.html)
Develop training for early childhood workers on OM risk factors	Yes, training materials developed as online web based resource on www.lookafterkidsears.com.au . See later in document for evaluation of this.
Identify Indigenous people exposure to excessive noise in different geographic environments	Yes, greater exposure risks for Indigenous households identified. See http://www.lookafterkidsears.com.au/cms/family/too-much-noise.html
Develop and evaluate resources to help understand risks of excessive noise	Yes, these developed and distributed on web based resources. See http://www.lookafterkidsears.com.au/cms/family/too-much-noise.html and http://doyouhear.org.au/wp-content/uploads/2011/08/Dangerous-Listening.pdf
Develop and distribute accessible training resources	Yes, these made available through website and promoted through childcare and hearing loss sectors. See feedback below.

Noise profile in different geographic contexts

The original scope of the project was to examine different excessive noise profiles in urban, regional and remote contexts. The factors contributing to noise exposure in different contexts was found to be the same but the influence of the various factors was more or less in different contexts. However, even within the same physical contexts there were variations in the influence of these factors.

Key factors

Factor	Urban	Regional	Remote
Crowded Housing	Generally the lowest level of crowding with exceptions of town camps. Also seasonal and other variations in numbers of occupants	Variable generally lower level of crowding than remote but seasonal visitations from family and other factors increasing numbers of people residing in houses.	High numbers of occupants in houses in many communities.
Number of residents with hearing loss	Lowest numbers of community members with hearing loss from ear disease.	Moderate number of residents with hearing loss from ear disease.	Highest number of community members with hearing loss in remote communities.
Access to noise making electronic equipment	Highest because of access and income levels of communities.	High because of access and income levels for many people	Highly variable access depending on income levels.

While this table outlines the influence of key factors influencing different geographic areas there is enormous variability in the influence of these factors in specific communities. In the reporting of excessive noise risks we purposefully have not focused on risks in specific regions but focused on key risk factors common to all regions. Households at high and low risk of excessive noise exposure were found in all regions depending on the influence of key factors. The single factor that is probably the best indicator for risk of excessive noise exposure is overcrowding. In overcrowded households there are likely to be more people with hearing loss (since overcrowding affects transmission of ear disease) and greater likelihood of the competing escalation between sources of excessive noise that contributes to the development of excessive noise profiles. There are more details outlined in Attachment 2.

Introduction

This project had several components. It sought to research behavioural indicators of ear disease that would be usable by child care workers, as well as create general resources to raise awareness and encourage action to prevent Indigenous children’s ear disease and mitigate its impact. As well as general behavioural indicators of ear disease being identified, age specific indicators were also developed and distributed though the website and publications.

The project also researched excessive noise exposure risks of Indigenous people, created and distributed relevant hearing conservation materials. This component of the project has highlighted the high risk of excessive noise exposure in Indigenous family life. Indigenous people often live in crowded households where many people have hearing loss because of childhood ear disease.

Passive noise exposure' is a widespread result of the relatively recent availability of inexpensive electronic devices that enable a critical mass of people with existing hearing loss to 'listen loud' in crowded households. This excessive noise exposure points to an impending 'second wave' of NIHL adding to the existing 'first wave' of ear disease related hearing loss in Indigenous communities. A hearing conservation program, targeting Indigenous families where there is a high risk of excessive noise exposure, has been developed and distributed.

A consistent major obstacle in engaging Indigenous families in issues around ear disease and hearing loss is related to the normalisation of ear disease and hearing loss. It has been hard to engage family and community interest in a disease without observable symptoms and with observable outcomes that are not evident till later in life. Resources that create easy to understand awareness of the impacts of hearing loss have not been available but are crucial to engage families and Indigenous workers in action on hearing loss. An additional component of this project has been the development of videos based on Indigenous adults talking about the experience of ear disease and hearing loss. These videos that included the whole of life impact of hearing loss were professionally filmed and edited and distributed through the website developed by the project.

The resources that have been developed and distributed by this project have filled this important gap in existing resources on Indigenous ear health. The feedback on resources generally has demonstrated that that, while aimed at childcare workers, the resources are also highly relevant and useful to other sectors. The resources will create major collateral benefits for other sectors in the prevention of otitis media, the provision of audiological services and mitigating the impacts of hearing loss.

The developed resources have been promoted through SNAICC (the peak national organisation representing the needs of young Aboriginal and Islander children), the Earinfonet (a website on Indigenous hearing loss and ear disease) and the Deafness Forum of Australia (the peak body representing the interest of Australians with hearing loss) as well as many other agencies. They have also been promoted through journals, newsletters and conference presentations.

Audiology staff, child health and ear health workers have been targeted in the distribution of the hearing conservation message aimed at reducing risks of excessive noise exposure.

Resources based on internet distribution but have included resources that can be downloaded as 'print hard copy' or videos that can be burned onto DVDs or viewed on multiple platforms – computers and mobile devices.

Short web based videos and longer compilations as well as other information and training materials have been developed and distributed with very positive feedback from end users, as is outlined below. These materials have included easily accessible, low literacy resources for Indigenous adults.

Training materials for early childhood workers and others

Family and worker information and training materials have been completed and placed online. These materials are aimed primarily at early childhood workers but there are indications that they are being used in other sectors – especially the ear health sector.

In the two month period after initial release of the website stats on usage are as follows:

Successful requests for pages: 10,111

'Successful Requests for Pages' counts full page views. If a visitor surfs through 10 pages on your site, you receive '10 successful requests for pages'.

Distinct files requested: 16,592

'Distinct files requested' represents the number of 'distinct files request from the server'

The training materials developed through the project have been made available to lecturers for their use in BIITE Certificate III and IV in Children's Services and in B. Ed Early Childhood teacher education courses within the Australian Centre for Indigenous Knowledge and Education (ACIKE) which is a partnership between BIITE and Charles Darwin University (CDU) to teach the B. Ed EC courses and through this partnership materials will be promoted within CDU as well as BIITE. Universities outside of the NT have also distributed notification of the website to their early childhood course coordinators (i.e. University of Western Sydney, University of New England).

Other child focused/related courses available through BIITE in the areas of health, out of school hours care, nursing and education support have been made aware of the materials and given access to the materials for their use within their courses. The early childhood field in general has been made aware of the materials through emails to professionals interested in Indigenous early childhood, for example, Early Childhood Australia, the national peak early childhood representative body, SNAICC (Secretariat National Aboriginal and Islander Child Care); Red Cross NT (currently sponsoring Communities for Children projects in the NT). Resource materials from the project have also been adapted for a local NT audience and distributed through the FAFT program which operates across the 20 growth towns or remote Aboriginal communities in the NT.

These materials are also available to other child care courses Australia. Feedback from this sector has been positive. For example:

I lecture in the Early Childhood and Primary Bachelor programs. I think the website is easy to navigate and that the information is clear and relevant to the audience and the problem of hearing loss. The activity cards are a great idea, encouraging people to be pro-active in really looking at the situations in their own environment – whether at home, pre-school or school, and taking photos or drawing pictures. I could see this being a good activity for Pre- service and in-service teachers... Congratulations to the team on an informative and usable site. Let's hope it makes a difference.

It would seem the ears and hearing have not always been given the priority they deserve. My teachers will definitely be using your site in their Health and PE course this semester.

The resources have also been distributed by the earinfoNet (part of the Australian Indigenous HealthInfoNet), SNAICC (the peak national body that represents the needs of young Indigenous children) including those in childcare and Deafness Forum (peak body for hearing loss) for distribution through their websites or through links to the project website.

Links to these materials have been listed on the (Australian Indigenous HealthInfoNet) website (<http://www.healthinfonet.ecu.edu.au>). 'Look after kids' ears has been listed in the EarInfoNet, Northern Territory and Infants and Children sections, added a news item (Ear Health, Closing the gap) - which will be tweeted on these accounts (900 followers) - and sent out a yarning place message (430 members). (The Website) has been added to the current edition of the Bulletin also (digital distribution: 580). We are also going to list each video as separate resources. Once we get these up, we'll do another yarning place and a general message stick (digital distribution: 680) to notify everyone.

Resources

Look after kids ears

<http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=24546>

News

New website about ear disease and hearing loss for Indigenous childcare workers

<http://www.healthinfonet.ecu.edu.au/about/news/1147>

Yarning place - EarInfoNetwork

New website about ear disease and hearing loss for Indigenous childcare workers

<http://www.yarning.org.au/messages/view/id/1935>

Bulletin

Look after kids' ears

<http://healthbulletin.org.au/articles/look-after-kids-ears/> (Extract of email from earinfoNet)

SNAICC has distributed information on resources (<http://www.snaicc.org.au/news-events/fx-view-article.cfm?loadref=32&id=943>) and continue to do so - the website will be featured in the next SNAICC e bulletin.

Deafness Forum promoted the website in one of their newsletters.

It's a fantastic website and we will certainly promote it. (Deafness Forum)

Other agencies and individuals indicated an intention to promote the website.

Thank you very much for this incredible website. It is excellent! It really is. I will direct people to it at every opportunity. The art in the Healthy Ear Cycle is really beautiful. Congratulations to you. Please pass on my thanks and admiration to all involved in the sites creation.

(Professor of Education with an interest in ear health)

Other agencies with an interest in ear health are promoting the resources and using it in training of health professionals. For example 'the Remote Area Health Corps':

What a great website and resource. The videos are terrific too. We will include the link to our clinical resource pages of the RAHC website <http://www.rahc.com.au/> which we are currently updating. It will be a good addition to our free Ear Health e-learning module too.

Distribution through emails to interested professional networks has taken place; especially through existing ear health networks. Feedback from professionals informed and knowledgeable about Indigenous ear health has been very positive. Practitioners commented on the utility of particular resources available on the website.

It is a super website and I think it is a great addition to ear health resources. There are some terrific illustrations in particular and the Healthy Ear Indicators for age are a really useful tool. (Specialist ear health practitioner)

This is an excellent resource - well done to those who were involved, told their stories and shared all this valuable information in such an engaging and appropriate way for the audience.

I've just spent 30 minutes browsing around the new website. It looks great, there are lots of really good materials and I particularly like the videos. (Judith Boswell Audiologist)

There has also been positive feedback on other published resources developed in the project. For example, the ground breaking research on the exposure to Indigenous families to excessive noise. The hearing conservation resources have had been utilized by audiologists and other health professionals working with Indigenous people.

I really found the article very informative. As Audiologists working with Indigenous clients, we tend to focus on conductive hearing losses, as they are so prevalent. It was an eye-opener to learn of the high risk of sensorineural hearing loss, often as a by-product of the conductive losses in other individuals. I will pass this article and posters on to my contacts. (Senior Audiologist Australian Hearing)

As noted in an earlier report, these resources are more likely to be taken up when they are recognizably local, especially in terms of the images used to convey messages or provide illustration for concepts. This has led to the development of final resources templates that enable photos of recognizably local contexts to be inserted by local childcare services or ear health services. Feedback about this approach has been positive.

Progressive resource distribution

As outlined in earlier reports, there has been progressive distribution of materials and presentations as they have been developed. These included:

- An earlier National SNAICC conference are being distributed on the SNAICC website (<http://snaicc.asn.au/uploads/rsfil/02674.pdf> and <http://www.eartroubles.com/attachments/Handout%20for%20SNAICC%20Conference,%202010%20v6.pdf>)
- Remote and Regional Aboriginal Children's Services Support Workers (RRACSSU). Presentations to BIITE early childhood workers as part of evaluation of resources.
- AHS audiologists who provide services to Indigenous children.
- A Commonwealth parliamentary forum on Indigenous ear disease and hearing loss in Canberra and follow up work with the ACHE committee working to promote action in Indigenous ear health.
- A forum on children's hearing loss in Melbourne organised by Deaf Children Australia. Presentations at the national 2012 OMOZ conference in Perth on the findings on the behavioural indicators of ear disease. http://www.omez.com.au/images/content/Damien_Howard.pdf
- Presentation to IHEARS (group of interested professionals in the NT) in April 2013.

Published articles available online

Two articles on excessive noise as well have been distributed in journal articles that are available in literature searches

(<http://search.informit.com.au/documentSummary;dn=762536696918936;res=IELFSC>) as well as promoted through BIITE and earinonet websites (<http://eprints.batchelor.edu.au/213/> and <http://healthbulletin.org.au/articles/dangerous-listening-the-exposure-of-Indigenous-people-to-excessive-noise/>) as well as other sites providing information on Indigenous issues. For example ([http://trove.nla.gov.au/work/81062901?l-decade=30&q&c=article%20\(http://trove.nla.gov.au/work/81062901?l-decade=30&q&c=article\)](http://trove.nla.gov.au/work/81062901?l-decade=30&q&c=article%20(http://trove.nla.gov.au/work/81062901?l-decade=30&q&c=article)))

Print ready posters on the dangers of excessive noise have also been distributed on the website of the Aboriginal and Islander Health Worker Journal site (http://www.aihwj.com.au/Loud_Noise.html)

Copies of these resources have also been requested by agencies, mainly health and education services working with Indigenous people around Australia. They have also been distributed and used by Australian Hearing staff working with Indigenous clients.

Feedback indicates they are being used by audiologists, ear health workers and Teachers of the Deaf.

Two new publications are still forthcoming. A presentation that will include information on behavioural

indicators of hearing loss will be presented at the 2013 SNAICC conference. This is the first national SNAICC conference since the resources have been completed. A further article on excessive noise exposure has also been submitted for publication. Plain Language resources

As outlined in earlier reports plain language ear health/hearing loss resources have been also developed and distributed. These resources include the following:

Listening Troubles and Little Kids posters
What families can do to prevent hearing loss poster
Smart Families/Hearing Check poster
Indigenous specific anti smoking posters and
Too much loud noise stories.

Recommendations

The project has made significant contributions but further work is needed in these areas. The following recommendations indicate key areas:

- 1) The approach of focusing on the developmental and psychosocial outcomes of ear disease and hearing loss as a way to a) prompt more effective ear disease prevention responses and b) to engage responses that mitigate the impact of ear disease emerged from this research and response to developed materials. It is suggested a best practice strategy to effectively address the multiple impacts of ear disease and hearing loss on Indigenous lives.
- 2) The research has highlighted the current and future risks for many Indigenous children of noise induced hearing loss. This is an unexpected finding and there is a need for more research into this issue as well as an active program to reduce these risks. The research and resources developed provide an initial base that needs to be built upon in this hitherto unrecognized area. A particular problem is that unlike ear disease there are no existing professional stakeholders who have a responsibility or a mandate to take up this issue. Ideally this information should and could be incorporated in environmental health responsibilities, health promotion campaigns and school education curriculum. It is recommended that this important issue be pursued as a matter of urgency by the Office of Hearing Services.
- 3) The community return on the investment in these materials can be best utilized if they are utilized to the greatest extent. Feedback from stakeholders has highlighted the high quality and engaging nature of the materials in comparison with another recently created national website whose simplistic messages and graphics have not been engaging. However, feedback from professional groups who have been given a tailored guided tour of the site highlight the benefits for ongoing professional orientation for stakeholder groups. It is recommended that further funds be allocated for ongoing orientation (using web based presentations to minimize costs) for interested professionals around Australia.

- 4) Initially the uptake of the resources has been greatest in audiology, education and health sectors where there are professionals who can see the use of these resources in their existing work. There are professionals who 'know that they need to know'. In the childcare sector the problem of people 'not knowing that they need to know' remains an obstacle to these resources being used most effectively. It is recommended that an active campaign to focus on ongoing promotion of the use of these resources in the sector and the issues in general is needed.

Conclusion

This project has, firstly, sought to prevent Indigenous hearing loss by prompting greater engagement of families and early childhood workers - a strategic group who has hitherto had little awareness of ear disease and its consequences. The development of a variety of resources and information has created materials not only of utility for this sector but has filled a significant gap for ear health resources generally. The feedback on and uptake of these resources on Indigenous ear health and its consequences have demonstrated the interest in and need for these type of resources among Indigenous families and workers in multiple sectors.

The second component of this project identified a little considered risk of preventable hearing loss among Indigenous people from excessive noise exposure. In part this new risk is derived from endemic ear disease causing widespread hearing loss that prompts listening loud, especially in crowded households. The creation of hearing conservation resource materials is an initial step in what is likely to become a future major concern in hearing health of Indigenous Australians. Indigenous people already face multiple areas of disadvantage including experiencing more hearing loss across a variety of age ranges than other Australians. Unfortunately, this second wave of hearing loss is likely to compound the effects of the first wave (from ear disease) to invisibly undermine national 'close the gap' action. It is hoped the early identification of this additional risk to Indigenous hearing health and resources to assist inform families and professionals about it, may contribute to more action to address the dangers of Indigenous Australians experiencing hearing loss from excessive noise exposure.

APPENDIX 1

Common responses of children with ear disease/hearing loss as described by family.

The typical responses of children with middle ear disease/current hearing loss were examined through interviews with parents whose child or children had a known history of ear disease and hearing loss. This expanded list of possible indicators which were then examined to identify which indicators were the best general predictors of the presence of ear disease. This process involved carrying out tympanometry and hearing screening in a number of child care centers.

It was found, however, there was variability among the responses of children with hearing loss/ear disease that made selecting a single set of 'universal' indicators difficult. There was, firstly, one common behavioral pattern among some children who were demanding and had social difficulties. Secondly, there was another common pattern of responses where children avoided social contact. Many children displaying one or other of these common patterns also tended to be more emotionally reactive than other children. However the socially avoiding children tended to display emotional reactivity only with some people, mainly very familiar peers and adults.

The best universal indicators of ear disease/hearing loss that emerged were mainly questions about communication behaviors and/or 'socially difficult and demanding', 'socially avoiding' responses. These responses are consistent with those described in the literature as common social responses among older children with a history of ear disease.

Other responses examined are outlined below

- Social difficulties or demanding
- Get cranky with other kids
- Wants lots of help from adults they know
- Bossy with other kids Argues with family a lot Bites other kids
- Like to do things their own way
- Goes silly sometimes
- Talks to older family in a bad way
- Strong emotional reactions
- Gets sooky or sulks
- Worried or scared around new people
- Needs help to calm down after they have been upset
- Gets angry or wild with people quickly
- Have tantrums
- Gets upset when people can't understand them
- Gets upset if away from familiar people and/or activities
- Not affectionate or affectionate only when in the right mood

Socially avoiding
Ignores you
Avoids adults they don't know
Stay by them self
Play only with kids they know/ Avoid kids they don't know
Noisy with people they know but quiet with people they don't know
Clingy with parents around new people
Follow around kids they know
Do not ask to go to toilet – accidents
Language and Communication
Does not talk much, especially to new people
Uses actions or points more
Take longer to tell things
Need people to call out to get their attention
Sit close to music or TV
Can be hard to understand what they say
Does not know right words to say what they want
Uses wrong words
Misunderstand what is said to them
Watches others, especially new people

APPENDIX 2

Noise profile in different geographic contexts

The original scope of the project was to examine different excessive noise profiles in urban, regional and remote contexts. The factors contributing to noise exposure in different contexts was found to be the same but the influence of the various factors was more or less in different contexts. However, even within the same physical contexts there were variations in the influence of these factors.

Information on the noise exposures was gathered in three ways. Firstly, noise dosimeter equipment was used to record the exposure to excessive noise of specific individuals resident in households. Attachment 1 provides an example of a noise survey for children. There were a number of challenges in obtaining dosimeter information notably the process of negotiating access to homes, a sensitive issue for many families. Another factor was arranging the right equipment that was light enough to be carried comfortably by children.

Secondly, noise surveys were administered to individuals and the information used to identify loud noise exposure in the typical environments they occupy. An example of a children's noise survey is attached.

Thirdly, certain situations described in in surveys were simulated and measured with a sound level meter to calculate the accumulated noise exposure of typical situations described in the surveys. For example, the noise exposure from sitting close to stereo equipment, of driving in various cars with the stereo on maximum volume. Information from all sources was then analysed to identify typical factors contributing to excessive noise exposure. The following table reports the number of households and geographic context where information was gathered.

Information sourced from different regions.

	Urban	Regional	Remote
Number of households involved in dosimeter recordings in different areas.	6	8	7
Number of Noise Surveys conducted in different areas	15	25	20

In the public reporting of this information, we have emphasized the factors that contribute to excessive noise exposure rather the profile of excessive noise in different geographic environments. Several people in our Indigenous reference group commented that reporting on risks of excessive noise with a focus of urban/regional/remote environments could be both stigmatizing and disempowering. It was discussed that people had little capacity to change regions where they lived and the recent history of intervention in the NT had already sensitized people to the negative stigma associated with remote communities. It was highlighted that the information presented with a

geographic focus was liable to fit a pattern of 'catastrophising Indigenous communities' and it pointed out that information presented in this way was more likely to be resented and ignored by communities.

However, providing information on specific risk factors which could be more easily and actively managed by families involved a more empowering a process of knowledge transfer of the research findings. We altered the original intentions for reporting which was to highlight typical exposures in different geographic environments to report on factors in all environments on the basis of this feedback