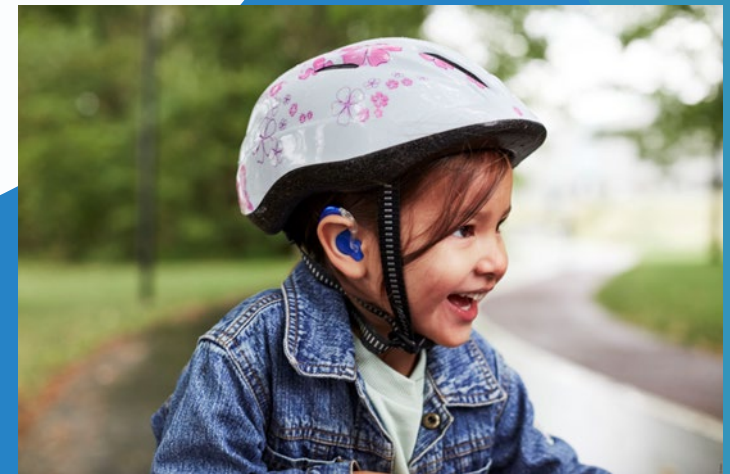



BACK TO SCHOOL WITH AUDITORY OUTREACH

October 2, 2024





We would like to acknowledge that we are presenting from the qathet region, on the lands of the Coast Salish peoples, specifically the unceded traditional territory of the Tla'amin Nation. I am grateful for the opportunity to live, learn, and share educational experiences here.



AGENDA

Introduction

Auditory Outreach Services

Forms and Requests

Website

Equipment Updates: Soundfield vs Personal RM

Questions



MEET THE TEAM!

Lora Baker

Principal and Speech Language Pathologist

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Assistant Manager

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Audiologist

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Teacher, Master of Education TDHH Candidate

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Audiometric Technician

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ABOUT AUDITORY OUTREACH

- Our program offers two main service streams: Assistive Listening Equipment loans and outreach services for students who have cochlear implants.
- We maintain a loan bank of assistive listening equipment which currently provides loans to over 1000 students in 56 school districts and at 132 independent schools across the province of B.C.
- We provide equipment loans, Easysheets, instructional videos, presentations, professional development, technical support, and equipment repairs/ replacements.
- Equipment loans, outreach services are available from Auditory Outreach to students attending public schools as well as group 1 and 2 independent schools as well as First Nations schools.
- Last year, we updated and renewed our service agreement with the 5 health regions and all the school districts in the province. New agreements can be found on our website: [Auditory Outreach Regional Agreements](#)

ABOUT AUDITORY OUTREACH

We are experts in remote microphone technologies and focus on the unique skills and learning needs of students who have cochlear implants.

Auditory Outreach consultative support for students with cochlear implants includes but is not limited to:

- Audiology, SLP and TDHH consultative support
- Assessments
- Assistive Listening equipment validation, implementation and technical support
- Long term and short-term goal identification including IEP support, and strategies for school teams
- Resource sharing, training and education for students, school teams, community teams and families
- Promotion of inclusion and advocacy for students who have cochlear implants in school environments
- Professional Development
- On-line groups targeting social connection to other students with CIs and social language

FORMS

NEW EQUIPMENT REQUEST

For students who are new to AO-PRP or do not currently have the requested piece of equipment on loan

EQUIPMENT EXCHANGE

For students who have a loaned piece of equipment, and they would like to exchange for a different piece of equipment.

ACCESSORY REQUEST

Use this form to request any accessory, even if it's to replace a lost or broken accessory e.g., lanyard, audioshoes, charging cord, etc.

EQUIPMENT RETURN

When a student is no longer using the equipment or moving to another school district or graduating. This form terminates the loan agreement for the returned equipment.

EQUIPMENT LOSS

When a piece or pieces of equipment (other than accessories) are lost.

FORMS

PERMISSION TO SHARE

This serves as our consent form for communication and sharing with audiology clinic and school district. Loans cannot be provided without this form. We need a new Permission to Share form if a student moves to a new school district or new independent school.

CI REQUEST FOR EQUIPMENT

For students with CIs when requesting new equipment or who are new to Auditory Outreach. Must be authorized by CI audiologist from BCCI clinic.

CI REQUEST FOR OUTREACH SUPPORT

Use this form to request consultative support for students with cochlear implants from Auditory Outreach Audiologist, SLP or TDHH.

TECHNICAL SERVICE

Use this form if you have already reached out to AO-PRP for troubleshooting and the equipment is still not working. Please ship the broken equipment to AO with this form.

CI EQUIPMENT EXCHANGE

When students with CIs want to exchange a current loan for a different piece of equipment.

REMINDERS & TIPS

REQUESTS AND FORMS

- For new students, Rena Jit emails the listed school to confirm registration status, PEN number and identity details (DOB and legal name)
- Students who are moving to a new school district, need to return all equipment and start a new request/ agreement with new SD including a new Permission to Share form
- Please include paperwork with returns
- New requests, tech service, equipment exchange, upgrades all require a recent (within the last year) audiogram/ report
- Incomplete forms or errors result in delays

EQUIPMENT

- When returning Roger X receivers or if the student is moving to a new school district, please go to the clinic to have receivers uninstalled and downloaded into the shells for return to AO-PRP.
- Please report losses promptly. Some items are covered under a 3 year loss warranty
- Invoicing for equipment that was lost last school year will happen in October. We only invoice for items that can be removed, stored at school and have a serial number.
- To help mitigate lost installed receivers, school districts can apply to join the Roger Installer program at no cost. Email Lora for more info.

REMINDERS & TIPS

EQUIPMENT

- Please use alcohol-based solution or wipes to gently clean equipment.
- All equipment including transmitters, cases and cords are cleaned and re-loaned to another student. Please refrain from writing on or using stickers on loaned equipment.
- If unsure, email to make sure that the equipment you are sending back is owned by Auditory Outreach before shipping.
- Auditory Outreach stopped loaning soundfield systems 6 years ago. Individual School Districts provide these for students that need them.

SHIPPING

- New equipment and exchanges are always shipped to the audiology clinic for validation
- Equipment for students with cochlear implants are usually sent to Carrie Siu, who arranges for equipment delivery and validation
- Please don't return broken accessories (non serial numbered items). It is too costly to ship back individual pieces.
- Please do not check off FRAGILE on the Loomis waybill. This results in costly charges.
- Consider packaging all equipment and multiple returns in one box/ prepaid envelope to reduce our costs.

REMINDERS & TIPS

GENERAL

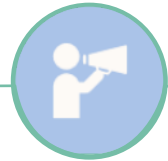
- For email inquiries, please provide the student's first name and last initial or initials and DOB
- We are now providing complete loan lists to every school district annually in May. We appreciate teams reviewing these and providing changes to school, etc.
- AO-PRP invoices school districts for lost equipment in the fall for the previous school year.
- Contact Info: Share any changes or updates in contact info, new team members, etc so we can ensure we have the correct contact, shipping address, etc.
- New audiology clinic or school district requires a new Permission to Share consent form signed by parent/ guardian.
- We accept digital e-signatures and prefer Adobe sign as it records the date.

WWW.AUDITORYOUTREACH.CA



FORMS/ REFERRALS

Access to forms,
information on
referrals and
eligibility



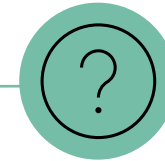
NEWS/ UPDATES

Past newsletters,
upcoming events and
announcements



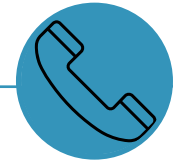
RESOURCES

Easysheets, website
links, presentations,
videos and more!



FAQS

Some frequently
asked questions
about procedures,
equipment, forms,
etc.



CONTACT INFO

Contact Info for the
entire team



SOUNDFIELD VS PERSONAL REMOTE MIC SYSTEMS

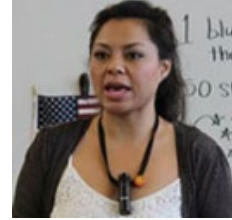
Why does the AO-PRP provide Personal, and not SF RM systems?

RMT (REMOTE MICROPHONE TECHNOLOGIES)



PERSONAL RMT

Teacher's voice is transmitted via frequency-modulated signals (FM or DM) from a microphone worn by the speaker to a receiver **worn** by the listener



SOUND FIELD RMT

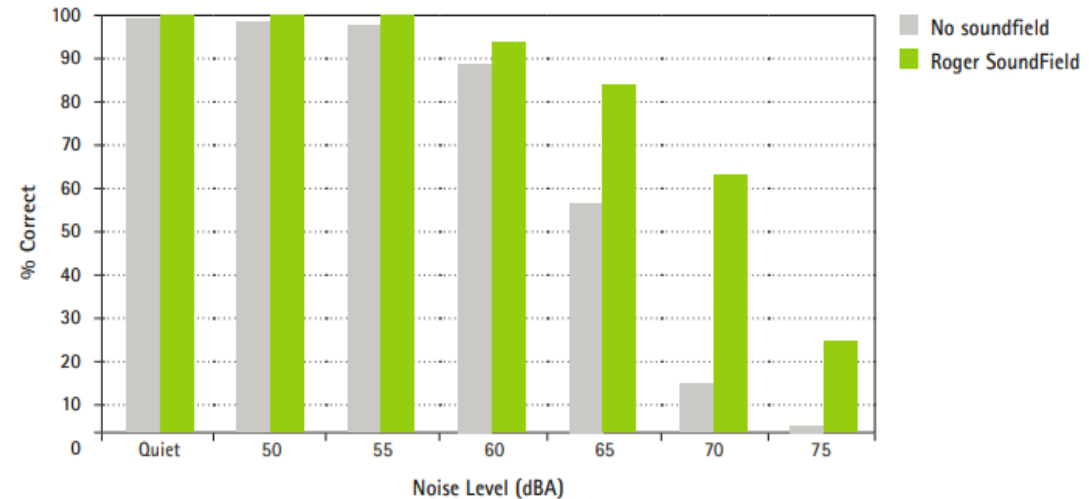
Teacher's voice is transmitted via frequency-modulated or infra-red signals from a microphone worn by the speaker to one or multiple loudspeakers that distribute the speech across the room

STUDIES ON SOUND FIELD RM

- **SNR:** Classroom's signal-to-noise ratio increased by 10-13 dB with the use of an infra-red SF (Larsen & Blair, 2008)
- **ELL:** teachers of English language learners reported SF allowed them to emphasize speech sounds and increase student engagement (Millet, 2017)
- **ASD:** teachers reported listening behaviours of students with ASD increased with use of SF (Wilson et al., 2021)
- **ELL with mild HL:** Eriks-Brophy & Ayukawa (2000): speech intelligibility increased after 3 months of SF use among Inuit children with normal and mild hearing loss (Eriks-Brophy & Ayukawa, 2000)

STUDIES ON SOUND FIELD RM

- Phonak Canada (2021): the use of a Roger SF increased children's speech recognition in noise by ~27% when noise reached 65 dBA or higher



Average speech recognition scores across noise conditions for normal hearing children with no soundfield compared to with Roger SoundField system.

Other benefits:

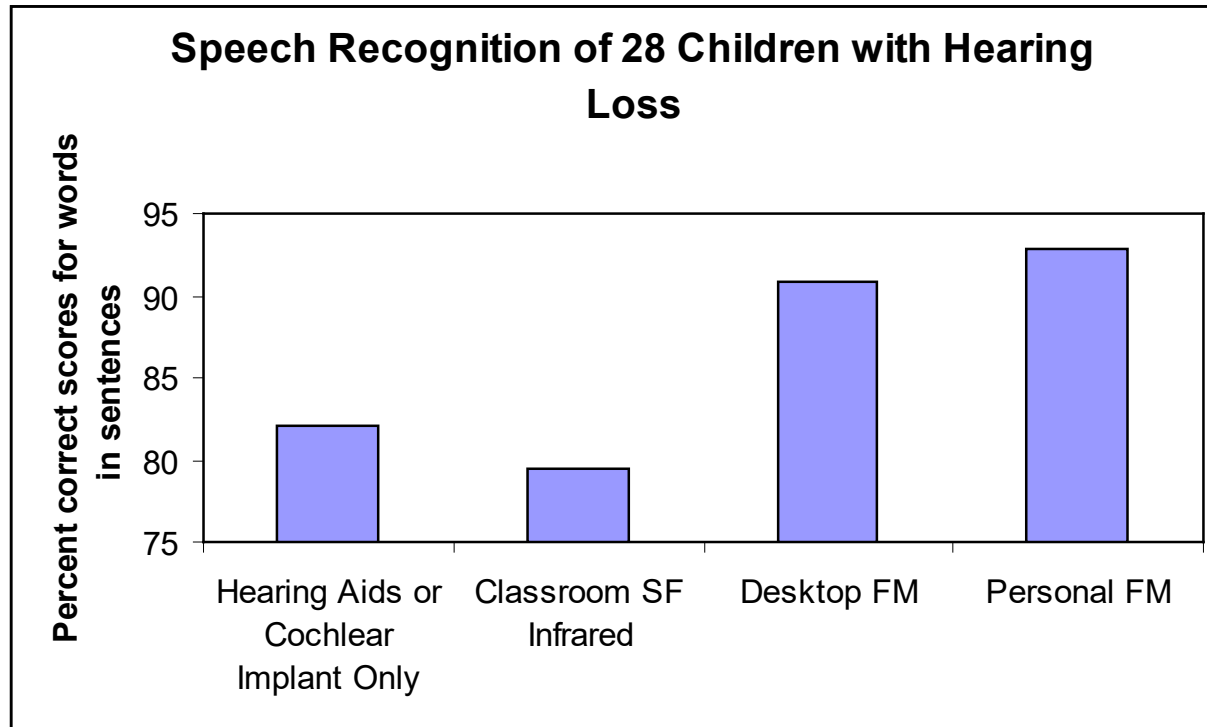
- Reduce teachers' vocal strain
- Universal design – benefits ALL, do not single out those with HL
- Cost vs personal RM

BUT ...

- *We know students with hearing loss need more !*
- Crandell (1993): children with minimal (up to 30 dB) sensorineural loss scored 25% lower in sentence recognition than normal hearing peers at -6 dB SNR
- Wolfe et al. (2013): children with hearing loss (when aided) performed significantly worse in speech recognition in noise vs normal hearing peers, i.e. 66% vs 89% at 60 dBA

STUDIES ON PERSONAL VS SF

- Anderson (2005): 28 elementary-aged children with hearing aids or cochlear implants
 - : SF resulted in poorer (though not clinically significant) scores vs HA/CI alone, i.e. 69% vs 74%
 - : both desktop FM and personal FM led to significantly higher scores vs HA/CI alone, i.e. 88% & 89%



TeachLogic Infra-red
Phonic Ear Infra-red
Lightspeed Desktop FM

Microlink, MLx

STUDIES ON PERSONAL VS SF

- Schafer & Kleineck (2009):
 - For children and adults with cochlear implants, average improvement in speech recognition in noise with CI+FM vs CI only:

FM via DAI	Desktop FM	Sound field FM
38%	17%	3%

Phonic Ear 900R
Audio Enhancement II
Lightspeed LES390

Phonak MicroLink CI
Phonak MLxS
Easy Listener

STUDIES ON PERSONAL VS SF

- Wolfe et al. (2013): personal RM provided significant benefit vs no RM across all noise conditions, i.e. 8% benefit at 50 dBA to 84% benefit at 75 dBA
 - : personal RM+SF (no patch) = personal RM
 - : personal RM+SF (patch) significantly worse than personal RM

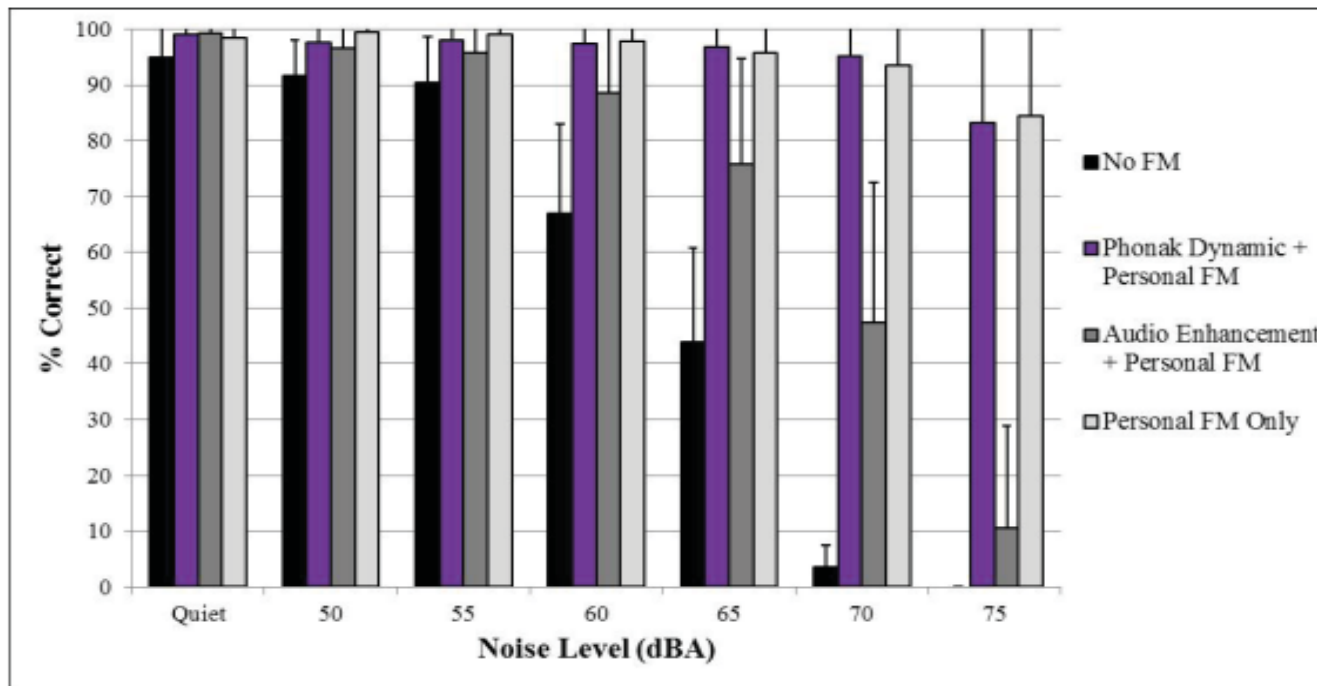


Figure 6. Average speech-recognition scores across the noise conditions for children with hearing loss without and with the classroom audio distribution (CAD) and frequency modulation (FM) systems.

Phonak Digimaster 5000 (adaptive gain, digital)

Audio Enhancement Elite II Infra-red (fixed gain)

Phonak Mlxi
Phonak Inspiro

PERSONAL VS SF CONT'D...

Wolfe et al. (2013): personal RM led to significantly greater speech recognition in noise than SF, i.e. 96% vs 72% at 65 dBA

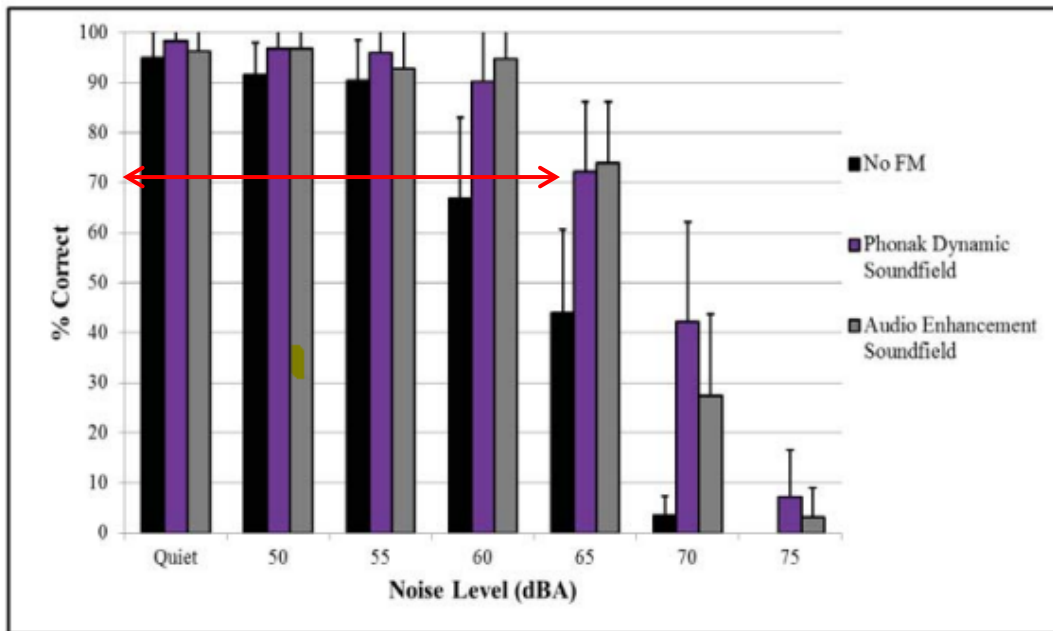


Figure 5. Average speech-recognition scores across the noise conditions for children with hearing loss without and with the classroom audio distribution (CAD) systems.

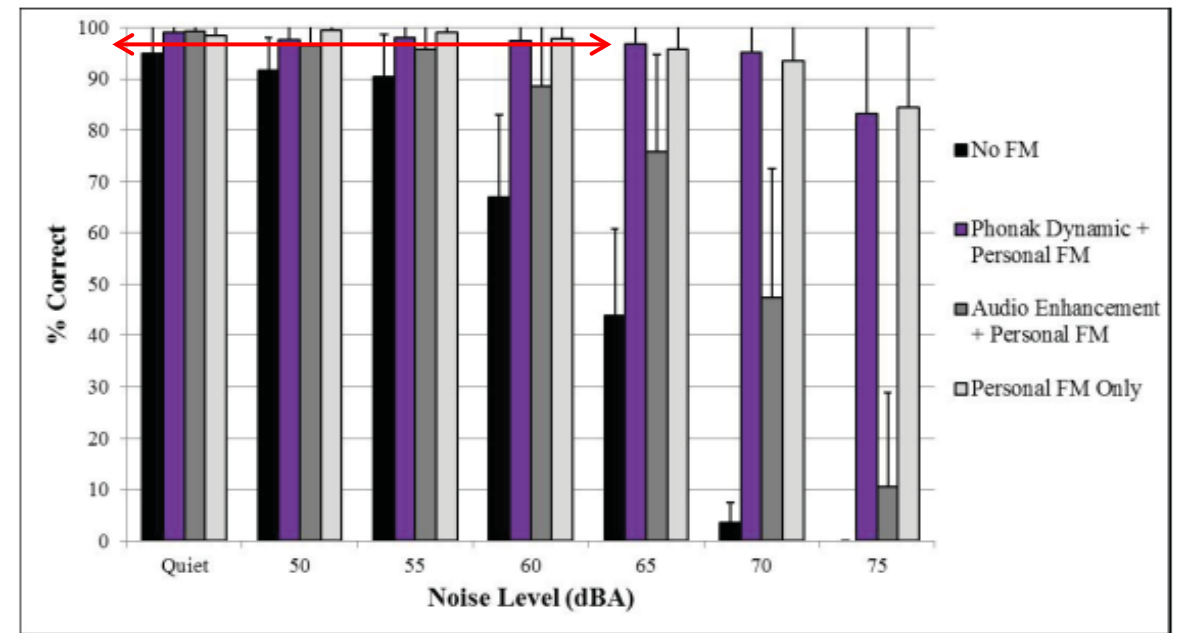


Figure 6. Average speech-recognition scores across the noise conditions for children with hearing loss without and with the classroom audio distribution (CAD) and frequency modulation (FM) systems.

CONCLUSIONS

- Whether SF alone provides benefit to students with HL depends on noise level of an occupied classroom during instruction times
 - At 60dBA, SF provides 90% vs HA alone 67% vs personal 98%
 - At 65 dBA, SF provides 72% vs HA alone 43% vs personal 96%
- As average classroom noise was measured to be at 65 dBA across studies and we know noise level does not stay constant in a dynamic learning environment, RM via DAI is the assistive listening equipment of choice for young learners with HL
- When a SF is ALSO provided in the classroom, no detriment (but also no word recognition benefit) to student with personal RM when no patching is involved, i.e. teacher wears transmitter for student with personal RM BUT when a non-compatible SF is ALSO in the room with student with personal RM resulting in patching (teacher wears transmitter for SF), there is significant detriment in word recognition of student with personal RM

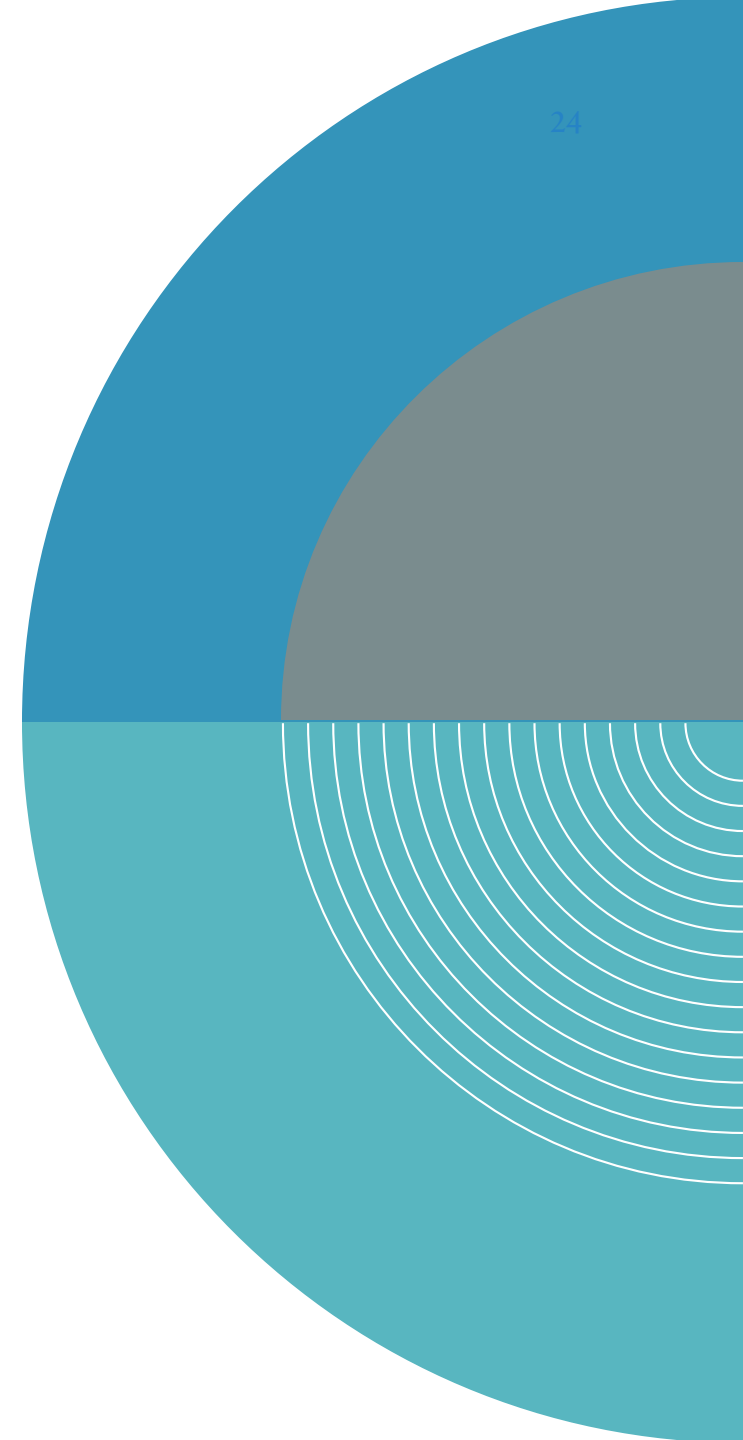
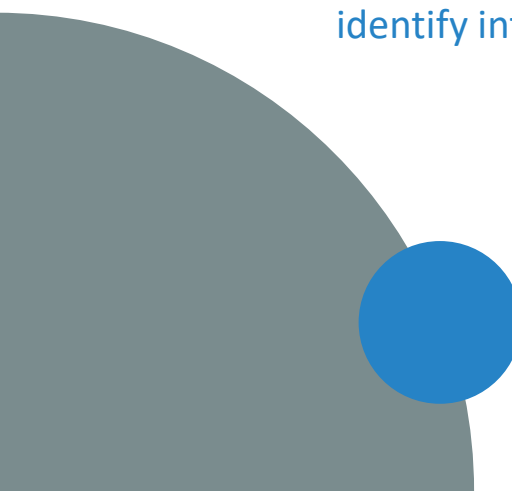
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FAQS

Why are outreach consultations only available to students with Cochlear Implants?

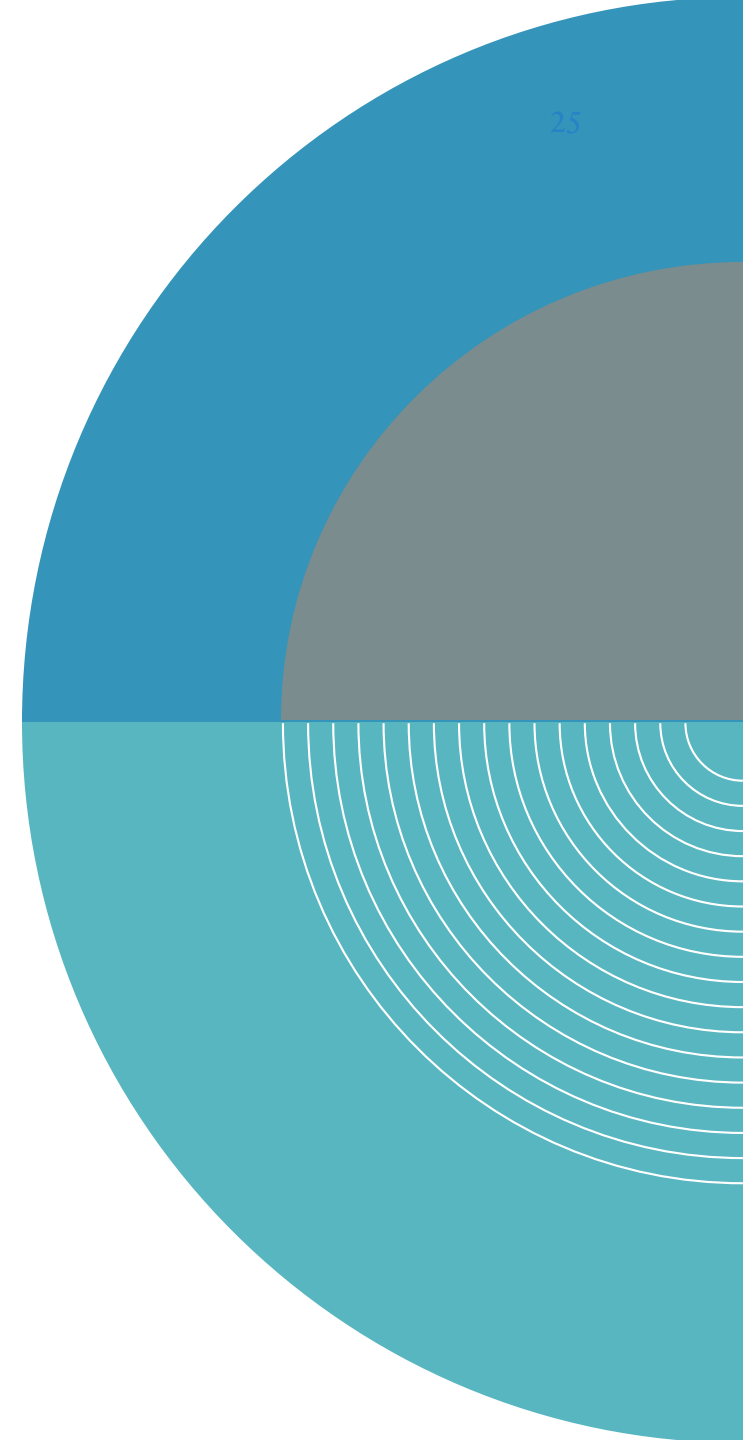
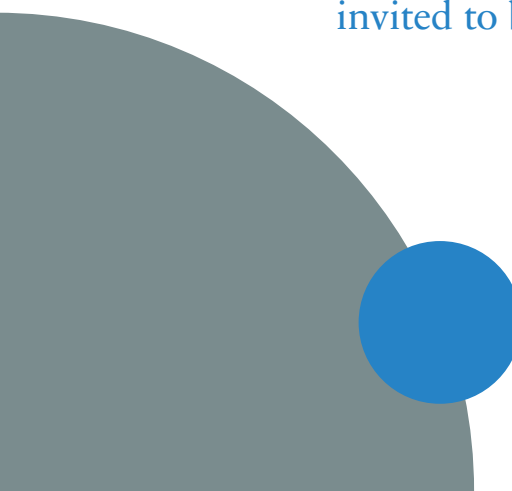
As you all know, the input and signal they receive is very different to what students with hearing aids hear. Speech and language skills, inclusion strategies, learning needs and target goals are often unique to students with cochlear implants. For this reason, the Ministry of Education funds Auditory Outreach to provide specific, expert knowledge on the equipment, learning needs and unique skills of students with cochlear implants. We work closely with the cochlear implant clinic team at the B.C. Children's Hospital to identify intervention needs and areas of support for this cohort.



FAQS

We have an SLP, Audiologist, and/or TDHH at the school district, is referring to you stepping on their toes?

Definitely not! Our team works collaboratively with existing school teams to ensure that we celebrate student and team successes and identify priority areas of growth. One major focus of outreach supports and visits is to ensure that the entire school team is working toward common goals and using the same targeted strategies that are specific to that student. School district SLPs, TDHHs, Teachers, EAs, administrators, parents and all team members are invited to be a part of the consultation process and meetings.



QUESTIONS?



THANK YOU

