



Navigating Medical School with Hearing Loss

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Acknowledgements

The following land acknowledgement is reproduced from the Purple Book which is presented each year to incoming UBC medical students.

We would first like to acknowledge the Indigenous territories on which the four campuses of the University of British Columbia (UBC) medical school (Victoria, Prince George, Kelowna, and Vancouver) are situated.

The Island Medical Program at the University of Victoria (UVic) is situated on the traditional unceded territories of the Lekwungen (Songhees) Nation and Esquimalt Nation. The nearby WSÁNEĆ (Saanich) Nations include the Pauquachin, Tseycum, Malahat, Tsartlip, and Tsawout Nations. These nations on Vancouver Island are a part of the Coast Salish peoples.

The Northern Medical Program at University of Northern British Columbia (UNBC) is situated on the traditional unceded territories of the Lheidli T'enneh Nation. Lheidli T'enneh means "the People Where the Two Rivers Flow Together". The Lheidli T'enneh are a part of the Dakelh peoples. Dakelh means "The People who Travel Upon the Water", and their combined territories encompass a large area in central BC.

The Southern Medical Program at the University of British Columbia Okanagan campus (UBCO) is situated on the traditional unceded territories of the Westbank First Nation. Westbank First Nation is one of the member nations of the Syilx (Okanagan) peoples. Syilx territory encompasses southern BC from Revelstoke to below the US border.

The Vancouver Fraser Medical Program at UBC is situated on the traditional unceded territory of the x^wməθk^wəyəm (Musqueam, "People of the River Grass"). x^wməθk^wəyəm Nation is a member of a large cultural family, the Coast Salish peoples. The city of Vancouver is built upon the traditional unceded territories of three Coast Salish Nations: these are the x^wməθk^wəyəm, the Tseil-Waututh ("People of the Inlet"), and the Skwxwú7mesh (Squamish) Nations.

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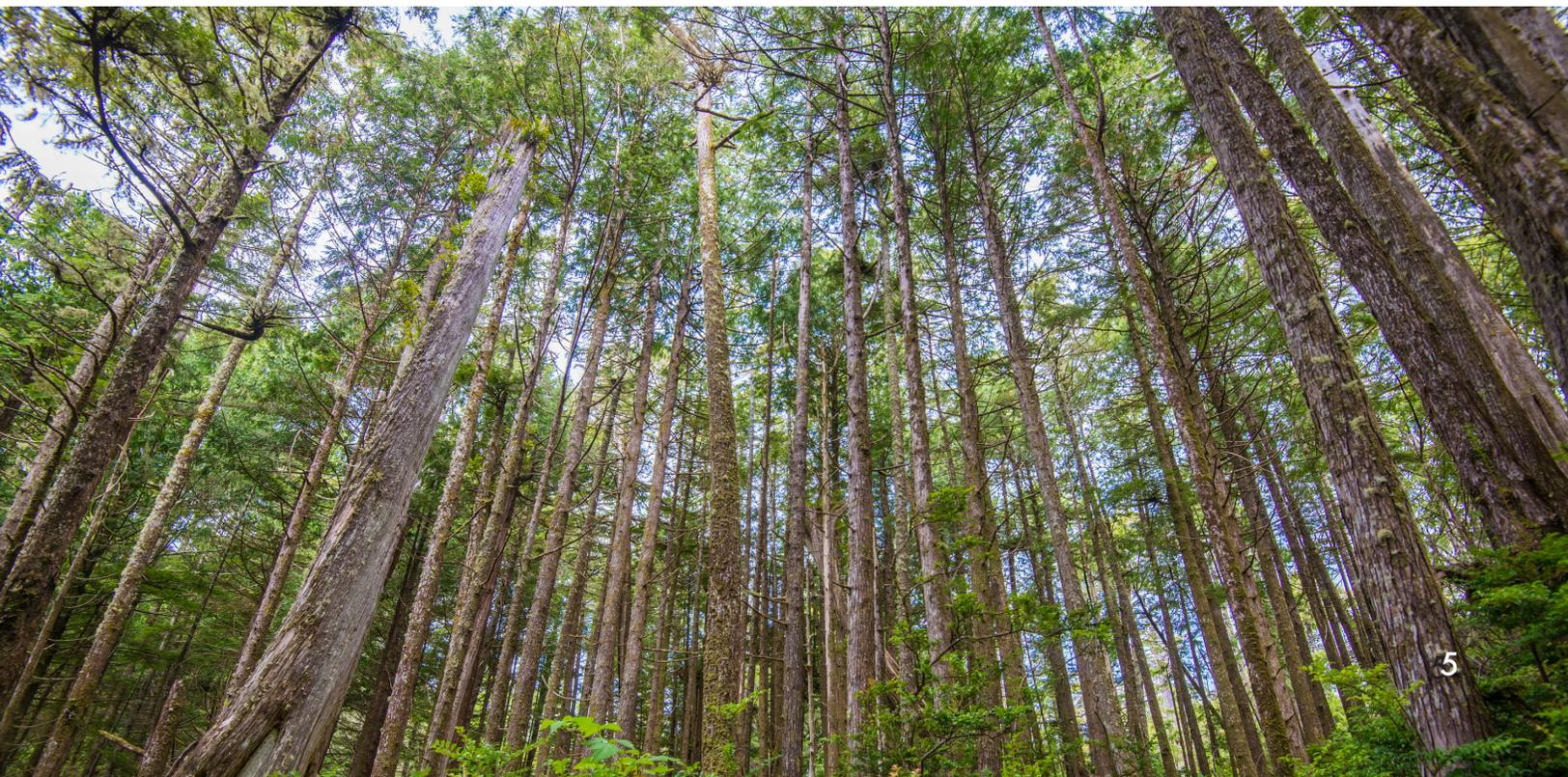
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We have tried, to the best of our ability, to avoid using brand names. However, in some cases, brand names are sometimes used in this guide. We do not have any relationship with these brands and have only provided them as a convenience to help students find resources.



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Welcome Message

This resource is a brief guide to assist you in navigating medical school if you have a hearing loss. There is a spectrum to hearing loss, and each individual's experiences, accommodations, and resources are unique. This guide aims to be as broad as possible but we recognize there may be topics that are overlooked. This guide provides resources specific to medical school, the University of British Columbia (UBC), and British Columbia (BC). These resources evolve periodically so if you have any questions, comments, or suggestions please reach out to the author's e-mail on page 2. Please also reach out if any of the information presented becomes out of date.

This resource supplements the Purple Book (orientation guide for incoming UBC medical students) but has specific information for students with hearing loss.

Medical training is a long journey. During challenging times, it is important to recognize that because hearing loss makes you unique it can be a strength rather than a weakness. Whether you have lived with hearing loss for a while, or are new to this experience, we hope you find this resource useful. There are students, residents, and physicians with hearing loss who are here to support you through your journey.



UBC Resources

UBC Centre for Accessibility

Should you need accommodations because of your hearing loss, it is best to connect to the UBC Centre for Accessibility early during your training to ensure your accommodations are set up in time for when school starts. You will be matched up with an advisor who can help you arrange your individual accommodations and provide you with a letter detailing which accommodations you have been granted. Please note that your healthcare professional (e.g. your audiologist) will need to write a letter in order for you to receive your accommodation letter. Your advisor can also help you apply for disability grants (you must hold a student loan for this) if you qualify. More information on funding can be found under “Financial Resources.”

UBC Faculty of Medicine Student Affairs

Student Affairs is a good first “go-to” if you have any questions or concerns regarding your accommodations or experiences in medical school. It can be beneficial to ask Student Affairs if there are current medical students who would be willing to discuss their experiences with you. Moreover, you can write to the author’s e-mail on page 2 to see if we can connect you to someone.

UBC Faculty of Medicine Mistreatment Help

Mistreatment can be an unfortunate reality in medical education. While UBC is making efforts to combat this, mistreatment does still happen. If you experience mistreatment, related to your hearing loss or otherwise, you can report it to the Faculty of Medicine on their mistreatment help website. This can be done anonymously if you wish. You are in control of how the information you report gets used. More details are available on the website.

- Website: <https://www.med.ubc.ca/current-learners/mistreatment-help/>

Hearing Loss Specific Resources

Association of Medical Professionals with Hearing Loss (AMPHL)

This association provides information, advocacy, and mentorship to those with hearing loss who work or plan to work in the healthcare field. On their website, you can register for their mentorship program where you can be matched to a working professional who is in a similar profession to you. AMPHL also hosts conferences and offer scholarships for students to attend. This is a great way to network with others in the field. The website has a blog and information on medical equipment (e.g. stethoscopes and clear face masks) which are discussed later in this resource. Their Facebook group is a network of healthcare students and professionals with hearing loss who are happy to answer questions you may have. It would be wise to read previous posts by other group members as your question may have already been answered.

- Website: <https://www.amphl.org/>
- Facebook group: <https://www.facebook.com/groups/21945864957/>

Canadian Hard of Hearing Association BC Youth Peer Support Program

This organization provides educational, recreational, and social opportunities for children, youth, and young adults with hearing loss. The team consists of young adults and working professionals who also have hearing loss and can provide insight on their own experiences as students and working professionals. This organization hosts a variety of workshops and social events throughout the year and there are opportunities to volunteer at events for children and youth with hearing loss. Their website has a variety of educational pamphlets and blog posts which include tips on hearing technology and choosing to disclose your hearing loss.

- Website: <https://www.chha-bc.org/youthpsp/>

Canadian Hard of Hearing Association, BC Chapter

The BC chapter is part of a larger national organization that provides information and advocacy. There are also opportunities to connect with individuals with hearing loss.

- Website: <https://chha-bc.org/>

Audiologist

There are a variety of audiology clinics throughout the province. If you are looking for a new audiologist it can be helpful to ask if they have experience working with clients who have hearing loss and work in a healthcare setting. Your hearing assistive technology might have to be linked to new technology (e.g. an amplified stethoscope) and it can be helpful to have an audiologist who has experience with this.

Personal Wellness Resources

There is a common saying that medical training is a marathon, not a sprint. It is important to recognize that there is a learning curve to navigating medical school with a hearing loss and it is important to prioritize your personal wellness. Here are some resources that might be helpful.

Deaf, Hard of Hearing, and Deaf-Blind Well-Being Program

The Well-Being Program (WBP) provides free mental health services for those with hearing loss. WBP is offered by Vancouver Coastal Health and is available throughout BC.

- Website: <http://deafwellbeing.vch.ca/>

UBC Counselling

You can walk-in to make an appointment with a counsellor. Note that same-day appointments often fill-up before 10:30 am, so come early for a better chance of a same-day appointment.

- Website: <https://students.ubc.ca/health/counselling-services>

UBC Student Health Services

This on-campus health clinic offers services by doctors, nurse practitioners, nurses, and specialists. You can make appointments online or by phone.

- Website: <https://students.ubc.ca/health/student-health-service>

UBC Speakeasy

Peer support volunteers offer confidential, one-on-one support. Drop-in and appointments are available.

- Website: <https://www.ams.ubc.ca/student-services/speakeasy/>

Physician Health Program

24-hour confidential helpline for BC physicians, residents, and medical students, as well as their partners and dependents. They offer free counselling, support, advisory, advocacy, and referral services. You can phone anonymously but note that some services cannot be provided unless you disclose your identity to confirm that you meet eligibility requirements.

- Phone number: 1-800-663-6729
- Website: <https://www.physicianhealth.com/>

Crisis Centre BC

24/7 confidential, non-judgemental crisis line. Services in over 140 languages are offered.

- Phone number: 1-800-784-2433
- Website: <https://crisiscentre.bc.ca/>

Financial Resources

In addition to regular scholarships and loans, there are specific financial programs designed to help students with permanent disabilities. In addition to the items below, be sure you take advantage of all funds available to students available to all students by applying for scholarships and bursaries when you qualify. The UBC Faculty of Medicine has a Student Financial Assistance Officer who can provide a lot of support in navigating the various financial resources.

Government student loans

There are many financial resources for students with disabilities that are only available to those holding government student loans, so you should apply for these loans if you qualify. Student loan eligibility is largely based on income. If you have a spouse (common law or married) or are still considered a dependent of your parent(s), their income will be considered as well. Even if you have not qualified in the past, you may qualify now due to the higher tuition in medical school, a change to your dependent status with your parents, or a variety of other reasons.

The websites in this section are for StudentAidBC because they will apply to most UBC students, but you should apply to the program in your province of residence. For more information about government loans in general, you can contact the UBC medical program's Student Financial Assistance Officer.

To declare that you have a permanent disability, you must complete an Appendix 8, with help from your accessibility advisor and your audiologist, in addition to the regular loan application. This only needs to be done once, unless you apply for equipment or services in subsequent years. If it is processed after your regular loan application, they will then reissue your notice of assessment to reflect any additional grants.

- Website: <https://studentaidbc.ca> (or your province's program)
- Appendix 8: <https://studentaidbc.ca/help-centre/applying-loans/i-have-permanent-disability-full-time-studies>

Government disability grants

On top of government student loans and grants available to all students, there are government grants specifically for full-time students with permanent disabilities. These are automatically assessed for students with an Appendix 8 on file when they apply for government student loans. Funding may vary slightly between provinces.

- Websites: <https://studentaidbc.ca/explore/grants-scholarships/bc-access-grant-students-permanent-disabilities>
- <https://studentaidbc.ca/explore/grants-scholarships/bc-supplemental-bursary-students-permanent-disability>
- <https://studentaidbc.ca/explore/grants-scholarships/canada-student-grant-students-permanent-disabilities>

Government services and equipment grants

There can be extra costs to medical education for students who have a hearing loss. Services and equipment grants help cover some of these costs for students with government loans. These grants cannot be used to purchase hearing aids. However, there are many other uses that may be relevant to you. Some examples are amplified stethoscopes, assistive listening systems, note takers, and sign language interpreters. Your accessibility advisor can help you determine which equipment or services may be needed in order to complete your application. Your audiologist will likely be involved as well.

When applying for equipment or services, the coordinating and purchasing is done through provincial programs. As such, it takes time for them to process your application, acquire the equipment, and deliver it to you – up to 8 weeks. Make sure you apply early if you need your equipment by a certain time (e.g. when school starts).

- Websites: <https://studentaidbc.ca/explore/grants-scholarships/canada-student-grant-services-and-equipment-students-permanent>
- <https://studentaidbc.ca/explore/grants-scholarships/assistance-program-students-permanent-disabilities>

UBC disability scholarships

UBC also has specific scholarships and bursaries for students with disabilities. The application period is once yearly.

- Website: <https://students.ubc.ca/enrolment/finances/awards-scholarships-bursaries/awards-disabilities>

Other disability scholarships

You may also check for scholarships at other sites. One such site is DisabilityAwards.ca.

- Website: <https://www.disabilityawards.ca>

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Medical Equipment and Tools

The Purple Book, an orientation guide to incoming UBC medical students, details the various medical equipment you will need. Students with hearing loss might require additional specific medical equipment which we will discuss below. Special equipment can be costly and add extra expenses. Please see “Financial Resources” for financial resources that can help offset these costs. This list is not exhaustive but include items that are commonly used in upper years.

Hearing aids and cochlear implants

It is your personal choice to use hearing aids and/or cochlear implants. If you are replacing your equipment or buying it for the first time, make sure you have a detailed conversation with your audiologist about what other items below you may need. Some devices may be easier to connect with certain peripheral equipment than others. Consider how hours/call shifts may impact which battery options you make need. Your audiologist can help you determine what will work best for your situation.

Assistive Listening Devices (ALDs)

Your audiologist can help you decide if you would like to use any ALDs and which kind to choose. These may be useful for lectures, small group sessions, operating rooms, or patient interactions. It is important that whatever technology you choose is documented in the accommodation letter your accessibility advisor will write, especially if other people are required to wear or be close to the equipment. Some ALDs can look like audio recorders, so you should also reassure your patients and others that they will not be recorded.

There is an option to borrow (for free) ALDs from Assistive Technology BC (ATBC). This can be a good option if you want to experiment using ALDs and do not want to commit to buying them right away. Your accessibility advisor can assist you with this application.



On the left is a cochlear implant and on the right is a hearing aid.

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Medical Equipment and Tools

Stethoscopes

There are stethoscopes that are amplified to louder volumes and other ones that display sounds visually. The Association of Medical Professionals with Hearing Loss (AMPHL) has a specific section on their website on stethoscopes which include a comparison table, blog, and frequently asked questions. However, it is not a comprehensive list of all amplified stethoscopes. If you decide to use an amplified stethoscope, the websites below can help you make an informed decision on which stethoscope to choose.

Before purchasing, check with your audiologist to ensure that the equipment you are considering will be compatible with the hearing aids, cochlear implants, or other equipment you may already own. Some things to consider when choosing a stethoscope:

- Will it require you to remove your hearing aids or cochlear implant to use it? Are specialized ear tips an option for you instead?
- Can you connect it to your hearing aids or cochlear implant? What equipment is needed to make that happen, e.g. streaming devices, cables, Bluetooth transmitter? Will everything connect together?
- Will the sound quality through your hearing aids or cochlear implant be adequate? They are not designed for these low frequency heart/lung sounds, so you may have trouble auscultating murmurs or other sounds through them. See “Tips and Tricks” for more information on stethoscopes.
- Will you require over/on-the-ear (OTE) headphones?
- Do you need/prefer a visual display of the sound waves?

Some individuals use portable ultrasounds (e.g. GE Vscan ultrasound) in addition to their stethoscopes to help visualize what the stethoscope is listening to.

- Website: <https://www.gehealthcare.com/products/ultrasound/vscan-family>

When buying a stethoscope, even if it is not advertised, it never hurts to ask if they have a student discount! See “Tips and Tricks” for more details about buying a stethoscope.

- Websites: <https://www.amphl.org/comparison-table>
- <https://www.healthyhearing.com/report/46018-Stethoscope-hearing-aids>
- <https://www.oaktreeproducts.com/amp-steth-solutions>
- https://aubankaitis.com/amplified-stethoscope-bullet-points/?fbclid=IwAR2-MDK8n9i29CY8wOoWA0HprHUdP7vathJckONFFjwA-GDE_MklubLrTME



Thinklabs One
Digital Stethoscopes



Eko CORE



3M Littmann Model 3200
Stethoscopes



Cardionics
The Heart of Association
E-Scope

Here are some models of amplified stethoscopes discussed in the Association of Medical Professionals with Hearing Loss (AMPHL) comparison table.

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Medical Equipment and Tools

Clear face masks

Everyone is required to wear face masks in the operating room (OR). Face masks may also be needed for certain procedures, when there is a body fluid splash risk, or when patients are on droplet precautions. By default, hospitals only stock opaque face masks, making lip reading impossible when others are wearing them.

There are now face masks (e.g. The Communicator by Safe'N'Clear, ClearMask, Stryker Mask) that have a clear window over the mouth to allow for lip reading. Try to shadow in the OR during your first two years of school to see if you might benefit from these during your clerkship year and beyond (years 3+). The Communicator meets FDA surgical mask standards, so their use should not be a problem in the sterile OR environment. The American Society of Testing and Materials (ASTM) has three levels for masks (e.g. The Communicator is a level one mask) and it is important to check what appropriate level is required depending on what OR equipment is used. Be sure to get an accommodation for their use if needed, and talk to your preceptors and the OR team early about using them. OR staff usually have a preferred mask and may be reluctant to use a new one, so having an official accommodation in place will be helpful.

Unfortunately, there are not as of yet any windowed N95 masks for when you have patients on airborne precautions.

Talk to your Student Affairs, accessibility advisor, and clinical team to see who is responsible for supplying these face masks.

- Websites: <https://www.infectioncontrolproducts.com/astm-levels-and-their-importance-to-your-mask-selections>
- <https://www.safenclear.com/>
- <https://www.theclearmask.com/>



**SURGICAL FACEMASK WITH
CLEAR WINDOW**

THE COMMUNICATOR
Clear Communication

Clear face masks, such as The Communicator from Safe'N'Clear, can aid with reading lips and facial expressions.

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Hearing Loss Accommodations

Each student will have unique accommodations and thus it is good to discuss the specific details with your accessibility advisor and Student Affairs. While it is hard to generalize accommodations as they are so personalized, here are some broad tips in accessing and managing accommodations that previous students have found helpful at UBC

Connect to support early on

It can be helpful to connect with UBC Centre for Accessibility and MD Student Affairs as early as possible to arrange for your accommodations. If you require new accommodations throughout your training, these two offices are very supportive and can help you navigate this. For example, Student Affairs can help manage your accommodations by informing your clinical preceptors and the appropriate teaching faculty about your accommodations confidentially. Thus, students are not always burdened with having to inform the appropriate people of their accommodations. Student Affairs handles all accommodations with a high degree of confidentiality.

Exam accommodations

In the first two years of the program, UBC uses a variety of different examination formats. For lecture content, you will have a multiple-choice exam delivered on your personal electronic device. For radiology, there will be a PowerPoint slide showing pictures. For both of these exams, general instructions are often given verbally before the exam starts. For the multiple-choice exams, warnings about time remaining are also verbal (e.g. "15 minutes remaining"), though you are also able to track time yourself on your personal electronic device that is approved for taking your exams (e.g. laptop).

The two exams that have more extensive auditory components are the histology and anatomy exams. Currently, the histology exam is delivered as a series of histology PowerPoint slides with a recorded voice-over reading the questions out loud. There is no written version of the questions for reference. Typically, these exams are taken in a large lecture hall.

Anatomy uses a "bell-ringer" format where there are multiple stations with labelled cadavers. There is a time-limit to answer each question and students are cued to move on to the next station when the bell rings. The count-down clock is visually displayed in the lab on multiple television screens and you will see other students moving onto the next station.

If you think these exams with auditory components might pose a challenge, talk to your accessibility advisor and Student Affairs early on to find an accommodation that works for you. Accommodations are unique but here are some ideas if you need help. For histology, you could ask if there is an option for reserved seating at the front or to take the test in a private room with a person reading the questions so you can see their face and lips. For anatomy, you could ask if someone could tap you on the shoulder once the time is up at each station.

Objective Structured Clinical Examinations (OSCE) accommodations

As a medical student you will complete Objective Structured Clinical Examinations (OSCEs) which are practical exams testing your clinical skills. There are short stations with actors where you are asked to take histories and perform physical exams under observation. UBC policy is that amplified/electronic stethoscope are not permitted unless you have accommodations. Thus, it is important that if you will be using an amplified/electronic stethoscope that you have this written in your accommodation letter that is sent to Student Affairs. It is important to double check that Student Affairs will inform the OSCE examination team that you will be using an amplified/electronic stethoscope to ensure your examination runs as smoothly as possible. If you are comfortable, you may also wish to bring a copy of your accommodation letter and provide it to the OSCE staff on arrival to help things run smoothly, but this should not be necessary if Student Affairs has informed the OSCE team.

Another possible challenge with OSCEs is the time notifications and Post-Encounter-Probe (PEP) questions. They use bells to let students know when a station is over and when they may enter the next station. They also use walkie talkies and knocks to let students know how much time has passed in a station. These notifications are important because they warn you when a station is about to end, so you can wrap up the encounter. They are also used because some stations end early, and the examiner then gives you a PEP question. These PEP questions are sometimes written and sometimes asked orally. If any of these procedures might be a challenge for you, discuss possible accommodations with Student Affairs and your accessibility adviser.

Sign language interpreters

Sign language interpreters may be provided for eligible students on receipt of requests well in advance of class dates. Your accessibility advisor can assist you with organizing this accommodation.

Speech-to-text

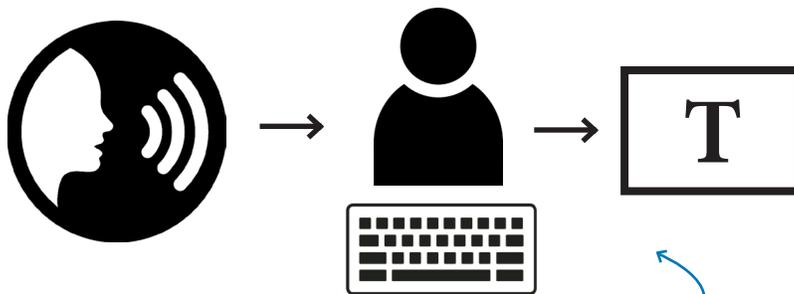
There are programs where computer recognition converts speech into text. Please note that some applications might require internet access, and WiFi can be spotty in hospitals.

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Hearing Loss Accommodations

Communication Access Realtime Translation (CART)

CART involves a word-for-word rendition of verbal content on a screen by a transcriber. Your accessibility advisor can assist you with organizing this accommodation if you are eligible for it. Please note that Typewell, another transcription service that transcribes meaning of a conversation, is not offered at UBC as CART is offered.



Transcription services such as CART have someone who transcribes speech into text in real-time.

Lecture accommodations

The UBC Centre for Accessibility can assist you in arranging the accommodations you might need during in-class lectures. These could consist of: priority seating in the front, peer note-takers, and audio recordings. Currently, the UBC Faculty of Medicine records most of their lectures, however, not all of them are recorded. It can be helpful to re-watch a lecture if you missed something in class. Please note that these lectures are not captioned.

The lecturers will have microphones and students can ask questions via the microphones on their desks so other students can hear their question.

Teaching videos

There are many videos used in the medical program, both during lectures and in other areas. For example, most clinical skills session have a video for you to view in advance that shows you how to do that week's physical exam. Most of these videos are not currently captioned.

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Hearing Loss Accommodations

Phone calls

Under the “Tips and Tricks” section there are some strategies for managing phone calls. If you use sign language, there is a Canadian service that allows you to communicate by using a sign language interpreter on video. This free service is open 24 hours a day, 7 days a week. You are required to register and you will receive a phone number which can be used to make and receive calls on your preferred device. Please talk to your clinical team if you are using this service as patient confidentiality is an important topic to discuss.

- Website: <https://srvcanadavrs.ca/en/>

IP relay is a service that is commonly offered by phone providers and can be useful for those who do not use sign language. Typically during IP relay, a person types in their conversation to the provider’s IP relay agent who reads the typed message to the person you are communicating with. The relay agent then types the other person’s response for you to read. All calls are strictly confidential. Talk to your phone provider for more details on IP relay.

If you use an interpreter there are several ways to manage phone calls. First, you could use a three-way call (e.g. via a conference call) if you need access to your designated interpreter who is located off site. Second, there is a device called a phone splitter, that can be used to manage three-way calls at a hospital. You attach this device to the hospital phone which allows your interpreter to overhear the conversation as well.

Double check accommodations

UBC Student Affairs, the UBC Faculty of Medicine, and UBC Centre for Accessibility will work with you to ensure the necessary accommodations are in place. However, when you are using certain accommodations for the first time in more stressful situations (e.g. exams) it can be beneficial to double check that the accommodations are set up and the appropriate people are informed. During an examination you want to ensure you only have to focus on doing your best and not whether your accommodations are in place or not.



UBC Faculty of Medicine Student Affairs is a good first “go-to” if you have any questions regarding accommodations. They will work with the UBC Centre for Accessibility to help ensure your educational journey is as smooth as possible.

It is up to an individual how much they want to disclose about their hearing loss and to whom. Your accommodations and resources are confidential and the UBC Centre for Accessibility and Student Affairs will work with you to make your educational journey as smooth as possible. Student Affairs can assist with helping to arrange your accommodations with the appropriate individuals so the burden is not always on the student. If you choose to discuss your hearing loss with others (e.g. classmates, patients, clinical preceptors, professors), here are some tips that upper years have used:

- Be clear and concise on whether you need someone to communicate more effectively with you. For example, you could say, "I am having difficulty hearing you, could you please face me and speak slower and louder?" With this statement, you are not necessarily disclosing you have hearing loss but saying that, like anyone else, it can be difficult to hear others!
- Some students have mentioned it can feel a bit stressful if you are constantly asking a patient to repeat themselves. However, if you reassure a patient that you are asking clarifying questions to ensure you get their details correct, usually they are understanding.
- Some patients do not respond well to being asked to repeat themselves, even with the tips above, especially if they are part of a group that is marginalized in some way. In those situations, you may find it easier to disclose that you have a hearing loss, though this would be entirely your choice.
- You may find that there are certain situations where you will generally prefer to disclose, for example to preceptors working with you in noisier environments. You will have to determine what is most comfortable for you.
- Case based learning (CBL) tutorials are small group sessions with eight students and a tutor working through a medical case. It is expected that students take turns writing on the board, which can be challenging because you cannot lip read when your back is facing the group. If this is an issue for you, you may wish to disclose your hearing loss to your tutor, or have Student Affairs notify your tutors to find a solution that works for you.
- If you are using a sign language interpreter, it is important to reassure patients that everything discussed in the room is confidential.

As you adapt to new learning environments, you will find different strategies that work best for you. Below are a list of tips and tricks others have found useful.

Buying a stethoscope

Always ask if a student discount is available or if there are online discount codes.

Consider the appearance of your stethoscope compared to traditional models and how comfortable you will be when others ask you about it. Preceptors and patients may comment or ask questions if your equipment looks different. For example, preceptors may assume that you are not carrying a stethoscope if they do not see the traditional model around your neck. If you are wearing headphones, to connect to your stethoscope, people may ask why or assume they are for listening to music. It is often possible to respond without disclosing if you wish (e.g. "This is my stethoscope," "Yes, technology has become very advanced!"), but be prepared for how you would like to respond to these types of comments. People usually mean well and are respectful however you respond, and your comfort with answering questions will set the tone for the encounter. If you will feel put on the spot by these questions, that may be a factor in what stethoscope you choose.

If you would like to try streaming your stethoscope through your hearing aids or cochlear implants, be aware that they are often not designed to transmit frequencies below 125 Hz, which is where most relevant heart and lung sounds are. The programming software often does not go below those values. Manufacturers might say they have output "below 100 Hz," but they might not be specific about the limits of their technology. As such, it is likely that the stethoscope is picking up some relevant heart and lung sounds that would not make it to you because of the limits of your hearing aids or cochlear implants. Anecdotally, some students have found that using their stethoscope with quality headphones with good bass output provides significantly better sound quality than streaming through their hearing aids and cochlear implants. However, this may not be true for all equipment, people, and situations. It is best to try out different set-ups if you can!

This playlist has test tones starting at 20 Hz, so you can see which frequencies your devices are able to output.

- Website: https://www.youtube.com/playlist?list=PLzFvCAflq7a2SIBfDhpCytFJ4RHVb_KLY

Over-the-ear headphones may allow you to keep your hearing aids on and use your prescribed amplification for the voice-range frequencies. However, they are bulky and provoke questions, as mentioned above. If buying headphones, this website has detailed quantitative reviews, including bass output, for many different models.

- Website: <https://www.rtings.com>

Other things to consider when buying a stethoscope are in the "Medical Equipment and Tools."

Learning to listen with your stethoscope

Learning to recognize different sounds with your stethoscopes is challenging for medical students, period. It can be even more challenging with a hearing loss. Hearing aids and cochlear implants are designed for speech sounds which are different frequencies than heart and lung sounds. It can be helpful to YouTube normal and abnormal hearts and lung sounds to learn to recognize these sounds. There are also multiple heart and lung sound apps that you can download.

Phones

Everyone has different strategies for managing phone calls. Your current strategy might need to be adjusted to work in a clinical environment. Be aware that hospital phones might not have the best audio and be fixed in a busy location. Thus, if possible, you could always ask the other person if you can phone them back on your cell phone which connects to your listening devices better and allows you to seek a quieter location. Some upper years have suggested to do a quick walk around on your first day to a new clinical location to scout out empty rooms or supply closets that can be used to make phone calls. Dictation rooms are often a bit quieter and have phones available. Also, most phones have volume control you can try to adjust.

If you are struggling to hear the other person, and you feel comfortable, it can be helpful to mention to the person on the other line that you are having difficulty hearing them and request them to speak slower or clearer. You can also ask if you can phone them back on your cell phone which connects to your listening devices and/or allows you to seek a quieter location. If the person is close by, you could also ask to meet in person.

Personal cell phones are increasingly used when on call. Some residents or staff may default to sending you a text or WhatsApp message instead of calling/paging when you are needed. Be sure that your notifications for these are adequate to wake you in the middle of the night. If not, discuss alternate options with your team (e.g. always calling).

Under the "Accommodations" section there is more information on strategies for phone calls.

Pagers

Some services and hospitals have students use their personal cell phones or a pager. If you foresee challenges in hearing your pager you can set your pager mode to have it flash light or vibrate. Other strategies include placing your pager within your visual field by pinning it near your shirt collar. If possible, you could work with your clinical team to see if your contact number can be set to your preferred phone number (e.g. cell phone that connects to your listening devices).

On the other hand, some individuals actually find it easier to use pagers over a personal cell phone. If this is the case, you could ask your clinical team if you can only use a pager.

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Tips and Tricks



Extra hearing aid batteries (brown dots) taped to the back of an ID badge. This helps ensure you have spare batteries on you, even if you do not have pockets!

Batteries and charging devices

If your hearing technology requires charging or batteries, always make sure you are prepared. For example, for spare hearing aid batteries, one student tapes extra batteries to the back of their ID card (which must always be on you) to ensure they always have spare batteries. If your stethoscope or assistive listening devices requires charging, make sure it is fully charged before any shift. As a back-up plan, bring a portable battery pack and charging cables, so you can charge your devices in your pocket while on shift. Rechargeable hearing aids may be problematic on 24+ hour call shifts if battery life is only ~16 hours and they cannot have other batteries swapped in.

Patient communication

It is up to you if you would like to disclose your hearing loss to a patient. There are ways to ask a patient to communicate clearer without fully disclosing. For example, you can simply say, "I want to make sure I am correctly hearing what you have to say, could you please speak slower and face me?" As long as you explain what you are doing and ensure patient comfort and confidentiality, generally people are understanding. Assistive listening devices may also help you hear patients, especially in noisy situations like hospital wards or emergency rooms.

Hearing during rounds or team meetings

Rounds or team meetings do not always happen in quiet environments. Often information has to be passed along quickly and efficiently and this might make listening difficult. You will find different strategies that work for you but it can be helpful to position yourself closer to the speaker and within range to see their face and lips. Assistive listening devices may also help, either by you pointing a device at the speaker, placing the device in the middle of a meeting table, or having a speaker wear the device. If you feel comfortable, you could ask a team member if you correctly heard the pertinent details.

Sterility and infection control

Sometimes you may get push back about using your equipment for infection control or sterility reasons. While some concerns may be warranted and deserve discussion, others are unfounded. For example, it may be okay to use your amplified devices in the operating room (OR) as long as normal sterility procedures are maintained.

Other situations where this has come up for students include wards where there is a traditional stethoscope in each patient's room that is meant to be used instead of clinicians' individual stethoscopes. You should discuss with your preceptor if it is okay to use your own stethoscope and clean it after each use. It may also be possible to put a rubber glove around your stethoscope to prevent the spread of microbes.

Scrubbing in

Once you are scrubbed in for an operation, you generally will not be able to use your hands to adjust any of your hearing related equipment. Your hands can only touch sterile items, and they need to stay between the level of your underarms and umbilicus (belly button). Some things to consider are:

- Do you need to adjust your hearing aid or cochlear implant volume? If you forgot before scrubbing, can you ask a circulating nurse to help you?
- Do you need to set up or adjust any assistive listening devices?
- Do you need to turn off your phone's Bluetooth or other means of communicating with your hearing aid or cochlear implant? You will not be able to reject a call while scrubbed, and you will not be able to hear your team if your phone is ringing in your ear.
- Are your batteries likely to run out during the procedure?
- If you might need to adjust something during the procedure, is it possible for that item to be kept in your mid-chest, so you can press buttons through your surgical gown?
- Is there music playing that is making it too difficult for you to hear? Ask if the volume can be turned down.
- Some noisy surgical devices, like drills, can cause uncomfortable feedback in some hearing devices. Sometimes moving away or turning your head can alleviate this somewhat.

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Forest (original image), pg. 5: Harvey Lui

Ears (original images), pg. 6 (top-to-bottom, left-to-right):

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- Harvey Lui (top middle left, bottom far right)
- Tharindu Fernando (top middle right, bottom middle left)
- Andy Tsung (top far right)
- Tasha Cox (bottom far left)
- Bowen Tang (bottom middle right)

Cochlear implant (original image), pg. 12: Tasha Cox

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Stethoscopes, pg. 13: Association of Medical Professionals with Hearing Loss

Clear face mask, pg. 14: Safe’N’Clear

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