University of Maryland
DEPARTMENT OF HEARING AND SPEECH SCIENCES

MCICE
Maryland Cochlear Implant Center of Excellence

Cochlear Implant Emphasis Program (CI-EP)
Doctoral Program in Clinical Audiology (CAUD)
Master of Arts in Speech Language Pathology (SPLA)

The Maryland Cochlear Implant Center of Excellence (MCICE) was established as an MPower initiative in 2016. MCICE combines the strengths of the University of Maryland-College Park in the areas of research in the areas of speech, language, and hearing sciences, audiology training, and speech-language pathology training with the surgical and clinical expertise of the University of Maryland Medical Center and the University of Maryland-Baltimore School of Medicine to create a premier program for educational training, clinical services, and basic/translational biomedical research on cochlear implants (CIs). A pivotal part of the educational mission of MCICE is implementing a specialty certification in cochlear implants for the UMD graduate programs in Clinical Audiology (CAUD) and Speech-Language Pathology (SLP). The students selected for the CI track would receive additional academic, clinical, and research training in cochlear implants, beyond the requirements of their respective degrees. Upon completion of this training, the students would be poised to provide uniquely specialized care to individuals with cochlear implants across the lifespan. Additionally, the track provides opportunities for interprofessional education (IPE) through shared coursework and clinical rotations. Interprofessional practice (IPP) is a significant component of providing patient-centered care and is a requirement for comprehensive training for healthcare providers. Without specifically designed opportunities for such training, IPE is often very challenging to incorporate logistically into clinical programs. The CI specialty track is being developed through IPP and these learning opportunities are therefore infused throughout the program.

Currently, there is no single institution nationally recognized as the top-ranked program in both research and education concerning CIs. On the educational side, many clinical audiology programs offer very limited training in CIs, despite the increasing prevalence of this technology. Most clinicians working with CIs undergo “on the job” training from the implant manufacturers, which is product- and company-specific. In fact, the American Speech-Language Hearing Association (ASHA) outlines the training of cochlear implant service providers to consist of: 1) product specific seminars led by the implant manufacturers, 2) attendance to professional and scientific conferences, and 3) informal dialogue with other implant professionals (ASHA, 2004). While the ASHA technical report is over a decade old, unfortunately this method of happenstance training continues today. This is especially true with regard to SLP programs. Most SLP graduate students will complete their clinical training without having worked with an individual with a CI. Obtaining experience with this population is not a requirement of the graduate programs, and therefore the experience occurs by chance, if at all. Considering the importance of speech and language therapy for newly implanted individuals to be successful with their device, it is imperative that there are appropriately trained providers ready to serve them. Children who are implanted early and receive appropriate rehabilitative therapy are mainstreamed in the classroom and require fewer supportive services than children who do not receive implants (Niparko, et al., 2000). Ultimately, this results in a reduced financial and resource burden for the educational system and, importantly, better outcomes for the children.

UMCP provides more advanced CI clinical training than most graduate programs, both through coursework and firsthand clinical experience, but there is room to grow. Given the current structure of our clinical and didactic training in cochlear implants for graduate students, offering a specialty certification is a likely progression for our mission. Moreover, no program of which we are aware incorporates inter-professional training opportunities between the audiology and speech-language pathology graduate programs; such opportunities would draw the most talented clinical audiology and SLP graduate students, and provide them with educational opportunities unmatched in the nation.

CI-EP Overview

Development of the CI specialty track was based on recommendations from other specialty programs in HESP (Cultural and Linguistic Diversity/Bilingual Certificate in SLP), as well as standards from other specialty programs in pediatrics and vestibular assessment from aspirational peers in the discipline (Vanderbilt University and Washington University).

Additionally, there is a need for rigorous didactic education for both professions, as most clinicians working with cochlear implants undergo product-specific training via the CI manufacturers while "on the job." There are relatively few AuD programs and no SLP programs that offer both in-depth education and on-site clinical training in cochlear implant theory and practicum. The majority of training opportunities are for professionals already practicing in the field. It has been noted that the number of specialty trained CI professionals is significantly below the numbers required to address the need (Vaerenberg, et al 2014). Furthermore, for young children, a population where early cochlear implantation is critical for speech and language development, data from the US Census Bureau indicate that "the population who could benefit from this technology is significantly underserved" (Bradham & Jones, 2008), especially in areas with lower socioeconomic rates.

Program Application Process

This proposal is for a limited capacity program, in order to enable effective mentoring and programming of clinical experiences for students in the program. An announcement for applications will be sent out to admitted students during the summer preceding their first Fall semester. Applications will be due on August 1 every year and consist of: an online form, 300-word statement of interest in the program and resume. Students will be notified about their entry into the program around the first week of Fall semester. Students will begin the CI-EP in the first semester of their graduate program. Students will work with a faculty advisor to plan their activities (described below). All changes to the activities need to be pre-approved by their advisor. Students will register for one credit for the CI-EP. For MA students, any CI-EP coursework (HESP639C) will apply towards the elective credit requirements of the program. CI-EP learning outcomes will be assessed at the end of the student's degree program. CI-EP program completion is defined as meeting all outcomes at a 'satisfactory' level of performance.

CI-EP Learning Activities

Students selected to participate in the cochlear implant specialty track of the CAUD and SLP graduate programs will receive additional academic, clinical, and research training in cochlear implants. In addition to completing the requirements of their graduate degree, the specialty track students will complete specialized clinical practicum with a cochlear implant caseload and will complete didactic

training in cochlear implants. Additionally, the student's Capstone project or candidacy paper will focus on issues relevant to cochlear implant topics. Upon completion of the certification, the graduate will have a unique set of skills for providing clinical services to individuals with cochlear implants.

The educational objectives of the CI specialty track are:

- To promote critical thinking in approaches to cochlear implant programming, assessment, and (re)habilitation;
- To teach basic and advanced techniques for CI programming and optimization;
- To provide unique exposure to cochlear implant patients for (re)habilitation therapy and training;
- To promote critical analysis of the literature on cochlear implants and to contribute to the empirical knowledge base for CI technology, approaches to programming, and therapy;
- To promote interprofessional practice through collaborative clinical practicum and didactic training

I. Coursework

Table A – CAUD students

Cochlear Implant Emphasis Program – CAUD Coursework	
Coursework already required for the standard program	**Credits**
HESP 649A - Clinical Practice in Audiology: Diagnostics	8
HESP 649B - Clinical Practice in Audiology: Aural (re)habilitation	2
HESP 712 – Cochlear Implants and other Implantable Technologies	3
HESP 729 – Advanced Clinical Practice in Audiology	6
HESP 829 – Clinical Internship Residency	18
Additional coursework/training activities	
Introduction to cochlear implants – Seminar (1 week)	1 credit (>12.5 hrs)
MCICE workshop – (1 day)	
Mid-Atlantic Symposium on Hearing (MASH) - (2 days)	N/C
American Cochlear Implant Alliance (ACIA) conference – (3 days)	N/C
MCICE Summer Intensive Program – YR1 Summer session II (2 weeks)	Credit in HESP 649B

Table B – SLP MA students

Cochlear Implant Emphasis Program – SPLA Coursework	
Coursework already required for the standard program	**Credits**
HESP 648A - Clinical Practice in Speech: Diagnostics	1
HESP 648B - Clinical Practice in Speech: Therapy	2
HESP 728 – Advanced Clinical Practice in Speech	6
HESP 639C – Special Topics: Cochlear Implants*	3
Additional coursework/training activities	
Introduction to cochlear implants – Seminar (1 week)	1 credit (>12.5 hrs)
MCICE workshop – (1 day)	
Mid-Atlantic Symposium on Hearing (MASH) - (2 days)	N/C
American Cochlear Implant Alliance (ACIA) conference – (3 days)	N/C
MCICE Summer Intensive Program – YR1 Summer session II (2 weeks)	Credit in HESP 648B

** Meets degree requirement for elective*

The above requirements, combined with existing degree requirements not specific to CIs, result in a total of 57 credits for CAUD students and 35 credits for SPLA students – the standard number of credits accumulated for both graduate programs. One requirement (HESP 639C) meets the elective requirement for SPLA.

In addition to credit-bearing courses, there are a number of non-credit requirements (Introduction seminar, MCICE workshop, MASH conference, ACIA conference) for additional training: 68 hours

The following are the intended learning outcomes of this program:

- Students will demonstrate the ability to identify, assess, and counsel cochlear implant candidates.
- Students will effectively apply (re)habilitative methods for individuals with cochlear implants in one-on-one and group settings.
- Students will demonstrate knowledge about best practices for cochlear implant programming, assessment, and (re)habilitation.
- Students will demonstrate an understanding of the speech, language, and hearing outcomes for individuals with cochlear implants.
- Students will acquire strategies for critical assessment of cochlear implant research findings to optimize cochlear implant outcomes.

II. Clinical Training

Students will work with cochlear implant patients during their training in the Hearing and Speech (HESP) Clinic as well as on clinical outplacements. In the HESP Clinic, CAUD students will provide direct patient care during pre-operative candidacy assessments and device discussions as well as post-operative activations, programming, assessment, and troubleshooting while SPLA students will conduct pre-operative assessments of speech and language to guide post-operative (re)habilitative planning. Students from both cohorts will be paired to provide post-operative (re)habilitative therapy collaboratively. Likewise, they will work together during the two-week summer intensive program for young children (during Summer Session II). Clinical experiences will be jointly supervised by faculty from Audiology and Speech-Language Pathology. Additionally, CI-EP students will complete the following outplacement rotations:

1. At least one semester-long rotation at a placement that works with CI patients/clients.
2. The CAUD 4th year externship will include a significant load of CI patients.
3. SPLA graduates of the CI-EP will be well prepared as competitive candidates for positions working with CI recipients during their clinical fellowship year (CFY).

An important component of this program is the clinical aspect of working with individuals with cochlear implants (or those who are candidates for a cochlear implant). This is achieved through a combination of on-campus and off-campus placements (Tables A &B). Though the goal is to provide every student with an opportunity to participate in a practicum placement (HESP 728/729) working with cochlear implants, it is possible that finding a local placement for a given semester may prove difficult. Other resources may therefore be used to ensure appropriate training is achieved.

III. Scholarly Research and Comprehensive Exams

1. Students will conduct original empirical research on a topic related to cochlear implants. This may be an independent study, an MA Thesis, or the CAUD Capstone Research Project.
   OR
2. Propose a novel empirical research project on a topic related to cochlear implants. This is the MA candidacy paper option.
   AND
3. One comprehensive exam question on a cochlear implant topic (this applies to CAUD students and SPLA students who choose the candidacy paper option).

Students must include at least one member from each discipline (SLP and AUD) as committee members/readers for their research project.

IV. Professional Activities (included in Tables A & B)

1. Attend scientific presentations on cochlear implants at professional conferences.
2. Present on a professional topic related to cochlear implants to students, professionals or a community group (e.g., departmental seminar, state convention).
3. Establish or participate in service, education, or outreach for cochlear implant recipients and their families in the community.
4. Develop assessment or educational materials (e.g., brochures) for education or to serve as (re)habilitation strategies for CI recipients.
5. Other, such as seminars on campus.