

Diagnostics + Rehabilitation = Au.D.: Equation for a Unified Profession

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Audiology began as a rehabilitative specialty. With adoption of the medical model, the focus of the field shifted to being almost totally diagnostic. Due in large part to the Academy of Rehabilitative Audiology (ARA), a rehabilitative focus has been restored. The ever broadening scope of practice makes it virtually impossible to train students in all diagnostic and rehabilitative aspects within the current master's degree model. The proposed Doctor of Audiology (Au.D.) degree will allow the "complete" audiologist to be trained. The purpose of this article is to briefly trace the evolution of audiology and to present an overview of the Au.D.

Audiology had its beginnings in the aural rehabilitation centers of World War II. The field began as a clinically based, rehabilitative specialty. Audiologists worked with hearing aids, speechreading, auditory training, and counselling. All of these activities were coordinated with each other and were delivered either by the same person or a coordinated team of professionals. When a problem

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related to hearing was diagnosed, it was treated.

Soon after the appearance of audiology, academic programs were initiated. Carhart, building on the program originally started by Bunch, started the first academic program in audiology at Northwestern University (Gaeth, 1979). Since its earliest inception, audiology has had a strong academic base. Our degree structure, including Bachelors, Masters, and Doctorate, reflects the academic nature of the training. Audiology's academic orientation can be contrasted with traditional helping professions, such as optometry, dentistry, and medicine. These fields have professional education that terminates in a professional doctorate, such as O.D., D.D.S., and M.D.

The academic structure served the profession well and audiology prospered. With the advent of higher technology and the lure of the medical profession, the focus of audiology shifted to a medical orientation with an emphasis on diagnosis and site of lesion testing. There was a market for testing and the young professional graduates of early audiology programs were prepared to deliver the product desired by the market. In a sense, medicine was our consumer.

A declining interest in auditory rehabilitation resulted in the Academy of Rehabilitative Audiology's (ARA) formation in 1966. It was an attempt to restore a remediation focus to the profession. At the heart of the ARA is the idea expressed by Darley (1969) that "we should put the patient on center stage. High quality of patient care should be of paramount concern. . . ."

The curricula of our academic training programs also reflected an emphasis on diagnostics as compared to remediation. Jack Rosen (1967), a founding member of ARA, lamented the lack of recognition and respect accorded individuals who practice what they teach, namely clinical professors. Rosen asserted, at least by implication, that those who teach and provide a rehabilitation service are relegated to lesser prestige than those who research new diagnostic tests.

It was true at the time the ARA was founded as it is now that the knowledge and skills needed to deliver remedial services are complex and time consuming to teach. Developing a new diagnostic test is very different from preparing a student to handle skill building, counselling, or the technical features of digital or sound field amplification. As the scope of practice of audiology continues to expand, the need to restructure our training has become obvious.

ESSENCE OF THE AU.D.

The Au.D. is a professional degree designed to replace the M.A. as the entry level degree for the practice of Audiology. The Au.D. will combine diagnostic and rehabilitative aspects of audiology enabling graduates of the program to become complete audiologists who are able to work autonomously in any setting. The Ph.D. will remain the degree for individuals who are interested in teaching and research. In fact, it is important to differentiate between a professional degree, such as the Au.D., and the Ph.D. A professional doctorate is the highest university award given in a particular field in recognition of completion of

academic preparation for professional practice. The Ph.D. is a degree granted as a mark of achievement in preparation for "creative scholarship and research, often in association with a career in teaching at a university or college" (Council of Graduate Schools in the United States).

During the third annual meeting of the ARA, Irvin Shore (1970) made a case for professional education. He pointed out that most audiologists were being trained to be specialists but without benefit of the general knowledge and skills that are necessary to specialize. That is, they were specializing before they generalized. Shore asserted that:

audiology training centers should strive to do what they started out to do many years ago . . . They should train people first to be (clinical) audiologists. If, after becoming a (clinical) audiologist, the person wishes to specialize in a given area, good. He should not, however, be permitted to specialize first.

The scope of practice in audiology has expanded significantly in the last several years to include increasingly sophisticated diagnostic and rehabilitative procedures. The knowledge base which is now necessary to insure that the people with hearing loss receive quality audiologic services cannot be provided with the current model of audiological education. It is clear that we need a change in our educational model. The Au.D. will provide a mechanism so that our profession is unified in our degree designator and in the education that audiologists receive.

The Au.D. curriculum is designed to provide professional education. Before entering the Au.D. program, students must first earn a Baccalaureate degree that includes a minimum of two years of pre-audiology education which emphasizes science and mathematics, as well as courses in the humanities and social sciences. The pre-audiology curriculum is designed so that students have (a) basic knowledge in the sciences as foundation for understanding the concepts involved in evaluating and treating hearing problems; (b) effective written and spoken communication skills, including analytical thinking; and (c) a broad general education. An example of the pre-audiology curriculum proposed by The University of Akron is shown in Table 1. The social science and humanities requirements for the University can be satisfied with a variety of specific classes in economics, history, sociology, anthropology, Western Cultural Traditions, and Eastern Civilizations. General studies requirements will, obviously, vary among universities. Upon successful completion of the required undergraduate degree and coursework, students may apply for admission to the Au.D. program.

The 48-month professional program is designed to balance classroom, laboratory, and clinical experience. Students take all of the courses in the same sequence. As a result, Au.D. students will have a shared intellectual experience that will provide them with a solid understanding of the scientific basis of the discipline of audiology and the clinical application of that knowledge. Graduates will be individuals who are able to function and work both independently and autonomously. The curriculum will also provide a foundation for those students

Table 1
The University of Akron General Studies
and Pre-Audiology Level Curriculum for the Au.D.

Course Number	Course	Credit Hours
1100:105	INTRODUCTION TO PUBLIC SPEAKING	3
	OR	
1100:106	EFFECTIVE ORAL COMMUNICATION	3
1100:111	ENGLISH COMPOSITION	4
1100:112	ENGLISH COMPOSITION	4
1100:120-81	PHYSICAL EDUCATION	1
3400:149	PRECALCULUS	4
3400:211	CALCULUS FOR LIFE SCIENCES	3
3470:261	INTRODUCTORY STATISTICS I	2
3470:262	INTRODUCTORY STATISTICS II	2
3600:133	MUSIC, SOUND, PHYSICS	3
3600:261	PHYSICS FOR THE LIFE SCIENCES I	4
3600:262	PHYSICS FOR THE LIFE SCIENCES II	3
3150:132	PRINCIPLES OF CHEMISTRY I	4
3150:133	PRINCIPLES OF CHEMISTRY II	3
3100:111	PRINCIPLES OF BIOLOGY	4
3100:112	PRINCIPLES OF BIOLOGY	4
3100:264	ANATOMY AND PHYSIOLOGY OF SPEECH/HEARING	3
Social Sciences – see <i>General Bulletin</i> .		6
Humanities – see <i>General Bulletin</i> .		12
Foreign Language – 7700:271 Language of Signs I		
	7700:100 Manual Communication I	5
	7700:150 Manual Communication II	4
	7700:121 Psycho-social Aspects of Deafness	3
	OR	
	7700:222 Introduction to Deaf Culture	2
7700:110	INTRODUCTION TO DISORDERS OF COMMUNICATION	3
7700:230	SPEECH AND LANGUAGE DEVELOPMENT	3

who are interested in obtaining the Ph.D. in audiology after they have obtained the Au.D.

While a model curriculum has been endorsed by the Academy of Dispensing Audiology (1988) and the American Academy of Audiology (1991), the actual curriculum will vary among institutions. The Au.D. curriculum proposed by The University of Akron is shown in Table 2. The first year of the curriculum emphasizes audiologic science. During the second and third years, diagnosis and treatment of hearing disorders are stressed. Clinical education begins in the

Table 2
The University of Akron Au.D. Curriculum

YEAR	FALL	SPRING	SUMMER SESSIONS
1)	7700:750 Observation (1) 7700:720 Physio. Acoust. (3) 7700:721 Acoust. Phon. (3) 7700:744 Instrumentation (3) 7700:611 Res. Meth. in Comm. Dis. (3)	7700:722 Aud. Dis. (2) 3110:641 Funct. Neuro. (6) 7700:750 Obser. (1) 7700:723 Psychophysics (3) 5100:741 Statistics in Education (3)	<u>I Summer Session</u> 7700:724 Aud. Assess. (3) (10 weeks) 7700:751 Clerkship (1) <u>II Summer Session</u> 7700:751 Clerkship (1)
2)	13 7700:625 Lang. Dis. (3) 7700:725 Dx. Aud. Dis. I (3) 7700:726 Hearing Aid Technlgy (4) 7700:727 Aud. Comm. Assessment (3) 7700:751 Clerkship II (1) Elective	15 7700:741 Speech Organics (3) 7700:728 Hearing Aid Fit & Select (3) 7700:729 Aud. Rehab.: Adults (3) 7700:730 Pediatric Audiology (4) 7700:752 Internship (2)	5 7700:732 Hx. of Aud. (1) 7700:733 Aud Rehab.: Child (3) 7700:752 Internship (2) 7700:754 Sp. Path. Clin. Rota (1) 7700:758 Exp Research in Aud (3)
3)	14+ 7700:743 Hearing and Aging (3) 7700:735 Counsel. for Com. Dis. (3) 7700:734 Electronystaymography (2) 7700:753 Grad. Aud. I (4) 7700:757 Sp. Path. Clin. Rota (1)	15 7700:736 Med Mang. of Aud Dis. (2) (Team Taught) 7700:737 Evoked Potentials (3) 7700:738 Computer Appl. (3) 7700:754 Grad. Aud. II (4) 7700:757 Sp. Path. Rota – If Needed (1) Elective	10 7700:739 Ind. & Commu. Noise (2) 7700:755 Grad. Aud. III (6) 7700:757 Sp. Path. Rota – If Needed (1)
4)	13 7700:756 Clinical Resident (14) 7700:742 Seminar: Clincl Pract (1)	12 + 7700:756 Clinical Resident (14) 7700:742 Seminar: Clincl Pract (1)	8 7700:740 Pract. Mgmt. in Audiology (3) Examinations
	15	15	3

second year and increases in emphasis until nearly 85% of the student's efforts in the fourth year are devoted to clinic.

Several content areas are included in the Au.D. curriculum. These include anatomy, physiology, neuroanatomy, acoustics, electronics, phonetics, audition, auditory assessment, pediatrics, aging, microcomputing, and research.

Students will acquire approximately 2,000 hours of clinical experience in the Au.D. program. There are six levels of experience that each student must successfully complete. The levels include:

1. *Observation.* One hour per week for the first two semesters of Year 1 is required. A total of 30 hours is required.

2. *Clerkship I and Clerkship II.* Students must register for Clerkship after satisfactory completion of the observation phase of training. The clerkship involves 4 hours of work per week. The goal of this phase of training is for the student to complete discrete tasks in the audiology clinic under the supervision of a faculty member. Examples of such tasks might include scoring a handicap inventory, obtaining pure tone air conduction thresholds, running an electroacoustic analysis of a hearing aid, and so forth. Students must complete 75 hours of clerkship experience before they advance to the next level.

3. *Intern I and Intern II.* Students must enroll as Interns during Spring Year 2 and Summer Year 3. Interns will be responsible for basic audiological assessments and provision of auditory rehabilitation services under the supervision of a faculty member. Upon successful completion of 175 hours, the student will be eligible to enroll as a Graduate Audiologist.

4. *Graduate Audiologist.* Enrollment in this practicum will yield a total of 300 hours of on-campus and 50 hours of off-campus clinical experience. At this point, the student will be expected to be able to handle all aspects of audiological services.

5. *Clinical Resident.* Students will serve as clinical residents in external clinical practicum rotation sites during the fourth year of the Au.D. program. Students will work 35 hours per week for a nine-month period and accumulate 1,600 hours of clinical training. Students will receive experience with a variety of clients and supervisors in a minimum of four external practicum rotation sites.

6. *Speech-Pathology Rotation.* Students will enroll for 3 hours of credit in a speech-pathology clinical rotation. This will yield 35 hours of clinical experience in speech-language pathology. The practicum will be structured so that experience is relevant to the clinical services that audiologists will ultimately be called upon to deliver.

AUDITORY REHABILITATION AND THE AU.D.

Treatment of hearing problems is a key component of the Au.D. program. A significant number of courses and practicum experiences in auditory rehabilitation are included. Courses in sign language, hearing aids, communication assessment, auditory rehabilitation of adults and children, as well as counselling

Table 3
Didactic Courses in the Au.D. Curriculum
with Auditory Rehabilitation Content

Course	Credits
Language of Signs I	3
Manual Communication I	5
Manual Communication II	4
Psycho-social Aspects of Deafness	3
Introduction to Deaf Culture	2
Introduction to Disorders of Communication	3
Speech and Language Development	3
Acoustic Phonetics	3
Language Disorders	3
Hearing Aid Technology	4
Auditory Communication Assessment	3
Speech Organics	3
Hearing Aid Fitting and Selection	3
Auditory Rehabilitation: Adults	3
Pediatric Audiology	4
Auditory Rehabilitation: Children	3
Hearing and Aging	3
Counselling for Communicative Disorders	3

are included. Coursework in pediatrics, aging, language development, language disorders, and speech organics is also required. A listing of Au.D. courses with significant auditory rehabilitation content is shown in Table 3.

Extensive clinical practicum and externship experiences in auditory rehabilitation will also be included. As such, a strong on-site clinic with a diverse case-load and a variety of external clinical rotation sites where auditory rehabilitation services are offered must be available. It is obvious that not all current training programs in audiology will be able to meet the clinical practicum needs of students and could not offer the Au.D. There are, however, sites where extensive auditory rehabilitation practicum are available. For example, at The University of Akron, during a typical semester we have an average of 20 children who receive individualized aural rehabilitation, three hearing impaired children who receive group language therapy, five hearing impaired college students who receive group intervention, and 16 older hearing impaired adults and their significant others who attend group audiologic rehabilitation sessions. In addition, we provide comprehensive pediatric assessments and an extensive hearing aid fitting and dispensing clinic.

As conceived, the Au.D. meets and/or exceeds the 1984 *ASHA* guidelines for graduate training in Aural Rehabilitation. The Au.D. is, however, neither a diagnostic degree nor is it a hearing aid degree. Rather, the Au.D. is a degree designed to train a complete audiologist.

The process of transforming audiology into a doctoral level profession, with the Au.D. as the designate, is ongoing. Several universities have or are working on proposals for the institution of the Au.D. Establishing new degree programs, however, is a long and involved process. In fact, the struggle to transform the field is reminiscent of our struggle in the '70's to institute hearing aid dispensing. In 1974 ARA passed a resolution urging ASHA to support dispensing. Eventually ASHA did. It is our hope that ARA will join with such other audiology organizations as the Audiology Foundation of America, American Academy of Audiology, Academy of Dispensing Audiology, and Audiological Resources Association in supporting the Au.D.

With the Au.D. we can achieve professional unity, including unity of service and unity of providers. Unity of service will result when speechreading, auditory training, language learning, amplification, communication status diagnosis, and site of lesion testing are not offered separately, but are coordinated and delivered in an integrated way. Unity of providers will occur when audiologists are prepared by in their educational experience to deliver, or integrate delivery of audiological care to the individuals with hearing loss whom we serve. In contrast to unity, our diverse services may become thought of as independent processes, delivered by different individuals with little thought to the interrelationships between the parts. As launched by Carhart, auditory rehabilitation emphasized unity. When rehabilitation was neglected, the ARA was instituted. We now emphasize our return to an education system which stresses unity – the Au.D.

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