

REQUIREMENTS FOR ADULT - AURAL REHABILITATION PROGRAM

REG. NO.M9410

THIS INDEPENDENT PROJECT SUBMITTED AS PART FULFILMENT FOR
THE FIRST YEAR M.Sc. (SPEECH AND HEARING) TO THE UNIVERSITY
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ALL INDIA INSTITUTE OF SPEECH AND HEARING: MYSORE 570 006

MAY 1995

TO

MY BELOVED (PARENTS)²


FOR ALL THEIR

LOVE, PATIENCE AND GUIDANCE

CERTIFICATE

This is to certify that the Independent Project entitled: REQUIREMENTS FOR ADULT - AURAL REHABILITATION PROGRAM is a bonafide work in part fulfilment for the Degree of Master in Science (Speech and Hearing) of the student with Reg.No.M9410.

Mysore
May 1995


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C E R T I F I C A T E

This is to certify that the Independent Project
entitled: REQUIREMENTS FOR ADULT - AURAL REHABILITATION
PROGRAM has been prepared under my supervision and guidance.

Mysore
May 1995



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DECLARATION

I hereby declare that this Independent Project entitled: REQUIREMENTS FOR ADULT - AURAL REHABILITATION PROGRAM is the result of my own study under the guidance of Dr.(Miss) S. Nikam, Prof, and Head, and the Director, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier at any University for any other Diploma or Degree.

Mysore
May 1995

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INTRODUCTION

"Deafness is worse than blindness, so they say, it is the loneliness, the sense of isolation that makes it so, and the lack of understanding in the minds of elderly people. The problem of the child deaf from birth, is quite different from that of the man or woman who has become deafened after school-age or in adult life But for all of them, the handicap is the same, the handicap of the silent world, the difficulty of communicating with the hearing and speaking world".

SCOTT STEVENSON (1971)

The science of audiology has developed immensely in advanced nations, especially USA and Scandinavian countries. The need for developing such rehabilitative services for use in India, closing the enormous gap with the developed countries can be appreciated. Paucity of everything excepting growing population in this country is not conducive to a large scale ambitious program. Yet, on the other hand, waiting for a longer time would only widen the gap and multiply the problems. Aural rehabilitation is but one of the important responsibilities of the audiologist. In addition to the provision of rehabilitative services, the audiologist's professional functions include the following:

- i) identification of hearing impairment
- ii) assessment of type, severity and site of lesion of auditory impairment.
- iii) serving as an advocate for the rights of the handicapped, particularly the hearing impaired.

The aim of aural rehabilitative efforts for the hearing-impaired, according to Ballantyne (1977) is to overcome the handicap. That of course, is the goal of all professionals, who deal with the hearing-impaired. A team of professionals may become involved, including vocational rehabilitation counsellors, a psychologist, a sociologist, and of course the audiologist, who will probably coordinate the team. Each hearing-impaired client presents a somewhat unique profile. An individualized remediation program must be developed to meet the needs of the client. Audiological rehabilitation and rehabilitative audiology are terms that suggest comprehensive and integrated remediation approaches (Costello, et al. 1974). Specifically, audiological rehabilitation includes:

- i) audiological processing training
- ii) speechreading training
- iii) hearing and hearing aid/sensory aid evaluation, re-evaluation/selection and follow-up care
- iv) counselling of clients and Family.

(Chemark, 1981).

The sense of hearing is integrally related to communication and interaction among people. For the vast majority of people, when the sense of hearing is impaired, the ability to relate may be impaired as well. Messages may not be interpreted properly, because nuances of meaning conveyed by using inflection, a pause, or an emphasis in a particular part of an utterance are not caught. Helping the individuals deal with these problems must be considered an integral part of the total process of aural rehabilitation.

PURPOSE OF THE STUDY

i) The purpose of this project is to provide comprehensive information on the management of adults who are hearing-impaired, as audiologists are beginning to recognize the multifaceted needs of the hearing-impaired individuals. This awareness is resulting in the development and implementation of more appropriate and comprehensive programs, for audiological remediation. An interdisciplinary team effort is often crucial to the "success" of a rehabilitative program.

ii) Also, to highlight and outline the requirements for setting up an adult aural rehabilitation program.

NEED FOR THE STUDY

The need for the study is to enable interested professionals and practising clinicians to establish an aural rehabilitation program and encourage such centres to cater to the adult hearing-impaired population, because our life span has increased and the aging process is one of the major causes of acquired hearing loss. The words "deaf-mute" and "the deaf and the dumb", as prevalent in India, have been changed by the nomenclature "impairment of hearing" (degree and severity). The slogan has been offered to the community that 'deaf need not be 'dumb' if properly rehabilitated.

CHOICE OF SITE. LOCATION AND SPACE

Steps in opening the doors of an aural rehabilitation centre include proper locale, either within the established group practice or a group that is forming. It should be easily accessible to the patients, with reasonable proximity from the residence of those served and adequate parking with little or no traffic hazards particularly, if invalids are involved. If a solo practice is being undertaken, then it should be located close to, or built in along with strong referral sources.

SEACE

The choice and treatment of the space utilized by a clinical program reflects the self-respect and philosophy of patient care. Some of the space considerations are listed as follows:

- i) The amount of space necessary to house all elements of the program is to be considered, including the waiting areas, storage capacities, professional offices and client treatment areas.

ii) The geography of the communication disorders program to specific medical departments or to specific medical availabilities as well as other referral sources is to be considered.

iii) Also to be noted, is the perceived status of the location (which includes area of the community, the floor-level in the building, proximity of parking.

iv) Organization of space is another factor to be considered. The administrator should be able to create space that represents the organizational philosophy.

Space, should be hence designed, as to convey feelings of confidence, feelings that would elicit positive approaches to evaluation and therapy, while reducing the natural anxieties of the patients, families, parents and children. Employees should be able to move about in orderly comfort. Sufficient waiting area should be available for the various ages and types of cases. The waiting area should convey a message of the programs. The next focus is on the cost of supporting the desired space. Local costs will cause some variations in the proposed expenditures and availability of fiscal resources may restrict achieving the

amount and quality of space desired. Even if the proposed space is not obtained immediately, it may remain as a target for future achievement. Square foot costs are usually available for specific neighbourhoods and specific cities and can be calculated prior to actual inspection of sites. In large institutions like hospitals and schools, those responsible for allocation of space will consider costs in much the same way. If we assume zero available finance before deciding a setting in which to establish a service program, where should we begin? Firstly, analyse the space needed. Consider how the practice would function. Think about the patient flow. The amount of space may be listed in the following way:

<u>Space List</u>	<u>Sq.feet</u>
Director	175
Supervisors	130
	130
Clinicians	100
	100
Technician	120
Office	180
Waiting area	140
Lounge	140
Group therapy	200
Audiologic labs	425

Storage	100
Sub-total	1940
Hall ways, construction (walls, doors)	322.5
Space total	2262.50 Sq.ft/

Since space is extremely expensive, assigned space must be well utilized and requests for additional space carefully justified.

LOCATION

Location of one's practice is critical as it must be close to several strong referral sources. Acquiring space in a large medical building housing a range of specialities, does place one near possible referral source. However, rents for floor space in such a building will generally be higher than, in a smaller professional building. The latter might serve, if strong referral sources have been established prior to opening the service.

Building noise, ie. air conditioning, blowers, elevators and street noises should be carefully reviewed. Often attractive locations have ambient noise levels

which are prohibitive to the audiologist. However, it becomes very expensive to modify these noises to an acceptable acoustical level. Since considerable weight is involved with sound rooms, this should be considered while negotiating for space. Such set ups should be located in a quiet area. Adequate parking, rest room facilities, elevators, telephones and drinking fountains should be easily accessible. Carpeting keeps the noise down, especially if it is installed on both walls and floors. In audiology it is particularly effective, if treatment rooms should be comfortable for children and adults.

Acoustic environment plays an important role in the field of audiology. For the various test requirements, the clinic must be provided with a satisfactory sound treated room.

CHARACTERISTICS OF A SOUND TREATED ROOM:

If audiometric tests are conducted without considering the ambient noise conditions inside and outside the room, there is every possibility of getting audiograms that are not valid due to the masking effect of the ambient noise in the test environment. Acceptable noise-levels (in dB SPL

for octave bands) in audiometric test rooms, when testing is expected to reach "0" dB HL (ANSI-1991).

Frequency (Hz)	Under earphones only (dB SPL)	Sound field or bone conduction (dB SPL)
125	34.0	28
250	22.5	18.5
500	19.5	14.5
1000	26.5	14.0
2000	28.5	8.5
4000	34.5	9.0
8000	43.5	20.5

Besides the above requirements, the sound treated rooms should be sufficiently spacious with good ventilation and diffused lighting for the comfort of the patient. These measures will avoid physical fatigue of the patient and thus will ensure good cooperation from the patient which is essential for valid hearing measurements.

DESIGNING OF SOUND TREATED ROOM

To achieve the above qualities for a sound treated room in a speech and hearing clinic, the following points should be considered.

i) ORIENTATION: Generally a sound treated room will be constructed in an ordinary room of a building. This particular room should be selected in such a way that, it is away from heavy traffic or any other noise source in the vicinity.

ii) SIZE; It is preferable to have a room of a size of 10x'8'x8* for conducting all the tests. A small dimension may be chosen for the puretone and speech audiometry. The dimension may be changed in terms of user's requirements. In addition to the sound-treated rooms, a control room of proper dimension should be provided.

iii) WALLS In a moderate ambient noise level in a single brick wall with two sides. Cement mortar plaster is adequate. Total thickness of the wall maybe 9-10 inches. Incase of excessive ambient noise levels it is advisable to have double walls of single-brick in lengthwise construction separated by an air gap of 3-4". The air gap between the two walls should go deep into the floor atleast by 12 inches, which provides considerable isolation of the inner floor from the outer one.

iv) CEILING: The ceiling of the sound treated room must be of higher density materials such as reinforced cement concrete. For double wall construction the outer wall should carry the concrete slab and the inner wall should support the false ceiling. The space between the concrete roof and false ceiling may be filled by sound absorbing material. It is acoustically for this purpose, that one inch thick compressed fibre glass wool plus air is used.

v) FLOORS: Floors may be covered with coir matting and carpets.

vi) DOORS: It is preferable to have double doors fixed in such a way that it opens into the room and the other opens outwards. Each door may be made up of teakwood frame covered with teakwood planks bearing an air gap between the planks. The air gap maybe filled with sound absorbing materials such as glasswool or fine river sand. A thick rubber lining along the edges of the doors will be an added advantage to avoid leakage of sound.

vii) OBSERVATION WINDOW: In case of single wall construction, an observation window of 24"x18" maybe sufficient. This should be provided of 1/4" glass sheets

separated by maximum available air gap. Two separate windows of the same size mentioned above should be provided

in case of double wall construction. It is an advantage to line the edges of glass sheets with suitable sound absorbing material such as sponge or glass wool. From the acoustic point of view and also from that of visibility, one of the glass sheets should be tilted a little inward.

v i m INTERNAL ACOUSTICAL TREATMENT: It is important that the ceiling and all four walls of the room should be treated acoustically. For this, one inch thick compressed fibre glasswool plus an air gap of 1" with a facing of acoustic tiles should be fixed on all the walls of the ceiling.

ix) VENTILATION: Indirect lighting may be provided by suitable means to make it pleasant. Air conditioning should be made by a suitable ducting systems. It is essential that the AC plant should be installed away from the sound treated room and the ducting should be designed properly to keep the noise level to a minimum. An alternative is to have suitable room air cooler in the control room. This may be operated as frequently as desirable.

x) ELECTRICAL CONNECTIONS: The connection between the instruments in the control and test rooms are made through

suitable jacks and adaptors. Pipes or holes should not be used for this purpose.

A sound treated room in a new set-up can be constructed with a minimum of expenditure by considering the above. It is thought that a single brick construction of 10" thickness with cement plaster is adequate and the internal acoustic treatment can be made with glass wool and acoustics. This type of construction can give satisfactory results for ambient noise levels of 65 dB. The room may be provided with ceiling made up of tin sheets and river instead of with costly RCC slab. The area of the unit can be marked into the following different sections:

- i) Reception
- ii) Office : Officer incharge and secretary
- iii) Audiology section
 - a) Audiologist
 - b) Audiometrician
 - c) Teacher coordinators (hearing therapists)
 - d) Earmold laboratory,
- iv) Speech Section
 - a) Psychologist
 - b) Speech therapist
 - c) Vocational counsellors
- v) Medical Departments.

ESSENTIAL DEPARTMENTS OF THE UNIT

To meet the multifaceted needs of the hearing-impaired, it becomes natural and necessary to provide a comprehensive and integrated rehabilitation program. The present chapter focusses on the importance of collaboration with other disciplines and functions of the various Departments of the rehabilitation program. The audiologist should not seek to incorporate every component of the audiological rehabilitation into every program developed. However, each of these services should be available to the hearing-impaired client. The following should be the main departments in an aural rehabilitative set-up,

- i) Department of Audiology and Speech Pathology
- ii) Department of Clinical Psychology
- iii) Department of Otorhinolaryngology
- iv) Administrative Department

Supportive service can be provided by electronics and publicity and information unit. In addition to the above departments, we can also have specialists like neurologist, plastic surgeons to attend to the patients. In each of the departments, except the accounts and administrative department, the clinical services provided are

(i) Diagnostic (ii) Therapeutic.

DEPARTMENT OF AUDIOLOGY AND SPEECH PATHOLOGY

The clinical services should include:

1) Hearing Evaluation

Patients coming to the department can be divided into those coming for initial and periodic hearing re-evaluation, those who are seen for pre- and post medical/surgical evaluation, and those with mental retardation, tinnitus or vertigo, for whom hearing evaluation is done as a routine.

2) Hearing Aid Trial:

Hearing aid evaluation and recommendation of suitable hearing aid is one of the main rehabilitative activities of the department. This can be augmented through case history sheets, picture cards, new test procedures. Hearing aid trial can either be carried out objectively or subjectively. Objectively, it can be carried out using various instruments. Subjectively it can be carried out using the various available hearing aid models.

3) Earmold making:

Custom earmolds can be made for the cases who can acquire hearing aids. Wherever indicated, different types of molds such as full molds, shell molds, skeleton molds can be made.

4) Therapeutics:

Guidance can be given to parents/patients attending therapy and also to those who train their children at home.

5) Counselling:

All patients who are prescribed hearing aids should be counselled regarding the use, care and maintenance of hearing aids and earmolds.

DEPARTMENT OF CLINICAL PSYCHOLOGY

1) The patients coming to this department must be evaluated for routine and special psychodiagnostics which includes neuropsychological assessment, evaluation, assessment of aptitudes etc.

2) Counselling:

The parents of mentally retarded and other cases with behavioural problems can be counselled regarding the management of the problem behaviour and also guided regarding improving self-help skills, vocational guidance and counselling should also be carried out.

DEPARTMENT OF OTORHINOLARYNGOLOGY

The main objective of this department is to render good clinical services for the hearing handicapped. Clinical services should be provided to all the cases coming to the centre, ie. to examine and diagnose the otolaryngological problems and also putting them on medication for speedy recovery.

Procedures like suction clearance of ears with discharge, medical and surgical treatment should be given. If financial status is good, then plastic surgery and cochlear implants can be carried out for the hearing-impaired.

Apart from this, in collaboration with the Department of Audiology, the Otolaryngologist needs to give clearance of wax or any other discharge before carrying out impedance audiometry. Before prescribing a hearing aid, the audiologist needs to confirm from the ENT specialist, that no surgical procedure will bring about an improvement of hearing in the patient. If so, then clearance has to be given for the prescription of a hearing aid.

ADMINISTRATIVE DEPARTMENT

The director/head of the rehabilitative set-up is responsible for the coordination and development of services. Some responsibilities of this position include:

- 1) Provision of professional consultative services to the centre
- 2) Offering direct rehabilitative services for the patients of the centre.
- 3) Being a liaison between the rehabilitative unit and medical and non-medical community.
- 4) Working in association with director to maintain responsibility for third party reimbursement and to maintain ongoing contact with state and other agencies.

OBJECTIVES ;

The key personnel within any rehabilitation centre need to convene regularly in order to discuss the policies and procedures of the centre. One of the most important tasks that this group must undertake each year is short term and long range planning. That is, establishing the objectives of the organization. Once the objectives have been established, it becomes necessary to review each objective in detail. Establishing benefits, barriers, dates of implementation etc. Further more, a plan of action needs to be established for each given objective in detail.

HUMAN RESOURCE STRATEGIES

After establishing the objectives of the centre, a performance appraisal system that is consistent with the mission of the organization should be developed. Each department within the centre can develop its own specific objectives that are in concert with the centre goal. Further more, staff members should have the opportunity in collaboration with immediate superiors to develop their own objectives for the year.

The organization as well as employees gain from the performance appraisals. When every individual in an organization has a review of his/her responsibilities and actually has a knowledge of performance levels, including needs for improvement, the unit's organization will become strong. It is through this individual objective planning that an organization can encourage imagination, develop individual sense of responsibility and most important, intensify efforts to meet the organization goals (Kindall and Gatzka, 1963).

EFFICIENT BUSINESS MANAGEMENT SYSTEM

The general purpose of the management is to afford the Director and all of the program coordinators the appropriate tools to run the programs and the rehabilitation unit in general. The business office system must be well documented, and the documentation must include:

- i) a narrative chart of accounts,
- ii) a job description detailing responsibility and authority for each position,
- iii) a description of additional reports and additional information to put into these reports.

Several components are essential for a giving program. They include developmental phase, an instrumentation phase and follow up phase. In the developmental phase of annual giving program, there is a need to create identity, ie. it is essential that the annual giving program have visibility within the community. The next step is the implementation phase. This phase generally focusses on two factors such as

- i) development of a calender of activities
- ii) the scheduling of appropriate

Finally, the follow-up phase involves ensuring that the donors continue to give on a regular basis. Some of the activities which can contribute to the follow up phase are; hosting a recognition award evening, revisiting with a renewal of the pledge, sending out periodic correspondence to the donors, starting an expansion from the local community to the region and planning for a capital funds drive.

DEVELOPMENT AND MARKETING OF NEW PROGRAMS:

New programs developed should satisfy:

- i) the unique capabilities and expertise of the centre staff
- ii) the needs within the community
- iii) a minimal amount of external competition.

PUBLIC AND CUSTOMER RELATIONS:

The coordination for public relations should assist the Director in reaching the community with activities of the centre. To develop the customer relations norms which will be the norms in dealing with customers. These should include how to answer the phone, how clients are greeted and client waiting facilities.

Therefore, the administrator's position requires decisiveness, flexibility, some imagination, considerable skill in personal relation and patience.

RECRUITMENT OF PERSONNEL

The recruitment of personnel for an aural rehabilitation centre, should be done carefully. The main aim of recruitment should be to secure best candidates for performing specific jobs in the centre. The development and implementation of effective human resources (personnel) programs is a major administrative responsibility. The goals of personnel management in any social-service or educational system are to recruit, employ and motivate personnel for the purposes of -

- accomplishing the system's objectives
- guiding the personnel in the achievement of position and unit standards of performance
- offering career development opportunities, and
- matching organizational and individual objectives

(Castetter, 1981).

The personal and program management roles in audiology and speech language pathology have been delineated by Anderson (1981) and Fisher (1982). They include:

- > staff-selection, orientation, development and evaluation
- > developing curricula, organizing clinical intervention, scheduling case load
- > securing appropriate materials, equipment and facilities

- > coordinating referrals and support services
- > serving as a public relations agent
- > evaluating program effectiveness.

Thus, the term 'recruitment' in personnel work refers to the process of advertising for and finding potential applicants to fill employment openings. The selection of personnel is the process of choosing the best qualified person, for each specific job. Thus, effective recruitment is the first step in providing for effective selection (Plumbley, 1976).

Professionally prepared personnel generally come to a position with considerable knowledge and a set of skills that will assist them in adjusting to their assignment. Paraprofessionals and professionals must be utilized appropriately.

The use of team management has become an accepted model for the provision of diagnostic and rehabilitative services. Interdisciplinary teams are assembled to integrate the expertise of various specialists and to promote a holistic understanding of clinical cases and their families (Bennett, 1982; Brill, 1976; Golin and Ducanis, 1981). Team goals and

objectives should be task oriented and will be influenced by the agency role, clientele, and outcomes that are needed. Personal managers must make certain that a team is actually required for offering quality care and that systematic operational processes are established not only to maintain the team, but to keep their performance efficient and effective. Proper recruitment pre-supposes an efficient system of dissemination aimed at informing the prospective candidates about the vacant jobs. This information should include the salary scale, allowances, fringe-benefits, and working and service conditions attached with the jobs.

Salaries and benefits need to be competitive and express the attitude of administration relative to fair employee treatment. They should attract well trained people and assist in creating the institutional loyalty necessary for achieving team practise. Besides salaries and allowances, the employees are provided certain other benefits which include:

- > Gratuity/bonus on retirement
- > Equal/more contribution to the provident fund
- > Sickness leave with fullpay or a portion of it, reimbursement of medical treatment expenses/provision of free medical care to the employee and his dependent family members

- > Free conveyance and other amenities such as loans and advances on easy terms
- > Overtime allowances, ie. payments at higher rates for the extra time an employee is required to put in
- > Sabbatical leave, earned leave, casual leave etc.
- > Life insurance, long-term disability insurance and accident insurance are also significant benefits.

The professional staff required, along with their respective duties have been listed in a tabular form, herein. The professional staff have been classified under > administrative and > non-administrative.

PROFESSIONAL-STAFF AND THEIR ROLE

SL. NO.	DESIGNATION	DUTIES
ADMINISTRATIVE STAFF		
1.	DIRECTOR/ PRINCIPAL INVESTIGATOR	: Consultant on part-time basis, guidance, coordination and administration.
2.	CO-INVESTIGATOR AND OFFICER INCHARGE	: Procurement of equipment, day to day work, coordination of the team, guidance, administration.
NON-ADMINISTRATIVE STAFF		
3.	AUDIOLOGIST	: To organize the Audiology Lab, diagnosis of cases, planning of therapy, prescription of hearing aids. To perform all types of audiological tests, instructions maintenance of audiometers and audiometry room. To help the

- Electronics Engineer in the routine repairs of audiological equipment.
4. ELECTRONICS ENGINEER : Inspection, installation, commissioning of audiological and and elctronic equipments, their calibration, maintenance and repair of hearing aids, measurement of noise levels and care of audiometry rooms.
 5. PSYCHOLOGIST : To conduct various psychological tests of performance, intelligence memory etc. To offer psychological support to patients requiring the same.
 6. OTORHINOLARYNGOLOGIST : It becomes a necessary practise that every case should be examined by the Otorhinolaryngologist (OPD) to exclude any organic cause as well as medical and surgical treatment could be given prior to therapy.
 7. EARMOLD LABORATORY TECHNICIAN : To prepare custom made earmolds, other prosthesis, To maintain the equipment of the earmold laboratory.
 8. TEACHER COORDINATORS (HEARING THERAPISTS) : Staffing, evaluation, and therapy of cases with hearing disorders, preparation of test materials.
 9. MEDICAL SOCIAL WORKER : To work up the social case history. To assess social and financial conditions. To help in the follow-up programs and home visits.
 10. SECRETARIAL STAFF.

The list, hence, mentions the essential staff comprising the rehabilitation unit. Besides this, however, the unit may need collaboration with other departments including:

- Plastic surgery
- Neurology
- Neurosurgery
- Physical medicine
- Psychiatry

Hence, if a rehabilitation program is to be successfully developed, the trained personnel are as such necessary as audiometers and hearing aids. The team approach on part of all workers in the unit should be accepted as an important basis; and collaboration with allied clinical and basic disciplines (multidisciplinary approach) needs to be emphasised for achieving clinical program by scientific methods.

FINANCIAL MANAGEMENT

THE BUDGET PROCESS

Audiologists, and practising professionals need both insight and instruction regarding their budgetary responsibilities or there should be fiscal officers and specialists in budgetary processes to work with the department.

THE CAPITAL BUDGET

The capital budget concerns the purchase of new equipment. There may be two kinds of capital budget projections requested, those for the current year and those for long range planning.

The current year's budget will include all the departments capital needs regardless of the amount. The Director ranks them in order of importance and identifies each, as an addition, a replacement or an improvement. The manager is usually required to write a brief description of the item and discuss how it will support the goals of the department and the centre.

THE ANNUAL OPERATING BUDGET

Regardless of the type of budget process used, the process begins with a budget calendar which gives timelines for each part. The controller directs the overall budget process and assists in the development of reasonable projections of departmental activities.

Further, the Director's professional expertise and judgement should prevail in budgetary decisions that affect the delivery of care.

Budget projections are based on the historical data from department statistics and data provided by fiscal services. Projections should be made in each of the following areas.

DEPARTMENT ACTIVITY

This can be expressed in several ways, such as number of treatment hours or on the procedures involved. In making projections, it is helpful to:

- * observe changes in activity, study their cause and determine the trends that will continue.

- * anticipate changes in patient flow.
- * consider the impact of new services and/or equipment.
- * consider changes in standards of care, staff or maintenance philosophy.

PRODUCTIVITY AND STAFFING

Productivity, can be stated in terms of calculating the time taken per procedure and convert it into treatment hours. A productivity goal is a necessity in determining all staffing needs. Factors to consider in determining this goal are:

- (a) observed changes from year to year, their causes and possible trends.
- (b) achievement of the previous year's productivity goal.
- (c) anticipated changes that would affect the staffing patterns.
- (d) impact of the new services and equipment.
- (e) changes in standards of management philosophy, that will affect staffing and
- (f) decisions regarding modification of the pay-scale.

REVENUE PARAMETERS

When looking at the revenue projections for the budgetary process, consider:

- > any change in the unit by which revenue is measured.

- > whether increased patient flow can be handled with the present staff and improved productivity.
- > if present changes will cover inflationary or deflationary impact and
- > any cost trends, changes in case/service minor charge structures which may occur before the beginning of the next fiscal year.

EXPENSE PARAMETERS

Estimates of department expenses must consider every item of expenditure including wages and salaries, fringe-benefits, minor equipment purchases, educational activities, travel and supplies. A unit of measure is selected for each expense to show, how it is distributed over the budget year, eg. monthly or semi-annually. These factors should be considered:

- > if a unit of measure adopted is appropriate for the type of expense incurred.
- > if trends and their causes other than inflation are identified, and
- > if any unanticipated new costs arise, such as maintenance, contracts for equipment on which the "free-service warranty" has expired.

For a department to be self-supporting and independent the revenues must completely pay for the service and in addition, contribute a profit margin to help pay for the department that are not fee-based.

WAGE AND SALARY SCALE

Since a significant portion of the department expense is wages and salaries, it is important to understand how these are determined and applied to audiologists etc.

Rowland (1984) states that after a job analysis is completed and a job description developed, pertinent information about the specific nature of the job is collected. Following the data collection, information is obtained regarding the salaries of comparable jobs in the community and surrounding area. The current job market and cost of living also furnish guidelines.

BENEFITS:

Benefits include paid vacation, sick and holiday time, and some form of health insurance coverage. The health insurance plan may include out-patient services. Life insurance, long-term disability insurance and accident insurance are also significant benefits. It is important that the director of the service and the supervisors make an attempt to provide appropriate management training and impart management philosophy to every staff member. The

success of the service depends on the willingness and ability of individual staff members to market the service to patients, to other professionals, and to the community.

CHARGES FOR HEARING SERVICES

Charges are based on the amount of time spent with the patient, regardless of the type of patient or the type of disorder. Some services have a set charge for evaluations while others base the charge on the time spent. A uniform treatment charge seems to be more appropriate since the expense involved in providing the treatment is the same regardless of the disorder.

Several variables must be taken into account, for establishing charges in audiology, such as staff-time per procedure, test interpretation, equipment, maintenance of equipment, maintenance of equipment space and supplies. The counselling time involved in hearing-aid fitting and service must be included. A per-procedure charge must be developed that takes these facts into account.

INSTRUMENTATION

EQUIPMENT REQUIRED AND ITS PROCUREMENT

INFORMATION PRIOR TO PROCUREMENT

The task of buying an equipment, often evokes apprehension and sometimes anxiety in prospective purchases. A good purchase is a result of planning and multi-dimensional business decision. The person should have an upto date knowledge in the field. One should have the following information about the instrument:

1. One should have knowledge regarding the technical specifications of that instrument.
2. Details about the accessories required with the instrument.
3. One should know the cost of the instrument and accessories.
4. Whether the instrument is indigenous or imported.

The instrument chosen should meet the requirements of the user. Reputed and well-established companies maybe chosen when more than one instrument is required. Priority may be given to those from whom some other equipment is already purchased and is working to one's satisfaction. An Indian dealer should be available if the instrument is imported. If there is the possibility of expanding the

facilities services then equipment to be purchased should have broad enough capabilities to meet further needs and to be able to interface effectively with any future purchases. Preferably obtain information about particular piece of equipment which you wish to buy from other professionals who have worked on it. It may be advisable to see the various pieces of equipment and also handle the equipment, during exhibits in conferences, seminars, etc. After making a checklist and arriving at a tentative decision regarding the purchase of the equipment, the next step would be to contact the manufacturer or special instrument distributor.

BUYING A USED EQUIPMENT

When considering the purchase of used equipment, the following questions should be asked:

- 1 - Is it in good working condition?
- 2 - Is it still in production?
- 3 - Can one get spare parts for it?
- 4 - Was it manufactured by a reputable supplier?
- 5 - Does the local manufacturer, service that product?
- 6 - How old is the equipment?

One advantage of purchasing used equipment is the cost factor. If the equipment is to be purchased from a private

party, it is recommended that the product be shipped to a reputable dealer for evaluation.

HOW TO BUY AN INSTRUMENT

Before buying any equipment, one must have detailed information regarding that instrument as mentioned earlier. Such information is collected before making the budget. The equipment is listed on priority of use.. Instruments needed urgently are listed first on the list. Once the list is prepared, the following type of detailed information regarding the instrument is prepared, such as

- 1) Name of the instrument, as given by the company.
- 2) Accessories that might be required along with the instrument.
- 3) Estimated cost of the instrument.
- 4) Justification of the use or need for that instrument in that department.
- 5) Proforma invoice, product literature, and proprietary item certificate should be collected before requisition is made to the higher authorities for acquisition of that instrument.
- 6) As the next step, the equipment list is referred to the committee concerned, along with justification, which

either approve it or rejects it depending on the sanctioned budget from the ministry or sanctioning authority.

- 7) If the equipment is approved, quotations are called from the firm, which manufacture that particular instrument.
- 8) As the equipment is delivered from the manufacturing company, payment is done either through bank or paying directly from the organization to the manufacturing company. Along with the equipment accessories are also purchased and sometimes extra number of accessories are purchased in order to avoid delays that might occur, or if the equipment goes out of order and there is delay in purchasing the accessories. Purchase can also be made by credit bill payment. Instruments can be purchased within the country or outside the country.

For the import of equipment, some additional steps have to be followed along with the steps for purchase of indigenous equipment. Before purchase of equipment from foreign manufacturers, one has to get "no objection certificate" (NOC) from the Director General of Technical Development (DGTD) and "Not manufactured in India certificate" (NMIC) has to be taken from the Department of

Commerce. Another approval, ie. the "Customs Clearance Permit" (CCP) has to be obtained from the Chief Controller of Import and Export. This is done to make way for equipment without any problem at the custom. While purchasing the instrument, one should check whether it has accessories or not, if so, then whether it is standard or optional one. If the accessories are indigenously available, then it is better to purchase indigenously than importing it, as it is cost-efficient. One should consider how often the accessories are needed to be replaced for a particular instrument. Owing to the frequent hike in price, one may purchase these accessories in bulk. However, the shelf-life of such purchases must be considered.

INSTRUMENTS

Instruments can be purchased for screening, clinical and research purposes. They can also be divided as diagnostic instruments and rehabilitative equipment.

DIAGNOSTIC INSTRUMENTS:

AUDIOMETER

Definition.∴ It is an instrument for the measurement of hearing acuity (IS:1979).

Audiometers can be divided into 2 types:

-> MANUAL AUDIOMETER

Definition: A Pure tone audiometer is one in which the signal presentations, frequency and hearing-level selection and recording of the signals, is performed manually (IS:1979).

This is most often used for screening, diagnostic and clinical purposes.

-> AUTOMATIC RECORDING AUDIOMETER: This is the pure tone audiometer where signal presentations, hearing level variation, frequency selection or variation (for Bekesy type) and recording of subject responses are implemented automatically (IS-.1979).

In order to know the type and degree of hearing loss, one needs to have diagnostic audiometer with speech audiometry and some special test facilities such as tone decay test (TDT), etc.

The purchase of audiometer depends upon the budget and according to the requirements of the set-up.

IMMITTANCE AUDIOMETRY is useful in supplementing/completing the information obtained during pure tone audiometry testing. Again immittance audiometers can be used for screening, clinical and research purposes. Screening instruments help in early identification of middle ear conditions. They may be manually operated. Clinical instruments lay emphasis on full manipulation of the test configuration, and more thorough testing. Generally test capabilities of clinical impedance instruments include - diagnostic tympanometry, reflex threshold, reflex decay, and eustachian tube function for intact and perforated ear drum. The market for research instruments is small. For the most part, these instruments are constructed as one-of-a-kind instruments used to support some particular investigation and are not commercially marketed.

BSERA (BRAIN-STEM EVOKED RESPONSE AUDIOMETRY) In order to measure and evaluate the hearing of patients with neurological symptoms as well as to differentially diagnose the case based on site of lesion, one may need to have BSERA, which measures changes in the on-going electrical, physiological activities. The system may be installed in an electrically and magnetically shielded, room, in a quiet environment.

POINTS FOR CONSIDERATION

- 1) If a battery operated audiometer is purchased, sufficient funds must be available to meet the recurring expenditure.
- 2) A two-room situation is required to carry out speech-audiometry using monitored live-voice and for free-field testing.
- 3) "High-frequency" audiometer can be purchased for testing older people or patients with drug-induced hearing loss where one needs to have high frequency range like 6 KHz-12 KHz.
- 4) A computer maybe programed to control all aspects of administering pure tone air and bone conduction stimuli, speech, masking, analyze the subject's responses in terms of threshold determinant criteria. The instrument is microprocessor controlled which allows it to be remotely operated by computer.
- 5) An IBM compatible personal computer and an audiometer combined in one equipment, where all controls are on the computer key-board, is a clinical model with facilities for all tests, user-friendly software for storage of patient history, data and audiograms.

COST OF INDIGENOUS AUDIOMETERS

An approximate cost of the audiometers, along with accessories is given herein.

Audiometers	Approx.price (in Rs.)
1. Portable screening audiometer	3,900 - 24,300
2. Clinical/diagnostic audiometers	30,000 - 50,000
3. PC based audiometers (with Accessories)	90,000

ACCESSORIES

For eg. Internal-accessories:

- Narrow band masking	4,560
- Insert masking	1,400

External accessories

- Free-field loud speaker in cabinet	6,550
- Patient talk-back system (Amplifier, microphone, speaker).	7,050

NOTE: Installation charges are to be paid separately. All local taxes like Octroi duty etc. will have to be borne by the party.

CALIBRATION OF AUDIOMETER

Use of calibrated equipment is a pre-requisite for an accurate audiological evaluation. For that electronic instruments are necessary which can be used by qualified and experienced electronic engineer who can use them properly. Some of the equipment needed for calibration are such as artificial ear, artificial mastoid, bone calibration transducer, microphone, sound-level meter, distortion-analyzer, oscilloscope, audio-frequency output meter, audio-cscillator.

REHABILITATIVE EQUIPMENT

HEARING AID SELECTION AND TRIAL

Definition: Hearing aid is a personal amplification device worn on the individual and it helps to amplify the incoming sound signal.

After the evaluation of hearing thresholds, it becomes -he job of the audiologist to provide the client with an appropriate hearing aid for the hearing loss, if it cannot be treated medically/surgically. The audiologist will have to evaluate patient population and determine which types of aids are needed and then investigate about their

availability. Ordering of hearing aids can be done in different ways, such as mentioned below.

- 1) The different types of aids can be purchased in bulk and stocked.
- 2) Another method could be to stalk only those that are used for hearing aid evaluation. Once a hearing aid is recommended, it can be ordered.

There are various types of hearing aids such as body-level hearing aid, behind the ear, in the ear, in the canal, eye glass and CROS. Hearing aids can be classified based on the acoustic output like mild, moderate and strong classes. While purchasing hearing aids, one should look at both the physical and electroacoustic specifications.

The approximate cost of hearing aids and spares such as battery, cords, etc. are mentioned herein.

Hearing Aids and it's spares	Approx.cost in (Rs.)
1. Body level hearing aid	1200-2600
2. Behind-the-ear	4000-7500
3. In-the-ear/canal	6800-18000
4. Eye-glass	9500
5. CROS	12000-16000

SPARES

Batteries	11.-75 per pair
Cords: Single cord	15 - 20
V/Y cord	30 - 40
V cord (3 pin)	32

SERVICE AND REPAIR

Requirements for the repair of hearing aids are as follows - multimeter, signal injector (battery operated), soldering-iron, cutter, watch screw-driver set, forceps of different sizes, battery holders, brush, cotton, spirit.

ASSISTIVE LISTENING DEVICES

Assistive Listening Devices are those which aid an individual with hearing-impairment to listen better. Some of the ALDs which can be used with adult hearing-impaired are mentioned herein.

HEARING AIDS

1. Hearing aids is a personal device worn by the hearing-impaired and it is portable. Each individual has own

his/her instrument. The 'T' position in the hearing aid can be used for communication while speaking on the telephone.

2. For those having higher degree of hearing-loss, teletypewriters can be used.
3. Radiopaging is where the individual can be contacted by a beeper, or when the hearing-impairment is severe, the person can be contacted by a device which has a light or by tactile cues.

Other ALDs used for hearing-impaired are vibroalarm, smoke detectors which have lights flashing to indicate excess smoke, or light-flashing to indicate door-bell, and stethoscope amplifier.

INSTRUMENTS FOR MEASUREMENT OF ELECTROACOUSTIC CHARACTERISTICS/INSERTION GAIN OPTIMIZATION OF HEARING AIDS:

Electroacoustic measures are measurements of input-output functions ie. they measure how the output varies from the input signal.

Electroacoustic characteristics can be measured in the laboratory, in anechoic chamber, or hearing aid test box.

Instruments used to measure the electroacoustic characteristics should conform to one or more standards (ANSI, IS, HAIC, IE, etc). While purchasing the hearing aid analyzer, one should look at the technical specifications, and accessories. The equipment for measuring IGO/Electroacoustic characteristics would approximately cost of Rs. 4 lakhs

EARMOLD LABORATORY:

An earmold laboratory requires consumables and non-consumables which have to be procured. Apart from a physical set up of an earmold lab, such as work-benches, wash-basins, etc., the following would be the minimum requirements for setting up an earmold lab. The firm dealing with the dental materials would be able to supply the majority of the items. Dental lathe (Rs.4000) and hanging motor (Rs.1000) are the only major investment items. Dental flask can be used as earmold flask.

The following materials/instruments are used in the earmold lab, also their approximate cost is mentioned alongside.

Materials	Approx.cost/price (in Rs.)
1. Plaster of paris	140 for 20 Kg.
Impression material (Alginate)	400 for 750 gms
3. Acrylic (hot cure)	1200 for 3 Kg(Powder) 900 for 4 litres
4. Acrylic (cold cure) for repair purposes	800 for the set
5. Pumice for polishing	20 per kg.
6. Vaseline	38 for 400 gms

The following instruments are used in the earmold laboratory:

- Dental flask with clamp
- Dental lathe
- Hanging motor with straight handpiece
- Rubber bowls
- Plaster spatulae
- Plugger
- Wax carver
- Plaster knife
- Earmold rings
- Electric stone for curing
- Probes
- Excavator

- Spirit lamp
- Acrylic trimmer
- Fissure burs and round burs of assorted size
- Brushes for polishing
- Brush

Most of the above items will be available in any of the local dental depot, nearer to your place.

ASSESSMENT IN AUDIOLOGICAL REHABILITATION

The primary objective of the audiological, rehabilitation process is to foster successful communication experiences. The rehabilitation process is designed to accomplish this goal and consists of ongoing assessment, planning and the implementation of comprehensive remediation techniques. The present chapter focusses on the essence of assessment-measurement and the contributions of measurement to the remediation process and remediation outcomes. Testing serves a key role in the remediation program. It helps the audiologist determine if the client's auditory and communication behaviours are within normal limits. Assessment involves description and diagnosis. "Assessment continues during intervention in order to chart progress, establish new goals and make necessary changes in procedures", (Bloom and Lahey, 1978).

As mentioned, the first step in rehabilitation process is pre-remediation assessment. Basic audiometric assessment includes the following:

- > Case history
- > Puretone audiometry
- > Speech audiometry
- > Impedance measurement
- > Any special tests indicated.

Medical evaluation is also recommended. However, if non-medical evaluation is required, the first step consists of hearing aid evaluation, to determine whether amplification will be beneficial or not (Chermak, 1971).

EVALUATION AND REHABILITATION

A complete rehabilitation program, designed for the hearing handicapped must be directed towards meeting the psychological, social and the vocational needs of the patient. Assessment should include the following.

1. A complete otological evaluation should be carried out to establish a diagnosis and to recommend desirable, specific medical or surgical treatment. A complete physical evaluation must be carried out. The otologist emphasizes to the patient, that the techniques of rehabilitation are to be considered an integral part of the treatment of his/her hearing loss and that they are necessary to him.

2. Using electroacoustic equipment in the sound treated room, a complete audiometric survey is done on the separate ears, including puretones, speech reception and speech discrimination testing. In addition loudness - tolerance

and signal to noise ratios must be assessed, again on separate ears. When required, this can be followed by conducting certain special tests as is required to be done to rule out the possibility of a cochlear or retrocochlear pathology. Tests can also be administered to detect any central auditory disorders. Impedance measurement, in addition to the puretone threshold and suprathreshold tests can be administered. This measurement provides information that might otherwise be unavailable to the otologist, using direct visual inspection. The completion of this entire evaluation gives an accurate estimate of the patient's ability to use a hearing aid as far as his cochlear function is concerned.

3. Unless the hearing evaluation, as described, indicates the impossibility of help with amplification, due to severe cochlear disease and subsequent poor discrimination score or low loudness tolerance, and signal to noise ratios; an ear impression is taken of the canal of the ear to be used for the hearing aid, and the individual mold is processed.

The patient then receives a hearing aid selection under subjective and objective conditions, where the objective evaluations are carried out in a sound treated room with his

personal earmold. Subjective methods as such are of two types:

> Prescriptive method: Here you know the hearing loss of the individual and the characteristics of the hearing aid. With this background information, you prescribe the suitable hearing aid.

> Comparative method: Herein you compare the hearing-impaired individual's performance with different aids and pick the hearing aid, with which he/she performs the best.

Objective measures include BSERA, immittance, IGO. The most commonly used method however is insertion gain optimization. In this procedure, the audiogram is first fed into the computer. The target gain based on the audiogram is selected, using the 1/2 gain or 1/3rd gain rule. Unaided and aided responses are checked at all frequencies and matched with the target gain. It is important to note that, hearing aid selection depends upon a few factors (both auditory and non-auditory) such as the following:

AUDITORY FACTORS

- > Degree of hearing loss
- > Type of hearing loss

- > Configuration of the loss
- > Discrimination ability
- > Tolerance level
- > Dynamic range.

NON-AUDITORY FACTORS

- > Financial condition
- > Listening need
- > Working environment
- > Motivation of the patient
- > Age.

The patient is then given a course in auditory education where he/she learns about his/her personal hearing loss. He is conditioned in the development of tolerance for amplified sound and given instruction in speechreading and the use of auditory clues. He is also advised to practise at home and aided in the adjustment of daily life situations. Vocational and family guidance are given by the medical and social worker. The family is informed of the patient's difficulty and plans are made to improve home-situations. For young adults and elderly patients, after hearing aid selection, provision should be made for follow-up and counselling and hearing aid orientation. The patient

with a hearing loss, in all other respects, is a capable worker, and when he is finished with the rehabilitation program, placement follows.

The basic audiometric evaluation often does not provide all the information necessary for the development and implementation of an individualized rehabilitation program. Communication occurs in a variety of contexts: social, vocational and financial. The audiologist must attempt to evaluate the effects of hearing-impairment for communication in diverse situations. Only then can we plan comprehensive and effective rehabilitative programs.

Assessment of speechreading ability is also a must and should include an evaluation of the visual, auditory and auditory-visual, perceptory skills of the client. A battery of speechreading tests are recommended for purpose of speechreading assessment. Some of these tests are as follows:

- > Lip reading screening test (Binnie et al. 1976)
- > Comprehensive speechreading test (McDonald and Chermak, 1978)

These tests enable the clinician to evaluate the client's ability to receive, discriminate and identify C-V syllables. Hence, speech tests in noise, administration of a speechreading test with visual cues alone, auditory cues alone and both (Dodds and Hardord, 1968), utilization of some measure of social adequacy or hearing handicapped scales or questionnaires, developing profiles of communicative problems encountered by the hearing-impaired individual at home, work and social environments (Alpiner, 1975; Sanders, 1975), should be of assistance in understanding the difficulties in communication experienced by the hearing-impaired individuals. Many self-report communication function scales have been developed, such as the following:

- > Social Hearing Handicap index (Ewertson and Birk-Nielsen, 1973)
- > Hearing Handicap Scale (High et al.1964)
- > Denver Scale Of communication Function (Alpine* et al. 1971)
- > Three Profile Questionnaires (Sanders, 1975).

Thus, in conclusion, the combination of all such information is vital to appropriate counselling, to the planning and conduct of audiologic habilitative programs and to the assessment of progress and improvement in communication (Olsen and Matkin, 1979).

AN INTEGRATED APPROACH TO REHABILITATION

One of the basic aims of aural-rehabilitation is to improve communication. In meeting the needs of the hearing-impaired adult, it is essential to go beyond accurate diagnosis, and selection of amplification. At every stage of the rehabilitation program, understanding and acceptance of the problems imposed by hearing loss are necessary. After amplification has been selected, some clients continue to experience serious problems in understanding speech. For them, training in the discrimination of phonemes, words or sentences using auditory, visual or combined auditory-visual information may be indicated. Drill on select materials and practice making finer discriminations are typical activities used to accomplish this purpose. These activities have been traditionally labelled auditory training and lip reading. Investigators have explored various aspects of speechreading and auditory training. The most successful approaches would appear to be those that address and incorporate specific therapy procedures as well as other needs of clients as they relate to the impairment of hearing and their communicative needs. The present chapter addresses approaches to aural rehabilitation. It must, however, be remembered that the complexities observed within

the hearing-impaired adult requires a client-oriented approach to aural-rehabilitation. Each hearing-impaired client presents a unique profile. Attention must be directed towards each client's educational background, communicative and social/vocational needs, health, motivation and personal assets or abilities. Audiological rehabilitation is a continuously developing speciality within the field of audiology. The essential components of audiological rehabilitation include:

- i) speechreading
- ii) auditory processing training
- iii) speech therapy
- iv) hearing and hearing/sensory aid evaluation, re-evaluation and follow-up care
- v) counselling of clients and family.

Speechreading, auditory processing remediation and speech therapy are at times approached as isolated skills to be improved for the purpose of communication efficiency. A triangle incorporating speechreading instruction, auditory processing training and speech therapy, has been described as useful skills for the improvement of oral communication.

McCarthy and Alpiner (1978) suggest a "progressive approach to aural rehabilitation treatment that is based on modifying either the client's behaviour and attitudes, the client's environment or a combination of both. According to these authors, the sequence of their approach is as follows:

- i) Audiologic and hearing aid evaluation
- ii) Assessment of communication function
- iii) Identification of problem areas due to hearing loss
- iv) Verbal discussion within the group regarding the problem
- v) Admission of hearing loss to themselves and to others
- vi) Modification of behaviour, attitudes and environment
- vii) Willingness to utilize amplification in therapy sessions
- viii) Reduction of stress in communication outside of therapy sessions
- ix) Willingness to utilize amplification outside of therapy sessions
- x) Termination of therapy.

This approach concentrates on the psychosocial impact of hearing-impairment and the client's response to the deficits experienced in his or her environment. Thus, this treatment program premises that,

- 1) first, each client has special priority needs that revolve around his/her frequented communicative environments.
- 2) second, most clients can benefit from specific treatment techniques that are based on language factors, that, if brought to a greater level of awareness, aid in communication.
- 3) third, the majority of hearing-impaired adults complain of difficulty communicating in noisy or otherwise distracting environments. Practice in learning to cope in those environments can be of common benefit to most of the clients.

Hence, specific approaches alone or combined, rarely fit the needs of all hearing-impaired clients. Not every hearing-impaired adult should be placed in aural rehabilitation treatment groups, and not all require extensive hearing aid orientation, or special amplification devices. For some, the process of aural rehabilitation may involve a session or two to resolve a specific problem the client is experiencing within a specific communicative environment, and perhaps several more brief contacts to assess progress. Another may require only a hearing aid orientation program with a few follow-up visits for

adjustments of the hearing aid and suggestions for more efficient use of the aid in difficult listening environments. Other visits may be for hearing and hearing aid re-evaluation and words of encouragement. Some others, may require more lengthy and comprehensive aural rehabilitation programs.

There are two major groups of adults who usually participate in audiologic rehabilitation programs. One of these is composed of young or middle aged adults, most of whom seek out services because the hearing-impairment interferes with some aspect of their lives enough to motivate them to look for remediation because many productive years lie ahead, the need for rehabilitation is obvious to members of this groups. Many of these clients are served adequately by hearing aid consultation, orientation and follow-up services.

The other group consists primarily of individuals who are of retirement age or older. The aging process involves difficulties that complicate most aspects of life and force changes in life-style. Declining health, reduced mobility, loss of friends or relatives, loss of independence, and a feeling of being unimportant all contribute to a psychological state, which may hinder

rehabilitation of hearing-loss. However, most treatment programs used with elderly populations involve the same type of habilitation activities that are offered to younger clients. The central auditory dysfunction, associated with presbycusis suggests that significant improvements in auditory and visual reception through auditory training and lip reading may not occur, but data are unavailable as evidence to argue either for or against such procedures. Amplification appears to be the major means for improving communication and general awareness of the environment.

Herein are guidelines that will aid in planning and execution of efficient aural rehabilitation programs for adult clients (Bode, Tweedie and Hull).

1. Auditory and visual stimuli initially should be presented to the client with maximum clarity during initial sessions. The client should experience a maximum degree of success in the initial phase of the therapy process. Not only will this success motivate him/her to continue to attempt speechreading or to make the auditory discriminations necessary to comprehend, but the client will develop a pattern for approaching more difficult listening situations.

2. Auditory and visual stimuli initially should be presented with sufficient redundancy of cues, so that the client experiences successful performance and acquisition of knowledge regarding the receptive communication task.

3. The clinician should serve as a model of a person who functions as an effective communicator. Clear, articulate speech without unnatural over-articulating, which tends to confuse persons attempting speechreading, should be the norm.

4. Clients should not only be informed of the clinician's general and specific objectives, but should also formulate their own goals, some of which should be co-managed with the clinician's while the remainder are the client's responsibility. The client must be made aware of his or her part and responsibility as auditory rehabilitation is a learning process. Only then can carry-over be accomplished successfully.

5. Clinicians should establish an explicit catalogue of possible methodologies to achieve specific objectives and then review this information during planning of individual therapy.

6. Both individual and group therapy programs should be available to clients. Communication is a dynamic process that must be developed with varying speakers in varying situations. The group situation for instance, permits the client to discuss with peers the communication problems common to each member.

7. Clients should be instructed regarding alternative listening strategies appropriate for specific communication situations. The clinician should explain to the client, why certain situations are more difficult than others to communicate. Difficult situations should be discussed for the purpose of developing alternative strategies.

8. Clients should be instructed regarding alternative response criteria appropriate for specific communication events. Therapy planning might include activities that directly involve principles of effective interpersonal communication.

9. Systematic practice during and outside of therapy sessions should be given high priority by both the clinician and the client. At the same time, spontaneous practice opportunities should not be ignored by either party. Each

clinician needs to calibrate the therapy approaches so that some more activities are included and modified.

10. Since successful communication is exciting and satisfying, therapy activities also should contain sufficient opportunities for similar positive interactions and experiences. Developing and maintaining motivation are important potential effects of a relationship wherein active involvement, and dynamic interaction are part of the therapy program.

11. Any opportunity for improving the speech expressiveness of the client's family, friends and others should be exploited. Interviews and discussions with family and friends might be of substantial importance to the client. General improvement in the communication expressiveness and effectiveness of these individuals could reduce the client's difficulties.

12. Development of assertive influence on the communication environment by the client, should be an essential component of therapy. Reducing background noise-levels, decreasing the distance from a talker, optimizing light for speechreading cues, and requesting the talker to use appropriate gestures, are examples of areas where the client

can become assertive and active in improving the communicative circumstances.

13. Counselling activity should be considered essential to the effectiveness of other components of the therapy relationship. Counselling forms one of the most important activities involved in auditory rehabilitation.

The need exists for effective interdisciplinary cooperation regarding auditory rehabilitative services, with a continuing effort to revise philosophies and approaches in dealing with those who have hearing-impairment. This can be enhanced, as mentioned in earlier chapters, through communication with other disciplines about respective professional activities and through implementation of team approach. In this chapter, we have presented different philosophies and approaches to aural rehabilitation. It behoves the reader to extract those portions that will be of direct benefit to the clients. We must remain vigilant to the special needs of individual clients. Some may require specific strategies to address particular problems in communication that are peculiar to them. Others may benefit from speechreading/ lip reading instruction to complement their residual hearing. Whatever the assessed

needs of clients, the audiologist must be flexible and knowledgeable in offering those services.

CONCLUSION

It is difficult to attach a single identifying label to the program described. It is a group, hearing aid selection, hearing aid orientation, communication effectiveness and attitude modification program. Throughout the group discussions, participants are encouraged to analyze their own communication situations and determine the sources of difficulty that they experience. By the end of the group meetings, it is obvious that most factors are under the control of the individual who is willing to admit the hearing loss, request necessary assistance and use amplification intelligently. Until our understanding of the effects of hearing loss on speech perception is more complete and amplification systems are developed which that can compensate better for the hearing loss, there will be a need for rehabilitation programs that focus on adjustment to less than optimal hearing.

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