
Communication Screening Program for a Geriatric Continuing Care Unit

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Introduction

The growing interest in the communication problems of older individuals is largely a product of heightened awareness of changes in the demographic characteristics of our society. At present, about 10% of the Canadian population is over 65, and population projections indicate that this will increase to approximately 23% by the year 2025 (Health & Welfare Canada, 1987). Although statistics on the numbers of Canadians with communication impairments have not been gathered, trends can be observed from American figures. In the United States, at least 20% of those over 65 are impaired in speech and/or language, and approximately 43% are hearing impaired (Fein, 1983). Fein (1983) has estimated that, by the year 2050, 39% of the speech-language impaired individuals and 59% of the hearing impaired individuals in this society will be over 65 years of age.

Communication disorders rank highest among age related disabilities (Jacobs-Condit, 1984). Among extended care facility residents, it has been estimated that between 60 and 97% have significant hearing impairments (Alpiner, 1964; Schow & Nerbonne, 1980). According to ASHA (1988a) nearly 75% of all strokes occur in persons 65 years or older, and nearly 60% of non-comatose stroke survivors suffer speech-language impairments. Alzheimer's disease affects approximately 15% of the over sixty-five population and has speech-language and cognitive sequelae (ASHA, 1988a). Parkinson's disease affects approximately one person per 100 over the age of sixty years and is associated with speech motor control problems (dysarthria), swallowing problems, and occasional language and cognitive impairments (ASHA, 1988a). Voice disorders, such as inadequate loudness and aberrant quality, have been reported to comprise 22% of the communication disorders seen in nursing home patients (ASHA, 1988a). In addition, the incidence of dysphagia, or swallowing difficulty, is higher within the elderly population (Donner, 1988a).

Despite the above statistics, the literature does not contain descriptions of programs that identify communicative disorders in the elderly. Lawton (1971) described techniques for assessing geriatric function in the areas of physical health, physical

self-care, instrumental activities of daily living, mental and psychiatric status, social roles and activities, attitudes, morale, and life satisfaction. Although mental status and social conversation skills were included, assessment of specific communication skills was not directly described. Mueller (1978) described a program in which 158 nursing home residents over 60 years of age were screened for the presence of communication disorders. Results showed that 95 (60%) had identifiable communication disorders including voice disorders, dysarthria, aphasia, and hearing impairment. Hearing acuity was judged perceptually. An aphasia scale was used to test language skills (Sklarr, 1966) but may not have identified language disorders not due to aphasia. In addition, a plan for follow-up based on identified individual needs was not described.

Recently, several authors have identified hearing impairment as important in its effect on mental status, and functional and psychosocial well being (Bess et al., 1989; Peters et al., 1988; Uhlmann et al., 1989). However, these studies have not included information on the identification of speech and language deficits and have not described clinically applicable programs to identify such disorders. Others have recommended interdisciplinary involvement, and geriatric assessment and rehabilitation to meet the needs of the hospitalized elderly (Caradoc-Davies et al., 1989; Larson, 1988; Narain et al., 1988; Winograd et al., 1988), but these assessments and interventions have not included communicative function.

For older individuals, effective communication and swallowing have been reported to be vital to maintaining one's independence (ASHA, 1980). Speech-language pathologists and audiologists traditionally have viewed their role with the elderly as one of identifying and improving observable speech, language, and hearing skills. However, Kapelus (1984, 1985) has described an environmental role which is setting rather than disorder oriented and is aimed at identifying and correcting factors that contribute to the handicapping of communication environments (Lubinski, 1981). By stimulating a positive communication environment with real opportunities for meaningful communication, the communication successes of individuals in the institution can be enhanced.

In accordance with this philosophy and in light of the shortcomings of previous programs, a screening program was developed and initiated on the Continuing Care Units of Centenary Hospital which would identify not only specific speech-language, swallowing, and hearing disorders, but also the communicative needs of each individual and would lead to appropriate recommendations and/or interventions by the speech-language pathologist, audiologist, and/or other health team members. In addition, this program integrated speech-language and hearing in its screening and follow-up components. It would be difficult to accurately screen individuals and promote positive communication interactions without examining and enhancing both audiological and speech-language skills. Together, recommendations were made regarding environmental modifications. Interdisciplinary team involvement also was an integral part of this approach. This included participation from the following disciplines: Geriatric Medicine, General Practice Medicine, Nursing, Physiotherapy, Occupational Therapy, Speech-Language Pathology, Audiology, Food and Nutrition, Social Work, Discharge Planning, Recreational Therapy, and Pharmacy.

The present screening program was aimed at identifying patients in the Continuing Care Units who had hearing disorders and speech-language and/or swallowing problems, and ensuring that appropriate and coordinated individual and environmental intervention could be implemented. This paper will describe the program, screening results, pass/fail criteria, and the referral priority system that was developed.

Screening Program

The Continuing Care Program that opened in 1986 at Centenary Hospital is located in a separate wing and houses 81 patients on three nursing units. Patients are identified as short-term rehabilitation, long-term rehabilitation, and chronic care. Each patient admitted to the Continuing Care Unit is a candidate for the Hearing and Speech-Language Screening Programs. The first 60 of these patients constituted the sample for the pilot screening program conducted between October and November, 1986. The average age of the patients was 81. Their medical diagnoses included cerebrovascular accident (25% of subjects), Alzheimer's Disease (7%), cerebral atrophy/dementia (18%), hip-fracture (8%), COPD/respiratory failure (10%), amputation (3%), and arthritis (5%). Twenty-two percent of subjects had different individual diagnoses (e.g., renal failure, back pain, atherosclerosis).

The Hearing Screening Program was conducted by an audiologist. The Speech-Language Screening Program was conducted by a speech-language pathologist. Under normal conditions, all audiological tests were completed within thirty minutes. When possible, speech-language screening was conducted upon completion of all hearing screening tests. In this

way, speech-language test results were not confounded by the sequelae of hearing impairment. Under normal conditions, speech-language testing was completed within 30-45 minutes. A separate questionnaire was completed by the appropriate staff nurse upon admission to provide a description of the functional communication skills of each patient. All patient testing was conducted in a quiet room located in the Continuing Care Unit.

Hearing Screening

After the patient was seen by the physician on the unit to inspect the ear for any discharge or excessive wax, two basic screening tests and a questionnaire were administered: (1) The pure tone hearing screening test for the identification of patients who had hearing impairments; (2) The questionnaire: a modified ten-item version of the Hearing Handicap for the Elderly (HHIE-S) (Ventry & Weinstein, 1983) for the assessment of the patient's hearing handicap; and (3) The acoustic immittance screening of middle ear function for the identification of conductive otologic abnormality.

Pure Tone Screening Test

A manually administered, individual pure tone air conduction screening procedure was used. Test frequencies were 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz. Screening level was 40 dBHL (re: ANSI-1969). This level is regarded as the best indicator of hearing handicap and hearing aid candidacy among the elderly (Ventry & Weinstein, 1983). The audiometer used for screening met the ANSI S3.6-1969 specifications. A biologic check was made of the equipment at the beginning and the end of each screening session. An inability to hear any one frequency in each ear constituted a fail on the pure tone screening. Any patient who failed the screening was required to complete the questionnaire. Any patient who passed went directly to the acoustic immittance screening in order to rule out possible conductive otologic abnormality. In those cases where conventional testing was not possible due to physical or mental status, unconventional methods were used. These included: discussing the patient's communication status with the speech-language pathologist involved in the joint hearing-speech-language screening, inquiring about the patient's hearing ability with the spouse, family members and attending nurses, and observing the patient's alertness in communication.

Questionnaire

It is well documented that the degree of hearing impairment does not predict hearing handicap. That is to say, two individuals with similar degrees of impairment differ in their perception of the handicap. A variety of self-assessment inventories have been developed to measure hearing handicap (e.g., High et al., 1964; Alpiner et al., 1975; Ventry & Weinstein, 1982). One inventory that is specifically designed for the elderly is the Hearing Handicap Inventory for the Elderly (HHIE) (Ventry & Weinstein, 1982). This standardized inventory in-

cludes 25 item responses that look into the social/situational and emotional effects of the hearing impairment. While it still remains one of the only standardized inventories designed for the elderly, a short version of the HHIE that reduced the original 25 items to ten was later developed as a screening tool (Ventry & Weinstein, 1983). The short version (HHIE-S) includes five social/situational and five emotional response items. Both the HHIE and HHIE-S were originally designed for the non-institutionalized elderly. In this screening program, the HHIE-S was used with slight modifications in the wording of some items in order to make it more appropriate for the patients in the Continuing Care Unit (Appendix A).

The questionnaire was delivered in a face-to-face format. The patient was asked to respond "yes," "sometimes," and "no" to the items, with a "yes" response being awarded four points, a "sometimes" two points, and a "no" zero points. A score of 11-40 points constituted a fail, and a score of 0-10 constituted a pass on the questionnaire.

Acoustic Immittance Screening

The equipment utilized for acoustic immittance screening had the capability for tympanometry and for monitoring an acoustic reflex at a specified intensity. It was calibrated before the initial screening. The probe unit was checked for obstructions periodically during the session. The criteria used for tympanometry was an air pressure range of +100 to -300 mm H₂O utilizing a probe tone frequency of 220 Hz. The eliciting signal for acoustic reflex was a pure tone of 1000 Hz presented at 105 dBHL ipsilaterally, at the tympanogram peak pressure point. A pass was given when peak middle ear pressure was between +100 and -200 mm H₂O, and when an acoustic reflex was present. A fail was given when there was an abnormal peak outside the range described above and/or an absent acoustic reflex.

Speech-Language Screening

The Speech-Language Screening Program consisted of one screening test and one functional communication questionnaire.

Screening Test

The screening test used was based on the Mayo Clinic Procedures for Language Evaluation (unpublished data). Observations of the following were made: attention, orientation and general information, auditory comprehension, verbal expression, reading comprehension, written expression, oral motor function, praxis, swallowing, and pragmatics. This screening tool also considered the appropriateness of responses and the use of gesture. Although not a standardized test, it was felt that this tool would be more comprehensive and appropriate than any available formal test.

The speech-language pathologist administered the screening test in a face-to-face format. Both the number of correct responses and the appropriateness of responses were recorded. Approval was sought from the attending physician prior to administering the swallowing section of the screening to prevent its administration to those patients for whom oral feeding was contraindicated. Inability to pass any one of the nine sections of the screening test constituted a failure of the test. Failures consisted of incorrect, inappropriate, or abnormal responses. Patients who could not be screened were evaluated unconventionally. This included observations of verbal and non-verbal responses to visual, auditory, tactile, and olfactory stimuli. For the swallowing section of the screening test, any observable sign of impairment with the oral phase of swallowing as well as evidence of coughing, choking, or gurgly voice after swallowing purée, solid, and liquid sample materials constituted a failure.

Communication Disorders Questionnaire

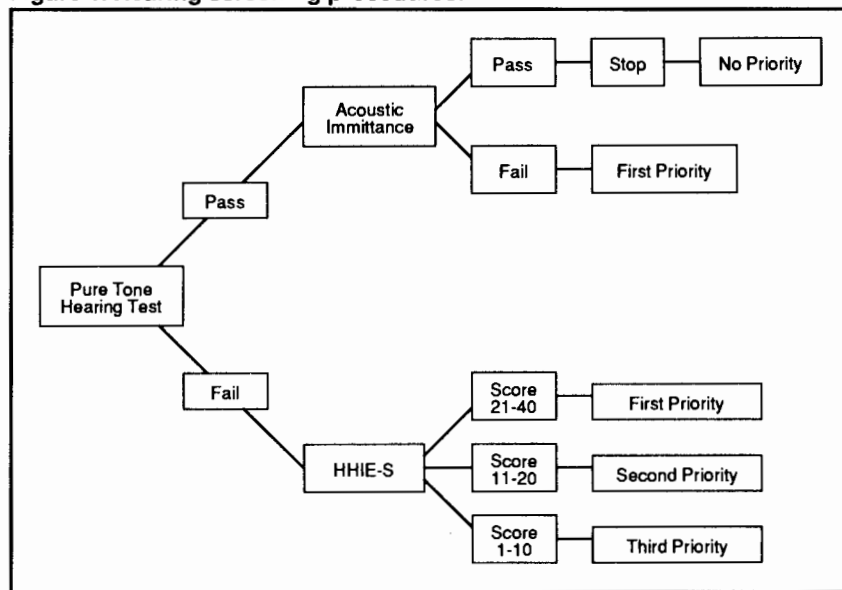
The Communication Disorders Questionnaire was an informal survey with a 5-point rating scale of comprehension and expression based on a questionnaire described by Mandel and Kapelus (1985). Nurses were requested to propose an explanation for the apparent communication disorder by identifying one or more given areas of impairment (Appendix B). Upon admission, the questionnaire was included in each patient's chart. A set of instructions was kept on the unit, and scoring was discussed with nurses at inservices and on a one-to-one basis. A staff nurse completed the questionnaire within one week after admission. This information was used to help determine a patient's priority status for further assessment by the speech-language pathologist. A score of nine (9) or less constituted a failure on the Communication Disorders Questionnaire. Both a brief summary of each patient's communication status and the recommendations for intervention were recorded on a screening form and included in each patient's chart.

Screening Results

Hearing Screening

Results of the hearing screening showed that of the 28% (17 of 60) who passed, seven (41%) were tested by conventional means and ten (59%) by unconventional means. For the 72% (43 of 60) who failed, a referral priority system was developed to ensure that patients needing the most immediate attention were seen for complete assessments promptly. Those patients who failed the pure tone hearing test and received a score of 21-40 on the HHIE-S were considered first priority. Patients who failed pure tone testing and received a score of 11-20 on the HHIE-S were considered second priority. Patients who failed pure tone testing and received a score of 1-10 were third priority. Twenty-one percent were first priority, 16% were

Figure 1. Hearing screening procedures.



second priority, and 35% were third priority for complete audiological assessment. Figure 1 illustrates the hearing screening procedures.

Speech-Language Screening

Preliminary results revealed that 63% (38 of 60) failed the screening test. One of these patients could not be tested in English. This case was scored as a failure and further testing in the patient's native language was recommended. Further analysis revealed that those who failed the speech-language-swallowing screening could be subgrouped into three general categories: (1) 20% (12) had specific speech-language deficits such as aphasia and dysarthria; (2) 23% (14) were verbally responsive but were disoriented and did poorly on one or more of the following subtests: general information, word fluency, proverb interpretation, and Cookie Theft picture description; and (3) 18% (11) were unreliably responsive to verbal stimuli and could not be tested using the screening test. It was with this later group that the joint hearing-speech-language-swallowing screening was especially important. Joint unconventional procedures were used with these patients to determine whether there was a hearing or language impairment, or both. The expertise of both the audiologist and the speech-language pathologist was useful in making these observations.

Thirteen percent (8) of all patients screened failed the swallowing portion of the test. It should be noted that the screening test might not have identified patients who were silent aspirators.

Referral Priority System

In order to deal with patients who failed the speech-language screening, a referral priority system was developed. Patients who failed the speech-language screening test and the communication questionnaire were considered first priority. Patients who failed the unconventional testing also were considered first priority. Patients who failed the screening but passed the questionnaire were considered second priority. Patients who passed both the screening and communication questionnaire or passed unconventional testing were considered to have no priority for further assessment (see Figure 2).

Of the 60 patients tested, the majority of those who failed were categorized first priority. As a result, subsequent to further assessment, a generic list of needs for specific patient groups was compiled followed by the delineation of specific goals, an action to

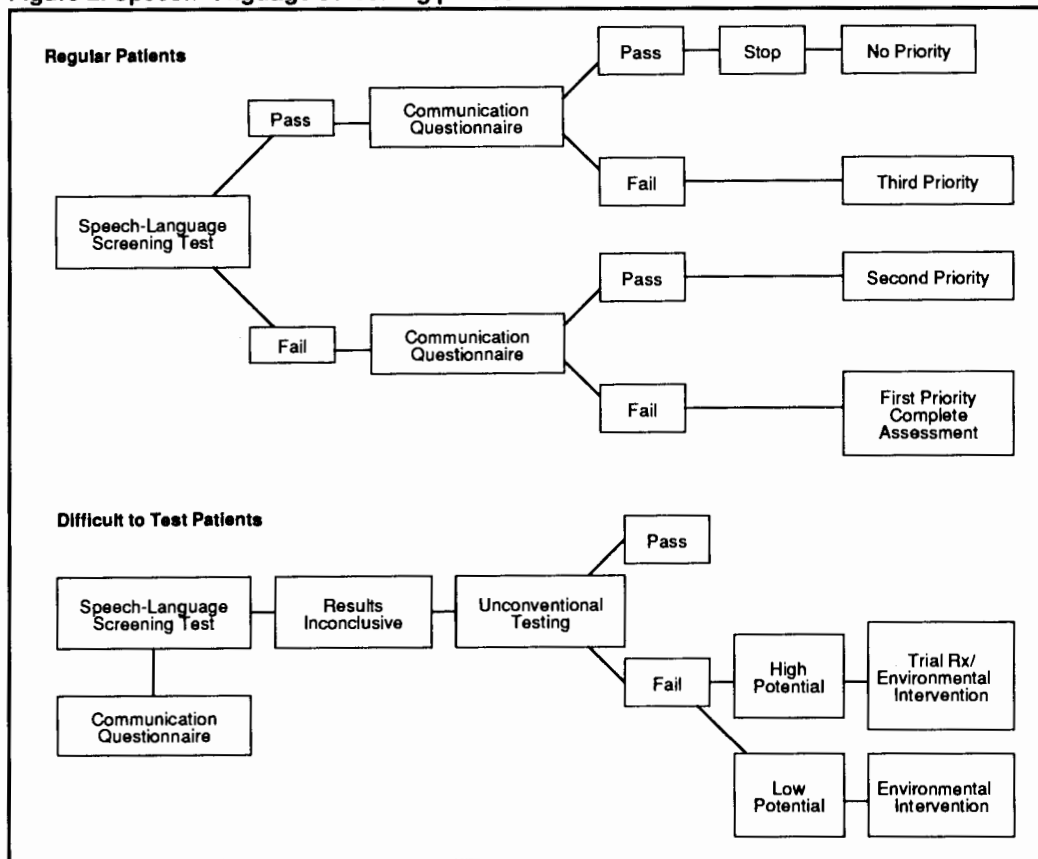
achieve these goals, and the discipline that was considered to be appropriate for assuming responsibility to meet these goals. This process helped determine that certain communicative needs could be well met by other disciplines and that the speech-language pathologist did not have to assume sole responsibility for all communicative programs on the unit, nor was he/she qualified to run all programs. For example, for the group of patients who were unresponsive to verbal stimuli, appropriate interventions might have included environmental intervention, sensory stimulation, and guided visits. For these activities, the speech-language pathologist could function as a consultant with involvement from physiotherapy, occupational therapy, recreation therapy, and nursing, as well as guided involvement from family and volunteers. This promoted interdisciplinary programming and shifted the focus of the speech-language pathologist from direct therapy to consultation and team involvement.

At present, each patient admitted to the Continuing Care Unit is screened for hearing, speech-language, and swallowing impairments in the manner described above. The current protocol differs from the original pilot project in that the speech-language questionnaire for nurses presently is incorporated into the Nursing Admission Assessment and is not requested as a separate procedure by the speech-language pathologist.

Conclusion

The above screening program demonstrates the need for audiological and speech-language intervention on a Continuing Care Unit. In a sample of sixty patients, 72% failed hearing tests and 63% failed speech-language tests. Moreover, 16% of

Figure 2. Speech-language screening procedures.



those who participated in the hearing screening and 18% of those in the speech-language screening benefitted from the joint hearing-speech-language effort since joint unconventional methods were needed to evaluate their status. In addition, 13% of all patients screened failed the swallowing portion of the screening. As a result of the screening, appropriate assessment and intervention were possible.

One advantage of this screening program was that it was relatively quick and simple to administer. The screening summary forms decrease reporting time. Moreover, joint screening of hearing and speech-language status provided more valuable and reliable information about communicative status and promoted collaboration between speech-language pathology and audiology.

The screening tool used in this project was difficult to administer to patients whose verbal and non-verbal responses were unreliable. Unconventional techniques were necessary for such individuals and were more difficult to score. In addition, the speech and language portions of the screening were not standardized measures and do require further evaluation to determine their reliability, validity, and sensitivity. The swallowing screening was brief and needs to be correlated with more in-depth bedside examinations as well as with

modified barium swallow studies and/or records of pulmonary function, weight, and electrolytes to determine its reliability. Finally, the small sample size described in this report limits generalizations of this work.

Despite its limitations, the present communication screening program showed that a majority of the hospitalized geriatric patients screened on the Continuing Care Unit presented with disorders of hearing, speech-language, and/or swallowing. The pass/fail criteria and referral priority systems described above are ways to manage the results of the screening tests more efficiently and meaningfully in terms of follow-up. In addition, identifying individual patient needs and the roles of the speech-language pathologist and audiologist as well as other members of the interdisciplinary team, helped to determine the time needed for therapy and the time better spent on consultation and team planning.

The above program is based on a philosophy of care that embraces a broad concept of communication management—a concept which incorporates interfacing with and modifying the physical, psychological, and social environment. It promotes collaboration between, and joint intervention by, audiology and speech-language pathology as well as ongoing interdisciplinary team involvement. It is our contention that the commu-

nicative needs in a geriatric continuing care setting can be met most effectively using this approach.

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Appendix A HHIE-S

Instructions:

The purpose of this scale is to identify the problems your hearing loss may be causing you. Answer YES, SOMETIMES, or NO for each question.

	YES (4)	SOME- TIMES (2)	NO (0)
E-1 Does a hearing problem cause you to feel embarrassed when meeting new people?	___	___	___
E-2 Does a hearing problem cause you to feel frustrated when talking to members of your family and/or Hospital staff?	___	___	___
E-3 Do you feel handicapped by a hearing problem?	___	___	___
E-4 Does a hearing problem cause you to have arguments with your family members and/or Hospital staff?	___	___	___
E-5 Do you feel that any difficulty with your hearing limits or hampers your personal or social life?	___	___	___
S-1 Do you have difficulty hearing when someone speaks in a whisper?	___	___	___
S-2 Does a hearing problem cause you difficulty when friends, relatives or neighbors visit you?	___	___	___
S-3 Does a hearing problem cause you to attend Hospital activities less often than you would like?	___	___	___
S-4 Does a hearing problem cause you difficulty when listening to TV or radio?	___	___	___
S-5 Does a hearing problem cause you difficulty when in a noisy environment with relatives, friends or Hospital staff?	___	___	___
Total Score: _____			
Subtotal E: _____			
Subtotal S: _____			

From Ventry, I., & Weinstein, B. (1983). The hearing handicap inventory for the elderly: A new tool. *Ear and Hearing*, 3, 128-134 (with modifications).

Appendix B

CENTENARY HOSPITAL
 DEPT. OF SPEECH LANGUAGE
 PATHOLOGY AND AUDIOLOGY

Date: _____ File No: _____

Please indicate () which of the following factors may be impeding the patient's communication

How frequently do you see patient?	Social/emotional, e.g., withdrawn, uncooperative		
	Voice disorder (loudness, quality)		
	Reduced speech intelligibility, e.g. motor weakness, incoordination		
	Environmental influences, e.g., limited opportunity to interact with others		
	English as a second language		
	Hearing Loss		
	Diminished language skills, e.g., comprehension, expression		
	Impaired mental ability, e.g., attention, memory, confusion		
Functional level of Communication	Expression 1 2 3 4 5		
	Comprehension 1 2 3 4 5		

Expression

1. Produces little or no meaningful verbal or non-verbal messages.
2. In a limited way can indicate some basic needs and wants but only with much guessing and questioning on the part of the listener.
3. Manages to make self understood most of the time in familiar and social situations.
4. Able to discuss most topics independently although may have some difficulty explaining complicated/abstract ideas.
5. Expression is normal.

Comprehension

1. No demonstrable comprehension. Does not follow simplest commands (although may demonstrate awareness of environmental sounds, facial expression).
2. Minimal comprehension. Understands simple instructions and questions but often relies upon situational and non-verbal cues.
3. Comprehends the meaning of most social conversation but may have difficulty in less familiar situations or with more complex instructions.
4. May have comprehension difficulties in groups or with abstract topics.
5. Comprehension normal.

Score: _____

Comments: Modified from Mandel, M. & Kapelus, G.J. (1985). Evaluation of communicatively-impaired patients by health care professionals in a Long Term Care setting. Paper presented at the Ontario Association of Speech-Language Pathologists and Audiologists Annual Convention.