CURRENT STATE OF THE VA RESEARCH EFFORT AT THE WESTERN BLIND REHABILITATION CENTER

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The year 1974 will probably be remembered as the year when the blind rehabilitation centers of the VA felt the full impact of the VA's effort to develop advanced devices for the blind. Conscientious research efforts of the past 30 years have resulted in mobility devices and reading machines which are transforming many of the standard rehabilitation center practices. The Western Blind Rehabilitation Center (WBRC) has been involved in three such sensory aids projects: electronic mobility devices, reading machines, and closed circuit television magnifiers (CCTV). Conducting these projects has led to development of a standard three-stage approach: screening, training, and followup.

ELECTRONIC MOBILITY DEVICES

Bionic Laser Cane

The WBRC was an evaluation site for the Bionic C-4 Laser Cane. The Center will be training veterans with Bionic's C-5 model beginning in July 1974.

This aid comprises electronic environment-sensing systems built into a specially constructed long cane. The user employs long-cane technique. The cane emits three laser beams that provide advance indication of overhanging and forward objects and dropoffs in the travel path.

The major screening criteria applied in selecting a veteran for the C-4 Laser Cane evaluation were: completion of training in orientation and mobility; total blindness; good health, good hearing, and no disabilities (physical or psychological) other than his blindness; location in an urban setting; good motivation, and a need and desire to travel frequently.

Two hundred fifty-five blinded veterans were considered by combing VA records, and 10 were tentatively selected. From these we were able to

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*Now Executive Director of the American Foundation for the Blind.
arrange the training of four.

The four blinded veterans were trained for a period of 1 month each, and all completed the training program. Video-taping over a test course was done for comparison and evaluation. All four men were issued the aids on which they were trained. We expect to maintain the training program substantially as it is.

Followups were performed and we found that three of the four continued to use the device; the fourth man did not feel that he got enough additional information to warrant using the aid. He also had a cane that broke down frequently. He is now trained to use the Binaural Sensory Aid which he prefers.

**Binaural Sensory Aid**

The ultrasonic Binaural Sensory Aid (BSA) is an eyeglass-mounted travel device that provides the user with early warning of objects in his travel path, and hopefully with perception of the environment, by monitoring the echoes of the ultrasonic energy the aid emits. It is used with a long cane. The WBRC has conducted evaluation of the Mark II Model of the BSA.

The major screening criteria are: no hearing loss of more than 20 decibels in either ear in the range 250-6000 Hz, completion of a course of instruction in mobility with the long cane, and no usable travel vision.

For this project 500 veterans were screened and nine selected for training. The screening process indicated that 6 percent of the veterans who completed the blind rehabilitation program could be candidates for the Binaural Sensory Aid.

The training program for the Binaural Sensory Aid extended over 1 month and comprised 30-40 hours of training. Of the nine veterans who took training, eight completed satisfactorily.

Followup consisted of telephone interviews with all nine and videotaped site visits to two users. Two use the aid on a daily basis, three use it at least weekly, three use it at least once a month, and one does not use the aid at all.

**REMARKS**

We have some observations on electronic mobility devices: selection should be modified to allow a broader range of men to be considered; the device appears to be mostly useful to men whose lifestyle requires they walk a minimum of several blocks each day; and finally, gaining more information of the mobility practices of the veterans appears to be critical to deployment of the aids.

Our plans for the coming year for these devices are: to train six orientation and mobility specialists to function as instructors of the devices, assist Western Michigan University in the development of a
training course for orientation and mobility instructors on electronic mobility devices for the blind, develop screening criteria for clinical purposes, which will reflect a broadening of the population range, and train selected blinded veterans in the use of one available device at a rate not to exceed an average of one per month.

**ELECTRONIC READING MACHINES**

**Mauch Stereotoner**

The WBRC is currently cooperating with American Institutes for Research (AIR) in the evaluation of the Mauch Stereotoner, a reading machine for the blind.

Plans are to train 12 blinded veterans as Stereotoner users. The screening of veterans is done by means of a prerecorded test cassette, which can be administered in a local VA office or other appropriate locations in the field. By mid-1974, 23 veterans had been screened, with 15 passing.

In selecting candidates for participation in the Stereotoner Field Evaluation Program, priority is given to veterans who show an interest and need to read moderate amounts of print on a daily basis, no significant hearing loss in the range of 440-3520 Hz, and adequate use of at least one hand.

The training program for the Stereotoner is 3 weeks in length. Five blinded veterans have been trained (of whom three have completed the course). Two teachers have also been trained. Followup is being carried out involving the use of print, tape recorded lessons, and tests.

**Telesensory Systems Optacon**

The Optacon reading machine for the blind from Telesensory Systems, Inc., is now regularly taught at the Center. It is a compact, portable reading aid for blind persons. It is about the size of a textbook, and weighs less than 4 lb. It works by converting the image of a printed character into a tactile image which a blind person can feel with one finger.

The screening of our first three veterans for the Optacon was done by the use of psychological and tactual tests through TSI. This firm has, within the past year, developed a "hands off" test for likely Optacon trainees. Fifteen such tests have been administered to veterans, and nine have been rated as acceptable candidates.

The screening criteria now being applied in this program are: inability to read ordinary print visually, passing scores or better on the Optacon screening examination, and an interest and need to manage the written word regularly.
The initial training program comprises 60 hours of instruction. *Eight* veterans have been placed in training, and *seven* have satisfactorily completed the program. In addition, three of the WBRC staff have been trained as teachers. Followup activities have been conducted through telephone contacts. It appears that *four* veterans are using the Optacon at least several times a week, while three are making minimal use of the device.

It seems that older veterans may have some difficulty in learning the codes for the reading machines and that they will require a less intense, long-term training approach. Home study material for followup or for preparation appears to be quite useful. The current screening criteria appear useful as they apply to both reading machines, but will require more validation as additional performance data become available.

Plans for the forthcoming year include the completion of the Stereotoner evaluation project and the further development of the Optacon clinical program. The home study followup material developed by AIR for the Stereotoner may enable us also to improve this aspect of our Optacon program at some future date.

**CLOSED CIRCUIT TELEVISION (CCTV) MAGNIFIERS**

The CCTV became generally available for clinical application in 1971. Since that time the WBRC has recommended 76 of them for use by legally blinded veterans. This instrument has provided a focal point for the development of an entire phase of this Center's program, that of visual skills.

The screening criteria for the CCTV are built into the treatment program for veterans with low vision. The criteria are: ability to read print of 1M size or smaller with the CCTV (using Sloan M units); attain a reading speed of 30 words per minute, or if one already exceeds 30 w.p.m., read 50 percent faster with the CCTV than with best near correction; ability to read for 30 consecutive minutes with the CCTV. If one can exceed this, one should be able to read 100 percent longer with the CCTV than with the best near correction; one should have the ability to address an envelope and write a letter legibly. The veteran should be able to operate the device independently for both reading and writing, involving change of focus, change of magnification, and change of polarity; he should have sufficient use of his upper limbs to permit manipulation of the equipment; and he should have an interest in and need for using the written word regularly.

The WBRC has evaluated 186 veterans for the CCTV; of these 76 were recommended. Personnel from the WBRC performed followups on 36 of the 76 veterans. These followups were made in the veterans' homes to provide any supportive services necessary as well as to deter-
mine the extent to which the equipment was used. It appeared that all equipment was in regular use. Only two pieces of equipment have been returned to the VA, and both cases involved loss of vision.

**FUTURE PLANS**

Plans for the future are: 1. to develop or improve training programs for visual-skills specialists and optometrists which will enable us to expand our services in this area; 2. to provide a regional service in adjustment to low vision, utilizing the current state of the art; and 3. to do research aimed at improving the visual functioning of low vision veterans.

**SUMMARY**

Methods for screening veterans for training on electronic mobility devices must be developed and refined in order to make proper use of the training programs. The followup for electronic mobility devices has been exemplary.

The screening test for reading machines for the blind has achieved a rather sophisticated development and can be expected to become more accurate and predictive as data are accumulated. The training programs are clearly defined and need to be modified only for older veterans. A followup for reading machines is being developed in a unique manner by AIR, and it is expected that these methods can be applied to the reading machine programs of the future.

The CCTV has been fully integrated into the clinical program and has achieved notable success as indicated by the data from thorough followups.