July 10, 1978

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

Office of Human Development Services
Rehabilitation Services Administration

Mr. Lex Frieden
Director, New Option
Texas Institute for Rehabilitation & Research
1333 Moursund Avenue
Houston, Texas 77025

Dear Mr. Frieden:

The purpose of this application review package is to provide an orientation to the review which you have agreed to perform for the Rehabilitation Services Administration. Enclosed are the following materials:

(1) Federal Register Program Announcement: This document provides information regarding program objectives and evaluation criteria.

(2) Application Instructions: These instructions are used by applicants in drafting their proposals and provide guidance related to preparation of proposal narratives.

(3) Program Guidelines: These guidelines detail program objectives, methodologies, and other requirements which must be addressed by applicants.

(4) Evaluation Scoresheets: These are the scoresheets which each reviewer is required to complete on each application reviewed. Please plan to use ink or felt point pens when completing these scoresheets.

(5) Grant Applications: Included are those applications for which you are assigned primary reviewer responsibility.

We suggest that you familiarize yourself with the program material and evaluation scoresheets contained in this package. You then should read the enclosed applications and make a tentative evaluation of each, using the scoresheet. Written comments also should be noted at this time. This preliminary review will enable you to lead the discussion on these applications during the meeting. Please be sure to bring the applications and scoresheets with you to the meeting.

Additional time will be provided during the review meeting for you to read, score, and evaluate applications for which you will be assigned secondary reviewer responsibility. Each application presented to the panel is reviewed by three reviewers.

With regard to the meeting, a room is reserved for you at the Park Central Hotel, 705 - 18th Street, N.W. (near the White House) for the nights of July 30, 31, and August 1. We suggest that you take a taxi to the hotel if you arrive at National Airport or Union Station. If you arrive at Dulles Airport, we suggest using an airport limousine to the Capitol Hilton Hotel. The meeting will be held in Room 418 of the Marvin Center on the George Washington University Campus. The Marvin Center is located at 21st and H Streets, N.W., about four blocks from your hotel.

The meeting will begin at 9:30 on the morning of the 31st, with introductions and a general orientation. The remainder of the day will be set aside for reading applications. The second and third days of the meeting will be devoted to discussing and rating applications.

I am looking forward to seeing you at the meeting. Should you have any additional questions, please call me at 202-245-0529.

Sincerely yours,

Albert Rotundo, Director
Division of Budget, Grants,
and Contracts

Enclosures

P.S. Also enclosed is a definition of "Core Area" in rehabilitation engineering to be used as measure of description of core area efforts in applications for Rehabilitation Engineering Centers.

U.S. Department of Health, Education, and Welfare
Office of Human Development
REHABILITATION SERVICES ADMINISTRATION

Instructions for Evaluating
REHABILITATION ENGINEERING GRANT PROPOSALS
Competing Applications

PROJECT NUMBER _____ DATE OF REVIEW _____

APPLICANT NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

APPLICATION TITLE _____

TYPE OF APPLICATION: NEW _____ COMPETING EXTENSION _____

NUMBER OF YEARS REQUESTED: 1 2 3 4 5

AMOUNT(S) 1 _____ 2 _____ 3 _____ 4 _____ 5 _____

SECTION I - Evaluation Criteria

Each application will be scored by the extent to which it meets the evaluation criteria. Applications are to be judged in meeting specific criteria as "poor," "marginal," "adequate," "good," or "excellent." In making this assessment, the appropriate assigned point is to be recorded. After all criteria have been scored, add the point values for each column to arrive at a total score for the application.

Federal Register Program Announcement
13627-781, Vol. 43, No.61, March 19, 1978

EVALUATION CRITERIA

Criteria	Poor 1 Point	Marginal 2 Points	Adequate 3 Points	Good 4 Points	Excellent 5 Points
I. Relevance and Transferability					
1. The relevance of the content of the proposed research to the objectives of the Rehabilitation Act of 1973, as amended, and the FY 1978 objectives of the rehabilitation engineering program.					
2. The extent to which the potential rehabilitation engineering research center or individual project grantee has the capacity to carry on continuing education and otherwise disseminate findings which will impact upon the service delivery system.					
3. The extent to which the research program is national in scope, has direct applicability to the needs of severely handicapped individuals and the results are transferable to other geographic areas and programs in this country.					
II. Methodology and Procedures					
1. The soundness of the methodology to be employed in implementing the project and the feasibility of achieving the established objectives.					
2. The extent to which the proposal provides for an evaluation methodology, including the manner in which such a methodology will be used to measure achievement of the objectives of the research effort.					
3. Evidence that the state of the art in the field of rehabilitation engineering research to be investigated is sufficiently developed to provide a high potential for producing relatively immediate benefits to the handicapped.					

Criteria	Poor 1 Point	Marginal 2 Points	Adequate 3 Points	Good 4 Points	Excellent 5 Points
4. The extent to which the application instructions are adequately addressed, including both the narrative statement and budget justification.					
III. Capability of Grantee					
1. The extent to which the institution has unique capabilities and expertise in the area of research selected for a center or individual project grant.					
2. Evidence that grantee has a clinical facility with individuals who have the types of disabilities relating to the core area of research under consideration.					
IV. Budget					
1. The extent to which the anticipated cost of the project is reasonable in relating to the expected results.					
2. The financial and other resources of the applicant in accomplishing the objectives and the potential for the program to continue beyond the life of the research grants.					
3. Extent to which staffing and equipment costs are appropriate.					
V. Other (Rehabilitation Engineering Research Centers Only)					
1. The clarity of the defined core area of research which will provide the framework for all research, clinical evaluation, training and service delivery functions of that center project.					

Criteria	Poor 1 Point	Marginal 2 Points	Adequate 3 Points	Good 4 Points	Excellent 5 Points
2. The extent to which the potential rehabilitation engineering research center has or can have strong teaching affiliations with medical, engineering and other allied schools willing to cooperate in this center program.					
3. Extent to which the potential rehabilitation engineering research center is capable and has the expertise to clinically evaluate devices, equipment and techniques developed within that center or elsewhere.					
4. Evidence that the potential rehabilitation engineering research center has an understanding and capacity to stimulate industry in developing, producing and marketing the results of research carried on within the centers.					
TOTALS — TOTAL COL. 1-5					

VI. Comments

"CORE AREA" DESCRIPTION FOR REHABILITATION ENGINEERING

"Programmatic Research (or core area)

A program of research in which the entire program is planned so as to contribute in a sequential or complementary way to a centralized body of knowledge of manageable scope. Each separate study or investigation must have some reasonable relationship to the central topic and must be undertaken on the basis of a predetermined plan that was developed upon the basis of a review that was made of what is already known about that topic. The development of a programmatic research program would normally involve a review of the literature; development of one or a series of hypotheses; selection or development of data gathering instruments; a series of demonstrations, surveys, studies, experiments, etc., to test out the various hypotheses; the refinement of one or more hypotheses into a theory; further validation studies; and consultation to prospective users during the entire process. Since RSA research must bear directly on the development of methods, procedures, and devices to assist in the provision of VR services . . . it is important that the researcher be always "end-product oriented" and aware of the service program his or her research is designed to improve."

The core area is a single definable R&E area which absorbs the major effort of personnel and supplies in the Center. It is a pioneering area wherein a Center has developed unique capabilities and the investigators are recognized as professional leaders in the world. A Center through its core area activiteis becomes a repository of knowledge, both through its own activities, through contacts with other professionals throughout the world and through collections of most relevant literature. Thus, the Center by reason of its core area will be internationally renowned because of its research contributions to the literature and the development of new devices for patients. Investigators of a core area will be continually responsive to the needs of patients in that field, both in documenting the nature and extent of these needs and in setting priorities for their own efforts to meet these needs, and they will stay abreast of the state of the art of their field so that their own efforts will avoid duplication and be focused on the most cost-effective projects. It is implicit that the majority of the Center budget will be allocated to its core area.

It is conceivable that a Center may develop two or more core areas when, because of its past experience, unique professional staff and patient populations, it can support a second or third group which reaches a position of international leadership. The central issue is one of resource utilization and critical mass required in each group to become truly professionally excellent. The creation of a

new core area should be undertaken with great caution when resources are limited. But a strong group deriving support from additional sources may synergistically enhance a Center's overall effectiveness in becoming the nucleus of a secondary core area without jeopardizing its primary functions.

Problems in Core Area Definition

1. May be defined broadly or narrowly.

2. Number of core may be too many for concentrated research with available funds.

3. The several core areas of a Center may not cohere so the Center can be seen as having a mission.

4. Overlapping of effort in some core areas.

5. Need for coordination of research activities across similar core areas, particularly where shared by many Centers, seems ad hoc.

PROJECT DESCRIPTION

1. Program Administration : RSA/OHDS
2. Date : November 9, 1977.
3. Project Title : Research on Communication System for Individuals with Hearing and Speech Impairments
4. Project Number : N-1
5. OHDS Objectives : OHDS 2 and 3
6. Cost and Duration : $100,000 - $200,000 per year for approximately 3 to 5 years.
7. Funding Source : P.L. 93-112, Sec. 3B and 202 (b)(2), Research
8. Project Management Responsibility :
9. Coordination : BEH, the Rehabilitation Engineering Centers exper
10. Performer : This project will be a competitively funded grant
11. Importance of Project : This project can take many forms because the area to be covered is very broad. For example, it is presently impossible for a deaf person to use an ordinary telephone. Various attachments for the deaf and deaf/blind should be developed. People with speech impairments need systems allowing fas and easy communication.
12. Purpose of the Project : To solve communication problems for several sub-groups of the communication impaired.
13. Background : Some work has been done on the visual display of sound and on tactile displays with no practical solutions as yet.
14. Expected Findings : The project objective will be the design and prototyping of communication devices for the handicapped.
15. Methodology : (1) A state-of-the art listing of present devices will be developed. (2) People with hearing and speech problems will be surveyed to determine their needs and desires. (3) Prototypes will be designed and built. (4) Field testing with communication impaired users will be conducted.

16. Utilization : Once the prototypes are working satisfactorily, it is hoped that private industry will produce and market these devices.

17. Other Related Projects : RSA grants to Harvard-MIT REC for sensory aids research, Smith-Kettlewell Institute has research "core area" of sensory aids - Blind and Deaf, Texas R.T.C. for research in communication systems for individuals with nonvocal disabilities.

PROJECT DESCRIPTION

1.	Program Administration	: Rehabilitation Services Administration/OHDS
2.	Date	: November 10, 1977
3.	Project Title	: Delivering Rehabilitation Engineering Services
4.	Project Number	: N-2
5.	OHDS Objectives	: OHDS 1, 2, 3 (Stress is on 2).
6.	Cost and Duration	: $100,000 - $200,000 per year for approximatel 1 to 3 years.
7.	Funding Source	: Rehabilitation Act of 1973, 93-112, Sec. 3B an 202(b)(2), Research
8.	Project Management Responsibility	:
9.	Coordination	: State VR Agencies, RSA Regional Offices/VA
10.	Performer	: This would be a competitive grant. First year to start with concern and potential for progra development, plus feasibility study to choose three additional States for project developmen Coordination and evaluation central to RE Cent
11.	Importance of Project	: Project is direct response to Section 3b and 202(b)(2) of the Rehabilitatio Act as amended Technical information and skills must be inte- grated with Rehabilitation case delivery syste This project would address that need.
12.	Purpose of the Project	: To develop an organized and coordinated system for the delivery of Rehabilitation Engineering services at the case carrying level to enhance the rehabilitation of the most severely disabl
13.	Background	: A state of the art conference on service delivery of Rehabilitation Engineering was held in January, 1977 which strongly encoura model demonstration projects on the delivery rehabilitation engineering services in one o more State Vocational Rehabilitation Agency.

14. Expected Findings : Development of system for replication in all States on delivery of rehabilitation engineering services.

15. Methodology : Definition and modeling of a Model State Plan for Rehabilitation Engineering Services.

Pilot Testing in several States with quality control evaluation.

16. Utilization : Direct entry into Rehabilitation Services case delivery programming. This would bring Rehabilitation Engineering research to client level.

17. Other Related Projects :

PROJECT DESCRIPTION

1.	Program Administration	:	RSA-OHDS
2.	Date	:	November 9, 1977
3.	Project Title	:	Stimulation of Industry for Development Production and Marketing Quality Devices for the Handicapped
4.	Project Number	:	N-3
5.	OHDS Objectives	:	OHDS - 2 and 3
6	Cost and Duration	:	$100,000 - $200,000 per year for approximately 1 to 3 years.
7.	Funding Source	:	202(b)(2), Sec. 3(b) (Public Law 93-122), Research
8.	Project Management Responsibility	:	
9.	Coordination	:	Veterans Administration, National Aeronautics and Space Administration and the National Science Foundation will work cooperatively in planning this project.
10.	Performer	:	Grant to a non-profit organization, or transfer of funds to Veterans Administration for a cooperative project with industry. No grantee or contractor has been selected.
11.	Importance of Project	:	At present industry is generally not interested in producing devices for the disabled because of the high risk and diffuse population target groups.
12.	Purpose of the Project	:	To determine ways of stimulating industry with incentives that would encourage initial production of devices produced in the RSA rehabilitation engineering program.
13.	Background	:	The problem is evidenced by a paucity of high quality economical and reliable devices and equipment for handicapped individuals. The literature on the area is extremely limited and covers only portions of the total problem.

14. Expected Findings : Minimal incentives will serve to stimulate small industries, but major incentives might not have an impact on large companies.

15. Methodology : Provide various incentives to several industries and compare results. Utilize money incentives, such as tooling up cost, as well as service incentives such as market analyses.

16. Utilization : Information on results will be disseminated to Policy planners in the Administration and Congress.

17. Other Related Projects : A project was conducted with the Electronic Industries Foundation PGN-23-57962/3, which helped to identify the types of incentives that might be utilized with industry.

R&E Area N: REHABILITATION ENGINEERING

I. Information Requirements

A. There is a serious lack of information on the mobility process, sensory feedback adaptations and overall mechanism for processing sensory information from our environment. This prohibits some aspects of applied research with respect to individuals with sensory deficits; e.g., blind and deaf. (OHDS-2)

B. There is also a need for more information on tissue mechanics whether it concerns attaching joints to bone or the necrosis of soft tissue from sitting, lying in bed or wearing a prosthesis. To this end there is a major need for an instrument to measure shear forces in soft tissue. Studies should include studies of the visco-elastic properties of normal and pathological tissues —on the foot and other weight bearing areas. (OHDS-2)

C. Much more needs to be known about nerve and muscle stimulations, about monitoring the electrical activity in the spinal cord and about the force and energy implications in electro-myography. Closely related to this fundamental knowledge are the tactile display parameters which lead themselves to sensory aids for the deaf, the blind and those lacking touch and proprioception. (OHDS-2)

D. Biomechanical studies are also needed to determine forces and motions at major joints to provide data for the design of implanted artificial joints. Anthropomorphic data is also required particularly for joints and for feet to be used in the design of footwear. The effect of weight and weight distribution in prosthetics should also be studied. (OHDS-2)

E. Closely related to this, are human factor data such as dimensions, ranges of motion, reach, etc. for all types of disabled, for use in the design of barrier free environment in the home, work place and community. This should include life styles, goals, attitudes and motivation for all disabilities including the deaf, the blind and the aged. (OHDS-2 and 3)

F. There are some knowledge gaps in the area of transportation. Guidelines are needed for the manufacturer of personal licensed vehicles and modifications to vehicles. A standard means for securing wheelchairs in private and public vehicles is required. (OHDS-2 and 3)

G. From the established Rehabilitation Engineering Centers, and the projects funded by the Rehabilitation Services Administration, the Veterans Administration, from private industry and from research and development in other countries, new products, new devices and new techniques are appearing on the rehabilitation scene. Some of these are relatively simple and inexpensive items; others although expensive and complex may have profound effect on the lives of thousands of individuals. In all cases, in order to determine the safety, the effectiveness, the durability and recommended application, some type of testing or evaluation is indicated. This usually takes the form of laboratory testing or clinical evaluation or both. The laboratory testing is carried out to determine such things as strength and durability and to verify specifications and technical performance. The clinical evaluation is carried out to determine the performance, suitability, acceptability and durability for specific patient applications. (OHDS-3)

H. During the past several years, considerable emphasis has been placed on research and development with the result that many new and promising aids and techniques have appeared on the scene. At the same time, through the Rehabilitation Act of 1973 and subsequent revisions, public interest and government responsibility has been directed towards the rehabilitation of the physically disabled with access to public transportation, schooling and vocational pursuits. Unfortunately no similar emphasis has been directed towards the development of a system for the delivery of rehabilitation engineering services. Therefore, with the exception of the traditional areas of prosthetics, orthotics and orthopedics no organized system for the delivery of services exists. Similarly, a concurrent need is to train qualified rehabilitation engineers capable of delivering the necessary rehabilitation engineering knowledge and services being generated by the RSA research activities. (OHDS-2 and 3)

I. There is a lack of information on methods to encourage industry in developing, producing and marketing assistive aids and devices for handicapped individuals. This is a major need which acts as a barrier to the delivery of rehabilitation engineering services. (OHDS-2)

J. In order to improve mobility and independent living of the physically handicapped, more information is needed on wheelchair design, propulsion systems, controls and other adaptations to make them more convenient, comfortable and functional. (OHDS-2)

II. Overview of 1978 Projected Research Activities

Each one of the projected research activities listed below relates directly to a confirmed need described previously. It is anticipated that one new rehabilitation engineering center will be initiated in 1978 on the design and development of sensory aids for the deaf. This need has been expressed by leaders of the deaf community as well as professionals in this field. Projects will also be initiated with NASA on a cost sharing basis in order to utilize their high level of technology as well as spread available funds to their limit. One such project will consist of an experimental living environment designed to eliminate or reduce environmental barriers by utilizing modern technology and revised attitudes and concepts. An expanded clinical evaluation of aids and devices will be initiated to include international as well as domestic aids which are commercially available. Based on a state of the art workshop on wheelchairs, new research and development will be conducted to improve the quality, variety and reliability of wheelchair systems now available to the handicapped population. Research efforts will also be directed towards the expansion of a State-Federal program for the improved delivery of rehabilitation engineering services. At least one project will also be directed to international researchers who have unique expertise in functional electrical stimulation. Finally, a project will address the major problem of stimulating industry to develop, produce and market rehabilitation engineering hardware that shows promise for enhancing the independent living status of severely handicapped persons. Table 1 relates OHDS objectives to the core areas of ongoing research in Rehabilitation Engineering Centers.

III. Recommended Research

Based partly on technical knowledge gaps and partly on a thorough examination of the needs of handicapped individuals, there are several recommended areas of research, development and clinical evaluation in rehabilitation engineering which will be pursued during the next several years. These are listed under the headings 1) Basic Research, and 2) Development of Devices and Techniques.

A. Basic Research

Concerning Activities of the Blind

- Study high performance braille readers and apply this knowledge in teaching others.
- Investigate means for improving conceptual development in blind children.

TABLE I

Relationship of Rehabilitation Engineering Centers Core Areas to OHDS Objectives

Center	Core	OHDS Objective
.Rancho Los Amigos	Functional Electrical Stimulation	2
.Kruger-Moss	Locomotion	2
.Harvard-MIT	Neuromuscular Control	2
.Texas Institute for Rehabilitation Research	Pressure on Tissue	2
.Northwestern University	Internal Joint Placement	2
.University of Iowa	Low Back Pain	2
.Smith Kettlewell Institute of Visual Sciences	Sensory Aids for the Blind	2
.University of Tennessee	Mobility Systems	2
.Case Western Reserve	Upper Extremity Prosthetics	2
.Cerebral Palsy Assn. of Kansas	Vocational Aspects of Rehabilitation	2 and 3
.University of Michigan	Transportation for Handicapped	2
.University of Virginia	Spinal Cord Injury	2 and 3
.Tufts University	Communication Systems	2
.New York University	Clinical Evaluation of Assistive Devices	3

.Develop a comprehensive theory of the mobility process of the blind pedestrian.

Concerning sensory stimulation substitute for the loss of sight, hearing, proprioception, etc.

.Investigate the encoding/decoding process of the human nervous system.

.Conduct studies pertaining to cutaneous sense characteristics.

.Investigate sensory feedback as a training and functional aids for the physically disabled.

Concerning the electrical stimulation of paralyzed muscle

.Determine the causes and prevention of tissue damage from implanted electrodes.

.Determine the mechanism of muscle fatigue.

.Determine optimum electrical and electrode characteristics.

.Study the biocybernetic considerations in the controlled stimulation of muscle fibres and nerves.

.Study the effect of electrical stimulation on spasticity.

.Study the carry-over effects of electrical stimulation.

.Study the effects of electrical stimulation or the central nervous system.

.Investigate alternate methods of stimulation - tactile, thermal, etc.

Concerning Tissue Mechanics

.Investigate the significance of temperature profiles (thermography, etc.)

.Study the effect on tissue of static and dynamic loading, including shear.

.Study the effect of tissue depth and composition in resisting static and dynamic loading.

Concerning Surgical Procedures

.Develop methods for monitoring spinal activity.

.Develop improved methods for spinal stabilization following trauma.

.Determine the causes of failure in joint implants.

.Continue investigations into direct skeletal attachment for external prostheses.

.Investigate osteotomy procedures in upper limb amputees to improve suspension and control.

Concerning Biomechanics

.Determine the forces and motion patterns (including ADL) in normal joints and joints with implants.

.Develop methods for the structural analysis of implants and joints.

.Develop better methods for measuring energy costs of physical activity.

.Investigate materials for implants.

.Conduct workshops to establish standards for obtaining and reporting biomechanical data.

B. Devices and Techniques

For Use at the Scene of an Accident

.Rescue and extricating apparatus.

.Spinal support systems for use in transit.

.Monitoring and communication equipment for use at the scene and in transit.

.System design for all rescue and transit apparatus.

Mobility Needs

- Transfer methods in home and public.
- Improved wheelchairs - better durability, less weight and bulk.
- Wheelchairs suitable for use in a van.
- Powered wheelchairs with better performance, transportability and control.
- Wheelchair securement system for use in vans and public transit.
- Standards and prescription criteria for hand controls, door openings, seat adjustments, etc., for automobiles.
- Investigation into the modular concept (compatability) in mobility system.
- Means for removal or overcoming architectural barriers.

Home and Work Aids

- Environmental control systems using micro-computers.
- Devices for eating, reading, etc.
- Manipulators or robot arms, possibly wheelchair mounted, for severely disabled.
- Beds and seating to allow change in position and avoid pressure sores.
- Devices to enhance the work potential of handicapped individuals.

Aids for the Blind

- Smaller, lighter, weatherproof mobility aids.
- New concepts for the next generation of mobility aids for the blind and deaf-blind.
- Medical aids for the blind.
- ADL, recreational, educational and occupational aids for the young and old with visual problems.

.Less expensive, more attactive devices for low vision problems.

.Faster, quieter braille writers (paperless braillers).

.Continued development of reading machines.

Aids for the Deaf

.Speech analyzing hearing aids with special pre-processing capabilities.

.Improved hearing test procedures and test batteries for diagnoses and prescription.

.Improved quality of synthetic speech.

.Development of a device to process environmental sounds, other than speech, to enable their identification by the deaf.

.Development of an adjunctive device to supplement lip reading or residual hearing.

Upper Limb Prosthetics

.Improved body powered mechanical hand.

.Improved elbow joints, including joints for endoskeletal prostheses.

.Multifunctional control system for above elbow, shoulder disarticulation and fore quarter amputations.

.Frame type sockets for shoulder disarticulation and fore quarter amputations.

.Lighter weight prostheses, possibly using polypropylene.

.Improved harnessing and power transmission system.

.Hybrid body and external power systems.

.External power systems with sensory feedback.

Lower Limb Prosthetics

.Adjustable sockets.

.Artificial foot studies (improved SACH).

.Improved joints for hip disarticulation and hemipelvectomy prostheses.

.Improved knee joints.

.Prostheses that can be adjusted in alignment by the amputee or remotely by a prosthetist.

.Feedback and other training procedures for above-knee amputees.

.Voluntary control knee systems.

.Survey of P.T.B. modifications.

Upper Limb Orthotics

.Study of prehension patterns of quadraplegics.

.Neuro-electric control systems for quadraplegics.

.Hybrid systems (external powered and body powered functional arm orthoses).

.Sensory control for flail arms in ambulatory patients.

.Orthoses for C-6 level quadraplegics.

Lower Limb Orthotics

.Improved joints - especially knee joints.

.Joint systems to control spasticity.

.Shoes as part of the orthotic system.

Service Delivery

.Conduct a pilot study of a service delivery system using existing prosthetic and orthotic facilities. Joint funding by private

industry and government would provide key personnel for patient services and consulting service to government agencies and third party payees.

- Conduct a pilot study of a service delivery system, using pool funding from various agencies to avoid procurement delays. Delays often occur when it cannot be decided who should pay for necessary services. The program calls for the pooling of funds from all involved agencies with money immediately available upon prescription. The division of expenses would be sorted out at a later date.

IV. Evaluation Projects

The Rehabilitation Engineering Program is currently being evaluated under a FY '77 RSA Evaluation contract. No new evaluations are planned.

[4110-92]

Office of Human Development Services

[Program Announcement No. 13627-781]

REHABILITATION ENGINEERING AND SPINAL CORD INJURY RESEARCH

Announcement of Grants for FY 79

The Rehabilitation Services Administration, Office of Human Development Services, announces that applications will be accepted until June 20, 1978 from State Vocational Rehabilitation Agencies and other public or nonprofit agencies and organizations wishing to compete for grants in fiscal year 1978 under the Rehabilitation Engineering and Spinal Cord Injury Research Programs authorized by Section 202 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 762).

All applications received by the closing date which are complete and conform to the requirements of this program announcement will be accepted for review and considered for an award.

Regulations applicable to these programs were published in the FEDERAL REGISTER in Subparts A and D of Chapter XIII of Title 45 of the Code of Federal Regulations (45 CFR, Part 1362) on November 25, 1975.

Scope of this Program Announcement. This program announcement identifies program objectives and funding priorities of the Rehabilitation Engineering and Spinal Cord Injury Research Programs for fiscal year 1978, solicits grant applications responsive to these objectives and priorities and establishes criteria upon which applications will be evaluated.

A. PROGRAM PURPOSE

The purpose of the Rehabilitation Engineering Research Program is to integrate this scientific knowledge in medicine, engineering and related sciences to help in resolving the vocational and self-care problems of the severely handicapped. The goal is to systematically address the problems of the severely handicapped by making full use of existing or new technology.

The purpose of the Spinal Cord Injury Research Program is to conduct research, initiate demonstration projects and carry out related scientific activities in association with Sec. 304(b)(1), model spinal cord injury systems, which bear directly on the development of methods, procedures and devices to assist in the provision of vocational rehabilitation services to individuals with spinal cord injuries.

B. ELIGIBLE APPLICANTS

Any State vocational rehabilitation agency and other public or nonprofit agency or organization, including institutions of higher education may apply for a grant in response to this announcement.

C. AVAILABLE FUNDS

The Rehabilitation Services Administration expects to award an estimated $650,000 for new and competing extension grants in Engineering and $750,000 for new and competing extension grants in Spinal Cord Injury during fiscal year 1978. It is expected that between 3 and 5 grants will be awarded in Engineering, and four grants in Spinal Cord Injury from the monies available. Generally, projects will be supported for periods of one to five years; however, funds currently available are for the first year of the project. Support for additional years of the project will depend on funds available and satisfactory project performance.

D. PROJECT OBJECTIVES AND FUNDING PRIORITIES

The Rehabilitation Services Administration has developed the following project objectives and funding priorities for fiscal year 1978. Applications submitted in response to this announcement should address a specific objective and priority. The number after each priority should be included in request for additional information and application kits.

REHABILITATION ENGINEERING

There will be two types of awards: individual project grants and rehabilitation engineering center grants. As authorized by Section 202(a) of the Rehabilitation Act of 1973, as amended, individual project grants of national scope include proposals for the planning and conducting of research and demonstrations and related activities which bear directly on the development of methods, procedures and devices to assist in the provision of vocation rehabilitation services to handicapped individuals; and for studies and analyses of architectural and engineering designs adapted to meet the needs of the handicapped. These grants will have a project duration ranging from one to three years, but the support for each year beyond the first is based on the availability of funds and satisfactory progress.

The second type of award will be the rehabilitation engineering research center grants which are authorized in Section 202(b)(2). Their purpose is to: Develop innovative methods of applying advanced technology, scientific achievement, and psychological and social knowledge to solve rehabilitation problems by conducting research designed to produce new knowledge, equipment, devices and systems needed by the handicapped including the stimulation, production and distribution of aids and devices to benefit the severely handicapped. rehabilitation engineering research centers must be located in a clinical environment where patients are being provided continuing rehabilitation services, affiliated with a university that has a recognized level of excellence in medicine, engineering and allied sciences; and the facility must have already demonstrated a high level of expertise in rehabilitation engineering research. These grants may be made for a maximum of five years duration, but the

support for each year beyond the first is based on the availability of funds and satisfactory progress.

Program objectives of the rehabilitation engineering program include the following:

1. To improve the quality of life of the physically handicapped through a total approach to rehabilitation, combining medicine, engineering, and related sciences.

2. To perform research and development in pioneering areas in which a Center has developed unique capabilities.

3. To collaborate with laboratories and industry to carry new devices and techniques through all phases of research, development, and clinical evaluation to active production and patient use.

4. To make available new devices and techniques to patients referred to the Center.

5. To educate clinicians and other professionals to use these new developments and the need to provide these services and techniques to patients throughout the nation.

6. To cooperate with other Centers in the clinical evaluation of their developments.

7. To provide an environment for education of physicians, engineers, and other professional persons involved in related life, physical, and social sciences.

8. To cooperate, coordinate, transfer, and exchange research findings and information with related centers and other institutions on a continuing basis.

Priorities for rehabilitation engineering research grants for fiscal year 1978 are listed below:

1. Research on communication systems for individuals with Hearing and Speech Impairments. (Applicants should reference priority N-1 when requesting application material).

2. Research and Demonstrations on Delivery of Rehabilitation Engineering Services. (Applicants should reference priority N-2 when requesting application material).

3. Demonstration on Stimulation of Industry for Development Production and Marketing Quality Devices and Equipment for Handicapped Individuals. (Applicants should reference priority N-3 when requesting application material).

REHABILITATION IN SPINAL CORD INJURY

The following are objectives for funding Spinal Cord Injury Projects:

Objective No. 1: To provide definitive new knowledge regarding the natural history and clinical course of urinary tract complications in spinal cord injury including:

a. The study of the dynamics of bladder function.

b. The study of the dynamics of vesico-uretero reflux.

c. The determination of predisposing factors to clinically significant bacterial invasion of the urinary tract, including the effect of host resistance.

d. The study of patterns of long-term pathophysiologic change in kidney and bladder structure and function.

e. The identification and evaluation of urinary calculi formation and optimal approaches to prevention and management.

Funding priority will be given to applications which best address the stated objective. It is expected that three projects will be funded under this objective.

Applicants interested in addressing this objective should reference project numbers E-1, E-2, and E-3 when requesting application material.

Objective No. 2: To provide definitive new knowledge regarding the clinical course, prevention and treatment of mass reflex spasm and spasticity including:

a. The study and evaluation in a comprehensive medical rehabilitation environment of existing invasive techniques in a retrospective manner including rhizotomy, myelotomy, etc.

b. The review and evaluation of indications, contraindications, and complications of available non-invasive techniques such as physical modalities, biofeedback, etc.

c. The clinical evaluation of the newer invasive and non-invasive techniques, such as radio frequency rhizotomy and subdural electrical stimulation and apply these, if successful, in a comprehensive medical rehabilitation environment.

Funding priority will be given to the application which best addresses the stated objective. Applicants interested in addressing this objective should reference project number E-4 when requesting application material.

E. The Application Process

Application Submission: Applications must be submitted on standard forms which may be obtained at the following address: Division of Grants and Contract Management, Office of Human Development Services, Room 1427, 330 C Street SW., Washington, D.C. 20201.

The application shall be executed by an official authorized to act for the applicant agency and to assume the obligations imposed by the terms and conditions of the grant award.

One signed original and two copies of the grant application, including all attachments are required and should be submitted to the Division of Grants and Contract Management, Office of Human Development Services at the address listed above.

It is also requested that an additional copy of the grant application be sent to the cognizant State Vocational Rehabilitation Agency. This Agency reviews the application and forwards its comments to the Commissioner.

Application Consideration: The Commissioner of Rehabilitation Services determines the final action to be taken with respect to each grant application.

All grant applications are subject to a competitive review and evaluation conducted by qualified persons outside Federal employment. The results of the competitive review assist the Commissioner's consideration of the competing applications. This consideration also takes into account the comments of State VR Agencies, the HEW Regional Office and the headquarters program office. Comments on the applications may also be requested from appropriate specialists and consultants inside and outside the Government.

After the Commissioner has reached a decision either to disapprove or not to fund a competing grant application the unsuccessful applicant is notified of that decision.

Grant Awards. The Commissioner makes grant awards consistent with the purposes of the Act, the regulations, and program announcements within the limits of Federal funds available. The official grant award document is the Notice of Grant Awarded. The Notice of Grant Awarded sets forth in writing to the grantee the amount of funds granted, the purpose of the grant, and the terms and conditions of the grant award, the effective date of the award, the budget period for which support is given and the total grantee participation, if any. The initial award also specifies the total project period for which support is contemplated.

F. Criteria for Review and Evaluation of Applications

All new and competing extension applications received in response to this announcement will be reviewed and evaluated against the following criteria:

1. Criteria for Evaluating Rehabilitation Engineering proposals:

a. The relevance of the content of the proposed research to the objectives of the Rehabilitation Act of 1973, as amended, and the fiscal year 1978 objectives of the rehabilitation engineering program;

b. Evidence that the state-of-the-art in the field of rehabilitation engineering research to be investigated is sufficiently developed to provide a high potential for producing relatively immediate benefits to the handicapped;

c. The extent to which the institution has unique capabilities and expertise in the area of research selected for an individual project grant;

d. The clarity of the defined core area of research which will provide the framework for all research, clin-

cal evaluation, training and service delivery functions of that center project;

e. The extent to which the potential rehabilitation engineering research center has or can have strong teaching affiliations with medical, engineering and other allied schools willing to cooperate in this center program;

f. Evidence that grantee has a clinical facility with individuals who have the types of disabilities relating to the core area of research under consideration;

g. The extent to which the potential rehabilitation engineering research center or individual project grantee has the capacity to carry-on continuing education, and otherwise disseminate findings which will impact upon the service delivery system;

h. Extent to which the potential rehabilitation engineering research center is capable and has the expertise to clinically evaluate devices, equipment and techniques developed within that center or elsewhere;

i. Evidence that the potential rehabilitation engineering research center has an understanding and capacity to stimulate industry in developing, producing and marketing the results of research carried on within the center;

j. The soundness of the methodology to be employed in implementing the project and the feasibility of achieving the established objectives;

k. The financial and other resources of the applicant in accomplishing the objectives and the potential for the program to continue beyond the life of the research grant;

l. The extent to which the anticipated cost of the project is reasonable in relation to the expected results;

m. The extent to which the application instructions are adequately addressed, including both the narrative statement and budget justification;

n. The extent to which the proposal provides for an evaluation methodology, including the manner in which such a methodology will be used to measure achievement of the objectives of the research effort;

o. The extent to which the research program is national in scope, has direct applicability to the needs of severely handicapped individuals and the results are transferable to other geographic areas and programs in this country.

2. Criteria for Evaluating Spinal Cord Injury Proposals:

a. The project objectives address the RSA objectives listed above in this program announcement and those statement in the application package relating to the specific funding priority;

b. The project objectives focus on the development of new or innovative techniques to achieve the RSA project objectives;

c. The application contains a substantial plan for dissemination of findings to potential users including feedback mechanisms on use and specific outcomes;

d. The project findings will be presented so that they are immediately implementable;

e. The hypotheses to be tested in each project are clearly stated so that the findings relate directly to the project objectives; f. The application contains a plan for the thorough review and analysis of literature related to the project;

g. The project's proposed design is complete and feasible and includes measurable objectives and an evaluation component;

h. The project's proposed staff is capable; the staffing pattern appropriate and the applicant organization's facilities and resources are adequate;

i. The applicant organization has a good performance record in the conduct of similar and related scientific and clinical objectives;

j. The project's budget is feasible and reasonable and costs are well justified in relation to anticipated project results;

k. The project seems likely to be completed within the proposed time schedule;

l. Projects which will utilize other public resources in addition to this grant) will receive special consideration;

m. The project does not supplant activities which are funded under other Federal programs (DDO, AoA, VA, etc.).

G. Closing Date for Receipt of Applications

Applications are due by close of business (COB) ON June 20, 1978. Applications will be judged on time if:

1. The application was sent by registered or certified mail not later than June 20 as evidenced by the U.S. Postal Service postmark or the original receipt from the U.S. Postal Service;

2. The application was sent by mail and received on or before the closing date in the Department of Health, Education, and Welfare, the Office of Human Development Services or the Rehabilitation Services Administration mailrooms as evidenced by the time date stamp or other documentary evidence of receipt maintained by such mailroom, or

3. The application is hand delivered to the office designated to receive the application in the application instructions. Hand-delivered applications will be accepted no later than COB June 20 in any case.

H. Late Applications

Late applications are not accepted and applicants are notified accordingly.

(Catalog of Federal Domestic Assistance Program Number; 13.627 Rehabilitation Research and Demonstration.)

Dated: March 16, 1978.

Robert R. Humphreys,
Commissioner of Rehabilitation Services.

Approved: March 23, 1978.

Arabella Martinez,
Assistant Secretary for Human Development Services.

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