

*Assistive Devices for Severe Speech  
Impairments*

December 1983

NTIS order #PB84-175371



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HEALTH TECHNOLOGY CASE STUDY 26:

# Assistive Devices for Severe Speech Impairments

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DECEMBER 1983

This case study was performed as a part of OTA's Assessment of  
  
Technology and Handicapped People

Prepared for OTA by:  
Judith Randal, Congressional Fellow  
Office of Technology Assessment, U.S. Congress

OTA Case Studies are documents containing information on a specific medical technology or area of application that supplements formal OTA assessments. The material is not normally of as immediate policy interest as that in an OTA Report, nor does it present options for Congress to consider.

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**Recommended Citation:**

*Health Technology Case Study 26: Assistive Devices for Severe Speech Impairments* (Washington, D. C.: U.S. Congress, Office of Technology Assessment, OTA-HCS-26, December 1983). This case study was performed as part of OTA's assessment of *Technology and Handicapped People*.

Library of Congress Catalog Card Number 83-600546

For sale by the Superintendent of Documents,  
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# Preface

*Assistive Devices for Severe Speech Impairments* is Case Study 26 in OTA's Health Technology Case Study Series. It is part of OTA's project on *Technology and Handicapped People*, requested by the Senate Committee on Labor and Human Resources. A listing of other case studies in the series is included at the end of this preface.

OTA case studies are designed to fulfill two functions. The primary purpose is to provide OTA with specific information that can be used in forming general conclusions regarding broader policy issues. The first 19 cases in the Health Technology Case Study Series, for example, were conducted in conjunction with OTA's overall project on *The Implications of Cost-Effectiveness Analysis of Medical Technology*. By examining the 19 cases as a group and looking for common problems or strengths in the techniques of cost-effectiveness or cost-benefit analysis, OTA was able to better analyze the potential contribution that those techniques might make to the management of medical technology and health care costs and quality.

The second function of the case studies is to provide useful information on the specific technologies covered. The design and the funding levels of most of the case studies are such that they should be read primarily in the context of the associated overall OTA projects. Nevertheless, in many instances, the case studies do represent extensive reviews of the literature on the efficacy, safety, and costs of the specific technologies and as such can stand on their own as a useful contribution to the field.

Case studies are prepared in some instances because they have been specifically requested by congressional committees and in others because they have been selected through an extensive review process involving OTA staff and consultations with the congressional staffs, advisory panel to the associated overall project, the Health Program Advisory Committee, and other experts in various fields. Selection criteria were developed to ensure that case studies provide the following:

- examples of types of technologies by function (preventive, diagnostic, therapeutic, and rehabilitative);
- examples of types of technologies by physical nature (drugs, devices, and procedures);
- examples of technologies in different stages of development and diffusion (new, emerging, and established);
- examples from different areas of medicine (e.g., general medical practice, pediatrics, radiology, and surgery);
- examples addressing medical problems that are important because of their high frequency or significant impacts (e.g., cost);
- examples of technologies with associated high costs either because of high volume (for low-cost technologies) or high individual costs;
- examples that could provide information material relating to the broader policy and methodological issues being examined in the particular overall project; and
- examples with sufficient scientific literature.

Case studies are either prepared by OTA staff, commissioned by OTA and performed under contract by experts (generally in academia), or written by OTA staff on the basis of contractors' papers.

OTA subjects each case study to an extensive review process. Initial drafts of cases are reviewed by OTA staff and by members of the advisory panel to the associated project. For commissioned cases, comments are provided to authors, along with OTA's suggestions for revisions. Subsequent drafts are sent by OTA to numerous experts for review and comment. Each case is seen by at least 30 reviewers, and sometimes by 80 or more outside reviewers. These individuals may be from relevant Government agencies, professional societies, consumer and public interest groups, medical practice, and academic medicine. Academicians such as economists, sociologists, decision analysts, biologists, and so forth, as appropriate, also review the cases.

Although cases are not statements of official OTA position, the review process is designed to

satisfy OTA's concern of each case study's scientific quality and objectivity. During the various stages of the review and revision process, there-

fore, OTA encourages, and to the extent possible requires, authors to present balanced information and recognize divergent points of view.

#### Health Technology Case Study Series<sup>a</sup>

Case Study Series number	Case study title; author(s); OTA publication number <sup>b</sup>	Case Study Series number	Case study title; author(s); OTA publication number <sup>b</sup>
1	Formal Analysis, Policy Formulation, and End-Stage Renal Disease; Richard A. Rettig (OTA-BP-H-9 (1)) <sup>c</sup>		William B. Stason and Eric Fortess (OTA-BP-H-9(13))
2	The Feasibility of Economic Evaluation of Diagnostic Procedures: The Case of CT Scanning; Judith L. Wagner (OTA-BP-H-9(2))	14	Cost Benefit/Cost Effectiveness of Medical Technologies: A Case Study of Orthopedic Joint Implants; Judith D. Bentkover and Philip G. Drew (OTA-BP-H-9(14))
3	Screening for Colon Cancer: A Technology Assessment; David M. Eddy (OTA-BP-H-9(3))	15	Elective Hysterectomy: Costs, Risks, and Benefits; Carol Korenbrot, Ann B. Flood, Michael Higgins, Noralou Roos, and John P. Bunker (OTA-BP-H-9(15))
4	Cost Effectiveness of Automated Multichannel Chemistry Analyzers; Milton C. Weinstein and Laurie A. Pearlman (OTA-BP-H-9 (4))	16	The Costs and Effectiveness of Nurse Practitioners; Lauren LeRoy and Sharon Solkowitz (OTA-BP-H-9(16))
5	Periodontal Disease: Assessing the Effectiveness and Costs of the Keyes Technique; Richard M. Scheffler and Sheldon Rovin (OTA-BP-H-9(5))	17	Surgery for Breast Cancer; Karen Schachter Weingrod and Duncan Neuhauser (OTA-BP-H-9(17))
6	The Cost Effectiveness of Bone Marrow Transplant Therapy and Its Policy Implications; Stuart O. Schweitzer and C. C. Scalzi (OTA-BP-H-9(6))	18	The Efficacy and Cost Effectiveness of Psychotherapy; Leonard Saxe (Office of Technology Assessment) (OTA-BP-H-9( 18)) <sup>d</sup>
7	Allocating Costs and Benefits in Disease Prevention Programs: An Application to Cervical Cancer Screening; Bryan R. Luce (Office of Technology Assessment) (OTA-BP-H-9(7))	19	Assessment of Four Common X-Ray Procedures; Judith L. Wagner (OTA-BP-H-9( 19)) <sup>e</sup>
8	The Cost Effectiveness of Upper Gastrointestinal Endoscopy; Jonathan A. Showstack and Steven A. Schroeder (OTA-BP-H-9 (8))	20	Mandatory Passive Restraint Systems in Automobiles: Issues and Evidence; Kenneth E. Warner (OTA-BP-H-15(20)) <sup>f</sup>
9	The Artificial Heart: Cost, Risks, and Benefits; Deborah P. Lubeck and John P. Bunker (OTA-BP-H-9(9))	21	Selected Telecommunications Devices for Hearing-Impaired Persons; Virginia W. Stern and Martha Ross Redden (OTA-BP-H-16(21)) <sup>g</sup>
10	The Costs and Effectiveness of Neonatal Intensive Care; Peter Budetti, Peggy McManus, Nancy Barrant, and Lu Ann Heinen (OTA-BP-H-9 (1 O))	22	The Effectiveness and Costs of Alcoholism Treatment; Leonard Saxe, Denise Dougherty, Katharine Esty, and Michelle Fine (OTA-HCS-22)
11	Benefit and Cost Analysis of Medical Interventions: The Case of Cimetidine and Peptic Ulcer Disease; Harvey V. Fineberg and Laurie A. Peadman (OTA-BP-H-9(11))	23	The Safety, Efficacy, and Cost Effectiveness of Therapeutic Apheresis; John C. Langenbrunner (Office of Technology Assessment) (OTA-HCS-23)
12	Assessing Selected Respiratory Therapy Modalities: Trends and Relative Costs in the Washington, D.C. Area; Richard M. Scheffler and Morgan Delaney (OTA-Bp-H-9( 12))	24	Variation in Length of Hospital Stay: Their Relationship to Health Outcomes; Mark R. Chassin (OTA-HCS-24)
13	Cardiac Radionuclide Imaging and Cost Effectiveness;	25	Technology and Learning Disabilities; Candis Cousins and Leonard Duhl (OTA-HCS-25)
		26	Assistive Devices for Severe Speech Impairments; Judith Randal (Office of Technology Assessment) (OTA-HCS-26)

<sup>a</sup>Available for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C., 20402, and by the National Technical Information Service, 5285 Port Royal Road, Springfield, Va., 22161. Call OTA's Publishing Office (224-8996) for availability and ordering information.

<sup>b</sup>Original publication numbers appear in parentheses.

<sup>c</sup>The first 17 cases in the series were 17 separately issued cases in *Background Paper #2: Case Studies of Medical Technologies*, prepared in conjunction with OTA's August 1980 report *The Implications of Cost-Effectiveness Analysis of Medical Technology*.

<sup>d</sup>Background Paper #1 to *The Implications of Cost-Effectiveness Analysis of Medical Technology*.

<sup>e</sup>Background Paper #5 to *The Implications of Cost-Effectiveness Analysis of Medical Technology*.

<sup>f</sup>Background paper #1 to OTA's May 1982 report *Technology and Handicapped People*.

<sup>g</sup>Background Paper #2 to *Technology and Handicapped People*.

## OTA Staff for Case Study #26

H. David Banta, *Assistant Director, OTA  
Health and Life Sciences Division \**

Clyde J. Behney, *Health Program Manager*

Clyde J. Behney, *Project Director*

Anne Kesselman Burns, *Analyst*

Kerry Britten Kemp, *Editor*

Ann Covalt, *Contractor*

Virginia Cwalina, *Administrative Assistant*

Mary E. Harvey, *Secretary*

Jennifer Nelson, *Secretary*

## OTA Publishing Staff

John C. Holmes, *Publishing Officer*

John Bergling	Kathie S. Boss	Debra M. Datcher	Joe Henson
Glenda Lawing	Linda A. Leahy	Cheryl J. Manning	

---

\*Until August 1983.

# Advisory Panel on Technology and Handicapped People

Daisy Tagliacozzo, *Panel Chair*  
*Department of Sociology, University of Massachusetts, Harbor Campus*

Miriam K. Bazelon  
*Washington, D.C.*

Tom Beauchamp  
*Kennedy Institute—Center for Bioethics*  
*Georgetown University*

Monroe Berkowitz  
*Bureau of Economic Research*  
*Rutgers University*

Henrik Blum  
*University of California, Berkeley*

Frank Bowe  
*Woodmere, N. Y.*

Jim Gallagher  
*Martha Porter Graham Center*  
*University of North Carolina, Chapel Hill*

Melvin Glasser  
*Committee for National Health Insurance*

Ralf Hotchkiss  
*Oakland, Calif.*

John Kimberly  
*The Wharton School*  
*University of Pennsylvania*

Robert Leopold  
*Department of Psychiatry*  
*Hospital of the University of Pennsylvania*

LeRoy Levitt  
*Mount Sinai Hospital*

A. Malachi Mixon, III  
*Invacare Corp.*

Jacquelin Perry  
*Rancho Los Amigos Hospital*

Barbara W. Sklar  
*Mount Zion Hospital*

William Stason  
*Veterans Administration and Harvard School of*  
*Public Health*

Gregg Vanderheiden  
*Trace Research and Development Center*  
*University of Wisconsin-Madison*

Michael Zullo  
*Corporate Partnership Program*  
*U.S. Council for International Year of*  
*Disabled Persons*

## Acknowledgments

Many people provided valuable assistance in the preparation of this case study. While OTA must assume ultimate responsibility for its content, it greatly appreciates the contributions of—among many others—the following individuals:

David Beukelman  
Director, Speech Pathology  
University of Washington  
Medical Center  
Seattle, Wash.

Colette Coleman  
Professor of Speech Pathology  
California State University  
Sacramento, Calif.

Yvonne Danjuma  
Graduate Assistant  
Office of Programs for Handicapped Students  
Michigan State University  
East Lansing, Mich.

Charles Diggs  
Director, Speech-Language Pathology Liaison Branch  
American Speech-Language-Hearing Association  
Rockville, Md.

Allen T. Dittmann  
Chief, Research Projects Section  
Special Education Programs  
U.S. Department of Education  
Washington, D.C.

John Eulenberg  
Associate Professor of Computer Science  
Audiology and Speech Sciences and Linguistics  
Artificial Language Laboratory  
Computer Science Department  
Michigan State University  
East Lansing, Mich.

Alexandra Enders O.T.R.  
Coordinator Information Dissemination  
Rehabilitation Engineering Center  
Children's Hospital at Stanford  
Palo Alto, Calif.

Cheri Florance  
Department of Speech Therapy  
St. Anthony's Hospital  
Columbus, Ohio

Richard Foulds  
Director  
Rehabilitation Engineering Center  
Tufts University  
Boston, Mass.

Carol Galaty  
Director, CHAMPUS Liaison Office  
Department of Defense  
Washington, D.C.

Bruce Gans  
Chairman, Department of Rehabilitation Medicine  
New England Medical Center  
Boston, Mass.

E. Paul Goldenberg  
Waban, Mass.

Anna Hofmann  
Market Researcher  
Phonic Ear, Inc.  
Mill Valley, Calif.

Mr. and Mrs. Richard Hoyt  
Westfield, Mass.

Arlene Kraat  
Speech and Hearing Center  
Queens College  
Flushing, N.Y.

Maurice LeBlanc  
Director of Research  
Rehabilitation Engineering Center  
Children's Hospital at Stanford  
Palo Alto, Calif.

Christy Ludlow  
Director  
Division of Communication Disorders  
National Institute of Neurological and Communicative  
Disorders and Stroke  
National Institutes of Health  
Bethesda, Md.

Nola Marriner  
Department of Speech and Hearing  
University of Washington  
Seattle, Wash.

Judith McDonald  
Department of Speech and Hearing  
University of Washington  
Seattle, Wash.

Shirley McNaughton  
Director  
Blissymbolics Institute  
Toronto, Canada

Laura F. Meyers  
Speech Communication Research Laboratory  
University of California  
Los Angeles, Calif.

Judy Montgomery  
Director, Non-Oral Communications for Fountain Valley  
School District  
Fountain Valley, Calif.

Rochelle Moss  
Director  
National ALS Foundation  
New York, N.Y.



Robert Munzer  
Chief Neurological Devices Branch  
Division of Anesthesiology and Neurology Devices  
Food and Drug Administration  
Rockville, Md.

Carol Nugent  
Director, Speech and Language Pathology  
Good Samaritan Hospital  
Portland, Oreg.

Ralph Naunton  
Director, Communicative Disorders Program  
National Institute of Neurological and Communicative  
Disorders and Stroke  
National Institutes of Health  
Bethesda, Md.

Gail Pickering  
Speech Pathologist  
Northridge Hospital Medical Center  
Northridge, Calif.

Barry Romich  
President  
Prentke-Romich Co.  
Shreve, Ohio

Lawrence Scadden  
Arlington, Va.

Pamela Schiffmacher  
Director, Speech Pathology  
Northridge Hospital Medical Center  
Northridge, Calif.

Howard S. Shane  
Director, Communication Enhancement  
The Children's Hospital  
Boston, Mass.

Robert J. Slater  
Director, Medical and Community Services Department  
National Multiple Sclerosis Society  
New York, N.Y.

Barbara C. Sonies  
Speech Pathologist  
Clinical Center  
National Institutes of Health  
Bethesda, Md.

Leon S. Sternfeld  
Medical Director  
United Cerebral Palsy Association  
New York, N.Y.

Christine Thompson  
Trace Research and Development Center for  
the Severely Communicatively Handicapped  
University of Wisconsin  
Madison, Wis.

Gregg C. Vanderheiden  
Director, Trace Research and Development Center for  
the Severely Communicatively Handicapped  
University of Wisconsin  
Madison, Wis.

Larry Weiss  
President  
Zygo Industries  
Portland, Oreg.