*The Cost Effectiveness of Digital Subtraction Angiography in the Diagnosis of Cerebrovascular Disease*

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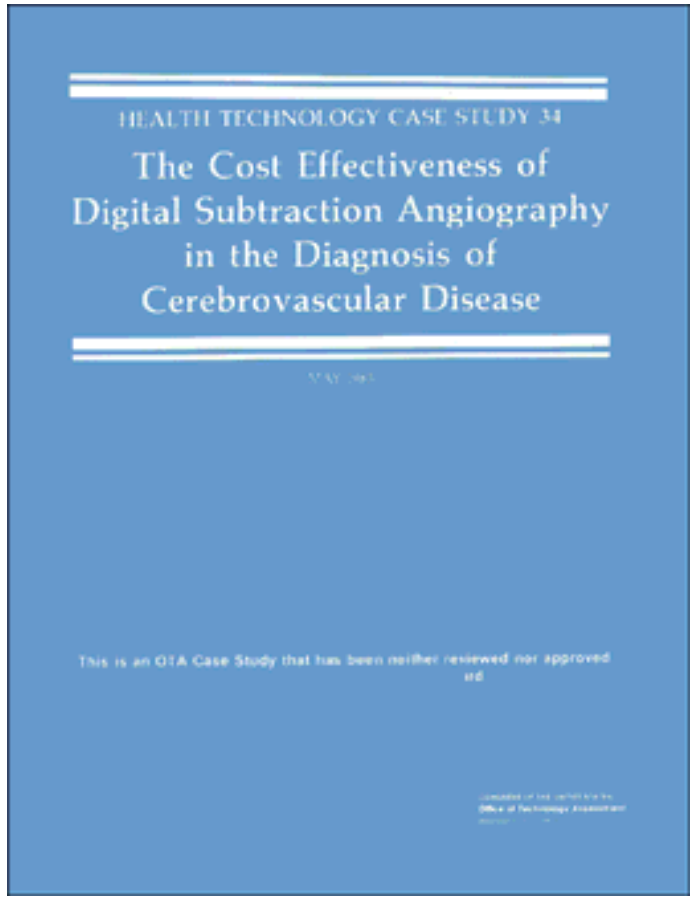

## HEALTH TECHNOLOGY CASE STUDY 34

# The Cost Effectiveness of Digital Subtraction Angiography in the Diagnosis of Cerebrovascular Disease

**MAY 1985**

This case study was performed as part of OTA's Assessment of

Medical Technology and Costs of the Medicare Program

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**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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# Preface

*The Cost Effectiveness of Digital Subtraction Angiography in the Diagnosis of Cerebrovascular Disease* is Case Study 34 in OTA's Health Technology Case Study *Series.* This case study has been prepared in connection with OTA's project on *Medical Technology and Costs of the Medicare Program,* which was requested by the House Committee on Energy and Commerce and its Subcommittee on Health and the Environment and the Senate Committee on Finance, Subcommittee on Health. 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 with each case study's scientific quality and objectivity. During the various stages of the review and revision process, therefore, OTA encourages, and to the extent possible requires, authors to present balanced information and recognize divergent points of view.

## Health Technology Case Study Series[a]

| Case Study Series No. | Case study title; author(s); OTA publication number[b] |
|---|---|
| 1 | Formal Analysis, Policy Formulation, and End-Stage Renal Disease; Richard A. Rettig (OTA-BP-H-9(1))[c] |
| 2 | The Feasibility of Economic Evaluation of Diagnostic Procedures: The Case of CT Scanning; Judith L. Wagner (OTA-BP-H-9(2)) |
| 3 | Screening for Colon Cancer: A Technology Assessment; David M. Eddy (OTA-BP-H-9(3)) |
| 4 | Cost Effectiveness of Automated Multichannel Chemistry Analyzers; Milton C. Weinstein and Laurie A. Pearlman (OTA-BP-H-9(4)) |
| 5 | Periodontal Disease: Assessing the Effectiveness and Costs of the Keyes Technique; Richard M. Scheffler and Sheldon Rovin (OTA-BP-H9(5)) |
| 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)) |
| 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)) |
| 8 | The Cost Effectiveness of Upper Gastrointestinal Endoscopy; Jonathan A. Showstack and Steven A. Schroeder (OTA-BP-H-9(8)) |
| 9 | The Artificial Heart: Cost, Risks, and Benefits; Deborah P. Lubeck and John P. Bunker **(O-I-A-BP-H-9(9))** |
| 10 | The Costs and Effectiveness of Neonatal Intensive Care; Peter Budetti, Peggy McManus, Nancy Barrand, and Lu Ann Heinen (OTA-BP-H-9(1O)) |
| 11 | Benefit and Cost Analysis of Medical Interventions: The Case of Cimetidine and Peptic Ulcer Disease; Harvey V. Fineberg and Laurie A. Pearlman **(OTA-BP-H-9(11))** |
| 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))** |
| 13 | Cardiac Radionuclide Imaging and Cost Effectiveness; William B. Stason and Eric Fortess (OTA-BP-H-9(13)) |
| 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)) |
| 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)) |
| 16 | The Costs and Effectiveness of Nurse Practitioners; Lauren LeRoy and Sharon Solkowitz (OTA-BP-H-9(16)) |
| 17 | Surgery for Breast Cancer; Karen Schachter Weingrod and Duncan Neuhauser (OTA-BP-H-9(17)) |
| 18 | The Efficacy and Cost Effectiveness of Psychotherapy; Leonard Saxe (Office of Technology Assessment) (OTA-BP-H-9(18))[d] |
| 19 | Assessment of Four Common X-Ray Procedures; Judith L. Wagner (OTA-BP-H-9(19))[e] |
| 20 | Mandatory Passive Restraint Systems in Automobiles: Issues and Evidence; Kenneth E. Warner (OTA-BP-H-15(20))[f] |
| 21 | Selected Telecommunications Devices for Hearing-Impaired Persons; Virginia W. Stern and Martha Ross Redden (OTA-BP-H-16(21))[g] |
| 22 | The Effectiveness and Costs of Alcoholism Treatment; Leonard Saxe, Denise Dougherty, Katharine Esty, and Michelle Fine (OTA-HCS-22) |
| 23 | The Safety, Efficacy, and Cost Effectiveness of Therapeutic Apheresis; John C. Langenbrunner (Office of Technology Assessment) (OTA-HCS-23) |
| 24 | Variation in Length of Hospital Stay: Their Relationship to Health Outcomes; Mark R. Chassin (OTA-HCS-24) |
| 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) |
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| 28 | Intensive Care Units (ICUs): Clinical Outcomes, Costs, and Decisionmaking; Robert A. Berenson (OTA-HCS-28) |
| 29 | The Boston Elbow; Sandra J. Tanenbaum (OTA-HCS-29) |
| 30 | The Market for Wheelchairs: Innovations and Federal Policy; Donald S. Shepard and Sarita L. Karen (OTA-HCS-30) |
| 31 | The Contact Lens Industry: Structure, Competition, and Public Policy; Leonard G. Schifrin with William J. Rich (OTA-HCS-31) |
| 32 | The Hemodialysis Equipment and Disposable Industry; Anthony A. Romeo (OTA-HCS-32) |
| 33 | Technologies for Managing Urinary Incontinence; (OTA-HCS-33) |
| 34 | The Cost Effectiveness of Digital Subtraction Angiography in the Diagnosis of Cerebrovascular Disease; Matthew Menken, Gordon H. DeFriese, Thomas R. Oliver, and Irwin Litt (OTA-HCS-34) |

[a] Available for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC, **20402**, and by the National Technical Information Service, **5285** Port Royal Rd., Springfield, VA, **22161.** Call OTA's Publishing Office **(224-8996)** for availability and ordering information.

[b] Original publication numbers appear in **parentheses.**

[c] 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.***

[d] Background paper #3 t. The *Implications of Cost-Effectiveness Analysis of* ***Medical Technology,***

[e] Background Paper #5 to ***The Implications of Cost-Effectiveness Analysis of Medical Technology.***

[f] Background paper #1 to OTA's May 1982 report *Technology and Handicapped People.*

[g] Background Paper #2 to ***Technology and Handicapped People.***

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[1] Until September 1984
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[3] Since March 1985
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[5] Since February 1985
[6] Since October 1984

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