

CONTENTS

<i>Chapter</i>		<i>Page</i>
1.	SUMMARY	3
	Findings	6
	Policy Problems Identified	9
	Policy Alternatives.	10
	Scope of the Study	11
	Organization of the Report.	12
2.	BACKGROUND.	15
	Principles of CT Scanning	15
	Operation of the CT Scanner	16
	Development of the CT Scanner.	19
3.	EFFICACY AND SAFETY	27
	The Issue of Efficacy.	27
	Evidence of Efficacy of CT Scanners.	29
	Safety of CT Scanners	38
	Federal Policies Concerning Efficacy and Safety.	39
	Shortcomings of Efficacy and Safety Policies	42
4.	NUMBER AND DISTRIBUTION	47
	Experience With CT Scanning	47
	Governmental and Nongovernmental Policies	54
	Federal Policies in Practice	59
	Shortcomings of Planning Policies	62
5.	PATTERNS OF USE.	67
	Experience With CT Scanning	68
	Federal Policies Concerning Use.	75
	Shortcomings of Utilization Policies	77
6.	REIMBURSEMENT	81
	Experience With CT Scanning	81
	Governmental and Nongovernmental Reimbursement Policies	93
	Shortcomings of Reimbursement Policies.	100
7.	POLICY ALTERNATIVES	105
	1. Information inefficacy and Safety	106
	2. Government Regulatory Policies	110
	3. Financing Methods.	117

APPENDIXES

I.	LOCATION OF CT SCANNERS INSTALLED IN THE UNITED STATES, MAY 1977.	125
II.	THEORETICAL CAPACITY AND ACTUAL OUTPUT OF A CT SCANNER	137
III.	INTERIM PLANNING GUIDELINES FOR COMPUTERIZED TRANSAXIAL TOMOGRAPHY (CTT)	139
IV.	ESTIMATES OF ANNUAL EXPENSES OF OPERATING A CT SCANNER.	143
v.	CALCULATION OF NET EXPENDITURES FOR CT SCANNING, 1976.	145
VI.	FEDERAL DEPARTMENTS AND AGENCIES WITH DIRECT INVOLVEMENT IN CT SCANNING	147
VII.	INTERNATIONAL VIGNETTES	155
VIII.	METHOD OF THE STUDY.	159
	BIBLIOGRAPHY	163

LIST OF TABLES

<i>Table Number</i>		<i>Page</i>
1.	Characteristics of CT Scanners.	21
2.	Diagnostic Accuracy of Head Scanning: Summary of Published Studies.	31
3.	Comparison of CT Head Scanning With Other Neurodiagnostic Procedures	34
4.	Diagnostic Accuracy of Body Scanning: Summary of Initial Results.	37
5.	Radiation Exposures From Use of Some Common Neurodiagnostic Procedures	39
6.	Type and Manufacturer of CT Scanners in Use, May 1977	48
7.	Coordinates of Diffusion Curve	50
8.	Distribution of CT Scanners by State, Region, and Population.	51
9.	Distribution of CT Scanners by Type of Facility.	53
10.	States With Certificate-of-Need Legislation, Section 1122 Agreements, or CT Planning Criteria	56
11.	Criteria Used by Health Planning Agencies in Reviewing Applications for CT Head Scanners, August 1976	61
12.	Some Diseases That Can Be Diagnosed by CT Scanning.	69
13.	Major Diagnostic Uses of Head Scanning	70
14.	Estimated Types of Patients Diagnosed or Referred Annually Who Are Potential Cases for CT Head Scanning	73
15.	Estimated Annual Expenses of Operating a CT Scanner	82
16.	Prices of EMI Scanners, 1973-77	84
17.	Estimated Average Cost of a CT Examination at Different Rates of output	85

<i>Table Number</i>		<i>Page</i>
18.	Fees Charged for CT Examinations, 1976	87
19.	Reported Charges and Estimated Expenses of a CT Head Examination . . .	89
20.	Estimated Average Annual Profits From a CT Head Scanner, 1976.	89
21.	Estimated Expenditures for CT Scanning, 1976.	91
22.	Federal Departments and Agencies With Direct Involvement in CT Scanning	148
23.	Numbers of Cerebral Angiographic and Pneumoencephalographic Examinations in Various Swedish Hospital Categories	158

LIST OF FIGURES

<i>Figure Number</i>		<i>Page</i>
1.	Computed Tomography (CT) Head Scanner	4
2.	Computed Tomography (CT) Body Scanner	5
3.	Schematic Illustration of CT Scanner	16
4.	Normal Brain Cross-Section, CT Scan	17
5.	Examples of Graphically Reported CT Findings	18
6.	Typical Computed Tomography Installation Involving Divided Rooms..	19
7.	Configuration of First and Second Generation CT Scanners With Parallel-Beam Data Acquisition	22
8.	Third Generation CT Scanner Configuration With Fan-Beam Data Acquisition	22
9.	Malignant Lymphoma in Right Frontal Region Before and After Enhancement	32
10.	Cumulative Number of CT Scanners in the United States by Date of Installation	49