

**1987 BOARD MEETINGS**

<b>Meeting Date</b>	<b>Agenda Item</b>	<b>Action</b>	<b>Page</b>
Dec 16	<ul style="list-style-type: none"> <li>● Quarterly Purchasing Report</li> <li>● CUHCC Building Proposal</li> <li>● Magnetic Resonance Imaging Unit II</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Endorsement</li> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>20-32</li> <li>(No #)</li> <li>51-60</li> </ul>
Oct 28	<ul style="list-style-type: none"> <li>● Medical Staff-Hospital Council Credentials Committee</li> <li>● Bylaws Committee Recommendations</li> <li>● Quality Assurance/Utilization Review Plan</li> <li>● First Qtr, 87-88 Bad Debts</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Approval</li> <li>Approval</li> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>23-28</li> <li>29-38</li> <li>91-113</li> </ul>
Sept	- CANCELLED -		
Aug 26	<ul style="list-style-type: none"> <li>● Quarterly Purchasing Report</li> <li>● Bad Debts</li> <li>● Compensation Plan</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Approval</li> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>10-21</li> <li>31-48</li> <li>49-50</li> </ul>
July 22	<ul style="list-style-type: none"> <li>● Appointments of Medical Staff</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>12-13</li> </ul>
June 24	<ul style="list-style-type: none"> <li>● Purchasing Policy and Procedure Revisions</li> <li>● Quarterly Purchasing Report</li> <li>● Medical Staff Hospital Council Credentials</li> <li>● Biennial Medical-Staff Hospital Council</li> <li>● Chief of Staff Appointment</li> <li>● Re-Appointment of Chiefs of Clinical Services</li> <li>● 1987-88 Compensation Plan</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Approval</li> <li>Approval</li> <li>Approval</li> <li>Approval</li> <li>Approval</li> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>8-9</li> <li>10-27</li> <li>31-34</li> <li>35-60</li> <li>63</li> <li>61-62</li> <li>70-71</li> </ul>
May 27	<ul style="list-style-type: none"> <li>● Mainframe Computer Replacement</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>8-19</li> </ul>
April 22	<ul style="list-style-type: none"> <li>● Severity Indexing Position Paper</li> <li>● 87-88 Operating Budget</li> <li>● 87-88 Capital Budget</li> <li>● Third Qtr 87-88 Bad Debts</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Endorsement</li> <li>Endorsement</li> <li>Approval</li> </ul>	
March 25	<ul style="list-style-type: none"> <li>● Purchasing Policy and Procedure Manual Revisions</li> <li>● Medical Staff-Hospital Council Report</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>8-38</li> <li>77-86</li> </ul>
Feb 25	<ul style="list-style-type: none"> <li>● Quarterly Purchasing Report</li> <li>● Primary Care Network Mtg</li> <li>● Credentials Committee Medical/Staff-Hospital</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Approval</li> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>8-23</li> <li>(No#)</li> <li>26-29</li> </ul>
Jan 28	<ul style="list-style-type: none"> <li>● Nominating Committee Report</li> <li>● Bad Debts 86</li> </ul>	<ul style="list-style-type: none"> <li>Approval</li> <li>Approval</li> </ul>	<ul style="list-style-type: none"> <li>(No#)</li> <li>14-31</li> </ul>

**The University of Minnesota Hospital and Clinic**

**Board of Governors**

**January 28, 1987**

**(Please note that the Board meeting will be held in 555 Diehl Hall)**

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**\*\*\* OTHER ATTACHMENTS \*\*\***

- University of Minnesota Hospital and Clinic - Mesabi Regional Medical Center  
and Local Clinic Affiliation
- "Quality in Health Care: Time for Action", Metro Hospital Trustee Council,  
November, 1986
- "Metro Hospital Trustee Council Summary Highlights of 1986", Metro Hospital  
Trustee Council, December, 1986
- "Hospitals Become Strange Bedfellows", Minneapolis Star & Tribune,  
December 22, 1986
- "Litchfield Doctor, Author William A. Nolen Dies", Minneapolis Star & Tribune,  
December 22, 1986
- "U Chief Transplant Surgeons Are Workaholics", Minneapolis Star & Tribune,  
January 4, 1987
- "U Designated as Research Center For AIDS", Minneapolis Star & Tribune,  
January 6, 1987
- "Ramsey County Celebrates Century of Public Health Nursing Service", The  
Shoreview Bulletin, January 7, 1987
- "U Researcher Yunis Links Genetic Defects, Cancer", Minnesota Daily,  
January 8, 1987
- "Medical-Cost Trend After 1990 Disputed", The Wall Street Journal, January 9,  
1987

**The University of Minnesota Hospital and Clinic  
Board of Governors**

January 28, 1987  
1:30 P.M.  
555 Diehl Hall

**AGENDA**

- |       |   |             |
|-------|---|-------------|
| I.    | <u>Approval of December 17, 1986 Minutes</u>                                      | Approval    |
| II.   | <u>Chairman's Report</u><br>- Ms. Barbara O'Grady                                 | Information |
| III.  | <u>Nominating Committee Report</u><br>- Ms. Phyllis Ellis                         | Approval    |
| IV.   | <u>Hospital Director's Report</u><br>- Mr. C. Edward Schwartz                     | Information |
| V.    | <u>Magnetic Resonance Imaging Presentation</u><br>- Dr. William Thompson          | Information |
| VI.   | <u>Committee Reports</u>  |             |
|       | A. <u>Finance Committee Report</u><br>Mr. Robert Nickoloff                        |             |
|       | 1. December Year-to-Date Financial Statements                                     | Information |
|       | 2. 1986-87 Financial Projections for Regents<br>Information                       | Information |
|       | 3. Bad Debts, October 1, 1986 to<br>December 31, 1986                             | Approval    |
|       | 4. Primary Care Network Management Company<br>Status Report                       | Information |
|       | 5. Update on Hospital Appropriations Review<br>by the State Department of Finance | Information |
| VII.  | <u>Board of Governors Self-Evaluation Survey Results</u><br>Ms. Nancy Janda       | Discussion  |
| VIII. | <u>Other Business</u>   |             |
| IX.   | <u>Adjournment</u>  |             |

**MINUTES**

**Board of Governors**

**The University of Minnesota Hospital and Clinic**

**December 17, 1986**

**CALL TO ORDER:**

Chairman Barbara O'Grady called the December 17, 1986 meeting of the Board of Governors to order at 1:45 P.M. in the Board Room of the University Hospital.

**ATTENDANCE:**

Present: David Brown, M.D.  
Shelley Chou, M.D.  
Phyllis Ellis  
Al Hanser  
George Heenan  
Robert Latz  
Jerry Meilahn  
James Moller, M.D.  
Robert Nickoloff  
Barbara O'Grady  
Nancy Raymond  
Ed Schwartz  
Neal Vanselow, M.D.

Absent: Leonard Bienias  
Kris Johnson  
David Lilly

**APPROVAL OF THE MINUTES:**

The Board of Governors seconded and passed a motion to approve the minutes of the November 19, 1986 meeting as written.

**CHAIRMAN'S REPORT:**

Chairman Barbara O'Grady introduced Ms. Bev Paul, AFSME Business Manager, and Ms. Dee Lutz of the Minnesota Daily.

The Board of Regents, Chairman O'Grady announced, had reappointed Leonard Bienias, Phyllis Ellis and George Heenan to the Board of Governors. The Board of Regents also appointed Donald Gilmore, a student in the Masters of Hospital Administration Program, as the new student representative to the Board.

Chairman O'Grady appointed the Nominating Committee, which is responsible for recommending candidates for Chair and Vice Chair of the Board of Governors. Phyllis Ellis will chair the Nominating Committee. George Heenan and Neal Vanselow, M.D., will serve with Ms. Ellis. Chairman O'Grady noted that she will not seek reelection as Chair. The report of the Nominating Committee will be made at the January Board meeting.

The 1986 Board of Governors self-evaluation survey will be sent to all Board members in late December. Chairman O'Grady noted that the results of the survey will be summarized at the January Board meeting.

#### **HOSPITAL DIRECTOR'S REPORT:**

Mr. Schwartz reported that the Primary Care Network had successfully recruited a Chief Operating Officer, Dr. Louis J. Filiatrault. Mr. Schwartz noted that the recruitment of P.C.N. physicians continues to go well but that the enrollment of patients continues to be a challenge.

#### **JOINT CONFERENCE COMMITTEE REPORT:**

Committee Chair Phyllis Ellis reviewed the December 2, 1986 report of the Credentials Committee, which had been endorsed by the Medical Staff Hospital Council and the Joint Conference Committee. The members of the Board discussed the process by which information on a physician's application for medical staff membership is verified. A special note was also made of the discontinuation of medical staff membership for I. Dodd Wilson. Dr. Wilson has assumed the Deanship at the University of Arkansas Medical School. The Board of Governors seconded and passed a motion to approve the Credentials Report as submitted.

Mr. Al Dees presented an overview of patient classification and severity indexing systems currently in use. He reviewed the historical development of these systems, characterized the design of each and provided several examples of the ways in which these systems are applied.

The Board discussed, at some length, the limitations of these systems, particularly as they are used in determining reimbursement and measuring quality. In sum, the members of the Board expressed agreement that reimbursement based on severity is appropriate and measurement tools that differentiate levels of quality should be employed. However, Board members agreed that refinement to current classification and severity system is needed before these objectives can be accurately met.

**FINANCE COMMITTEE REPORT:**

Mr. Nickoloff reported the Hospital shows \$4,300,000 in revenue over expenses for a favorable variance of \$7,000,000. Accounts receivable have increased to 106 days revenue outstanding.

Mr. Fearing reviewed the Financial Systems Modernization Plan that was endorsed by the Finance Committee and the Planning and Development Committee. He described the criteria employed in selecting a general ledger system. Thirteen systems had been evaluated; three had met the stated criteria. On the basis of this evaluation, it was also determined that a hardware change would be necessary. Mr. Fearing detailed financing options. He asked that the Board of Governors approve the acquisition of an IBM 4381-12 and the necessary application software. His proposal included an acquisition that would be made on a lease-purchase basis. The Board of Governors seconded and passed a motion to approve the acquisition of a new financial system as presented.

**PATIENTS FUND:**

Chairman O'Grady reminded the Board of the Patient's Fund solicitation and encouraged 100% participation by Board members.


**GIFT PRESENTATION:**

Ms. Phyllis Ellis presented Ms. Nancy Raymond with a gift of appreciation for her contributions to the Joint Conference Committee and the Board of Governors during the last year.

**ADJOURNMENT:**

There being no further business, the December 17, 1986 meeting of the Board of Governors adjourned at 3:15 P.M.

Respectfully submitted,



Kay F. Fuecker  
Secretary, Board of Governors Office

**Minutes**  
**Meeting of the**  
**Board of Governors Finance Committee**  
**The University of Minnesota Hospital and Clinic**  
**December 17, 1986**

**MEMBERS**  
**PRESENT:** Carol Campbell  
Edward Ciriacy, M.D.  
Clifford Fearing  
William Krivit, M.D., Ph.D.  
Jerry Meilahn  
Robert Nickoloff  
C. Edward Schwartz  
Vic Vikmanis

**MEMBERS**  
**ABSENT:** Al Hanser

**STAFF:** Kay Fuecker  
Greg Hart  
Nels Larson  
Barbara Tebbitt

**CALL TO ORDER:** The meeting of the Finance Committee was called to order by Chairman Robert Nickoloff at 9:45 A.M. in the Dale Shepherd Room of the Campus Club.

**MINUTES:** The minutes of November 19, 1986 Finance Committee meeting were approved as written.

**11/19/86**  
**FINANCIAL**  
**STATEMENTS:** Mr. Fearing reviewed the Report of Operations for the period July 1, 1986 through November 30, 1986. High census levels continued during November. Admissions were 1,480 (10% above budget), average length of stay was 8.4 days (12% above budget), and the November average daily census was 424. The census has not dropped as much during the holidays as it typically does between Thanksgiving and Christmas. Outpatient visits totalled 18,464 (6.4% above budget) and are 9,607 (10.3%) over budget for the first 5 months of the fiscal year.

Total revenue over expenses was \$4,374,721 for a favorable variance of \$7,109,803. Total patient care charges are 13.0% above budget with routine revenue 6.6% above budget, a close correlation to our favorable patient day variance. Ancillary revenue is 15.8% above budget, reflecting the favorable variance in both admissions and clinic visits and the



utilization of ancillary services per patient being higher than anticipated. The average inpatient ancillary revenue is \$6,602 per admission versus the budgeted average of \$6,199. Outpatient revenue per clinic visit is \$167 compared to a budgeted average of \$153. Operating expenditures are 4.0% above budgeted levels due to the increase in demand for patient services, primarily in personnel costs and patient care supplies.

Accounts Receivable are currently 106 days outstanding. Mr. Fearing attributed this increase to four factors: 1) more patients in the Hospital; 2) Discharged patients, where the final bill has not been sent to the insurance company due to a problem in getting final diagnosis from the Doctor; 3) Medical Assistance and Medicare slow down of payments; and 4) HMO payments which are consistently slow.

**CONTRACT  
STATUS REPORT:**

The Blue Cross/Blue Shield contract for 1987 has been signed with negotiated discounts of \$3.5 million or \$1 million less than the original Blue Cross/Blue Shield contract proposal. This decrease in discounts was achieved by: 1) creating a unique category of cases when no one else in the state would do it, we would be paid at 100%; 2) Transplants are not included in the Aware contract, but in a separate break-even contract; 3) payment to UMHC on a severity illness basis for any patient transferred from another hospital at 85% of charges rather than the current 55%; and 4) increasing the level of reimbursement in some diagnostic categories.

The Indian Health Service has proposed we help them develop a contract that is meaningful to both parties and keep the existing contract in place for the next calendar year during this process. Under the existing contract we experience about \$4.5 million in charges, and we will receive about 85¢ on the dollar. The 1987 contract originally proposed for Indian Health Service would have paid only \$2 million of the \$4.5 million in charges.

**FINANCIAL  
SYSTEMS  
MODERNIZATION:**

Mr. Fearing requested approval of the purchase of computer hardware and software to modernize the purchase of computer hardware the financial system. Nels Larson headed a task force that evaluated 13 different vendors before selecting McCormick & Dodge and MSA as the final software vendors. Because the software selected required IBM hardware, admin-

istration is recommending the acquisition of an IBM 4381-12 mainframe to implement its financial system modernization. Other systems were evaluated but rejected because they did not meet specifications or were not state-of-the-art design. The purchase cost of the hardware necessary to run the system is \$875,000.

A motion was made and passed to endorse the selection of the IBM hardware for the financial systems modernization.

**RESERVES:**

Mr. Vikmanis reported that the Hospital state appropriation of approximately \$13 million is an area where the State Department of Finance will likely recommend a reduction for the next biennium. The primary basis for their recommendation is that the hospital has accumulated reserves over the last several years and therefore doesn't require the appropriation at its current size. Mr. Fearing indicated that the financial feasibility study done for the financing of the new hospital specifically points out that reductions to the appropriation or other support of the hospital could impair bond repayment. Mr. Nickoloff suggested the Board of Governors and University administration make Governor Perpich's staff aware that any decrease in the Hospital appropriation would be contrary to the Governor's technological plan for the state as well as being detrimental to the University of Minnesota Hospital and Clinic. Mr. Schwartz indicated President Keller has stated his 100% support of the Hospital. Dr. Ciriacy suggested the Board of Governors address the reserve and appropriation issue to develop a strong support position for future legislative discussions. Mr. Nickoloff requested that copies of the feasibility study be sent to the Committee for future discussion.

**GRADUATE  
MEDICAL  
EDUCATION  
SURVEY:**

Mr. Fearing briefly discussed the Graduate Medical Education Survey. After completion of a survey to determine the methodology of and size of resident support, it was determined that funding of residents at The University of Minnesota Hospital and Clinic should be increased. This will be accomplished by increasing the number of residents funded by UMHC from 196.5 to 227 and by raising the amount per funded resident July 1, 1987. The total cost of this increase will be approximately \$1 million per year. The Clinical Development fund will be reduced to offset part of this increase. The size of the reduction will be addressed prior to July 1, 1987. Dr. Chou's Education Committee will review these proposals in late December for approval by the Clinical Chiefs in January or February, 1987.

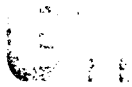
Meeting of the Finance Committee  
Minutes, December 17, 1986  
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ADJOURNMENT:           There being no further business, the meeting was adjourned at  
11:30 A.M.

Respectfully submitted,

*Kay F. Fuecker*

Kay F. Fuecker  
Recording Secretary



January 28, 1987

**TO:** Board of Governors Finance Committee

**FROM:** Clifford P. Fearing  
Senior Associate Director

**SUBJECT:** Report of Operations for the Period  
July 1, 1986 through December 31, 1986

The Hospital's operations through the month of December continued to reflect both inpatient admissions and outpatient visit activity that were above budgeted levels. In addition, we continued to experience ancillary service utilization that was higher than anticipated. To highlight our position:

**Inpatient Census:** For the month of December, inpatient admissions totaled 1,448 or 249 above budgeted admissions of 1,199. Our overall average length of stay for the month was 8.3 days. Patient days for December totaled 12,106 and were 1,578 days above budget. The increase in admission levels continued to be primarily in the areas of Medicine, Pediatrics, Surgery, and Urology.

To recap our year-to-date inpatient census:

	1985-86	1986-87	1986-87		%
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Variance</u>	<u>Variance</u>
Admissions	8,681	8,488	9,276	788	9.3
Avg.Lnth.of Stay	8.4	8.4	8.4	0	0.0
Patient Days	72,480	71,092	77,116	6,024	8.5
Percent Occupancy	66.5	64.4	70.7	6.3	9.8
Avg.Daily Census	393.9	386.4	419.1	32.7	8.5

**Outpatient Census:** Clinic visits for the month of December totaled 19,471 or 3,807 (24.3%) above budgeted visits of 15,664. The increase in activity was experienced in nearly all clinic areas with the largest increases occurring in Medicine, Psychiatry, and Urology. CUHCC (Community University Health Care Center) visits for the month of December totaled 3,708, or 575 (18.4%) above budgeted visits of 3,133, while Home Health visits of 1,003 for the month were 261 (20.6%) below budgeted visits of 1,264.

Report of Operations - December 1986  
Page two

To recap our year-to-date outpatient census:

	1985-86	1986-87	1986-87		%
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Variance</u>	<u>Variance</u>
Clinic Visits	109,403	109,147	122,507	13,360	12.2
CUHCC Visits	18,510	18,800	22,555	3,755	20.0
HHA Visits	4,083	7,502	4,992	-2,510	-33.5

**Financial Operations:** The Hospital's Statement of Operations shows total revenues over expense of \$4,483,019, a favorable variance of \$ 9,893,181.

Patient care charges through December totaled \$116,051,761 and were 15.9% above budget. Routine revenue was 8.0% above budget and reflected our favorable patient day variance. Ancillary revenue was approximately \$13,448,000 (19.4%) above budget and reflected (1) the favorable variance in both admissions and clinic visits; and (2) the utilization of ancillary services per patient being higher than anticipated. Inpatient ancillary revenue has averaged \$6,686 per admission compared to the budgeted average of \$6,199 per admission. Outpatient revenue per clinic visit has averaged \$169 compared to the budgeted average of \$153.

Operating expenditures through December totaled \$109,268,132 and were approximately \$4,413,200 (4.2%) above budgeted levels. The overall unfavorable variance continued to relate to the increase in demand for patient services and was seen primarily in increased personnel costs (salaries and fringe benefits) and patient care supplies (drugs, blood, medical supplies).

**Accounts Receivable:** The balance in patient accounts receivable as of December 31, 1986 totaled \$70,858,919 and represented 107.6 days of revenue outstanding. The overall increase in our patient receivables in December of 1.6 days occurred primarily in the Medicare and Medical Assistance categories.

**Conclusion:** The Hospital's overall operating position continues to be positive and above budgeted levels. Both inpatient and outpatient census levels remain above budget. We continue to monitor our demand for service closely and make those operating changes that are necessary and appropriate.

UNIVERSITY OF MINNESOTA HOSPITAL & CLINIC  
EXECUTIVE SUMMARY OF FINANCIAL ACTIVITY  
FOR THE PERIOD JULY 1, 1986 TO DECEMBER 31, 1986

	Budgeted	Actual	Variance Over/-Under Budget	Variance %
	-----	-----	-----	-----
Patient Care Charges	\$100,144,041	\$116,051,761	\$15,907,720	15.9%
Deductions from Charges	-15,555,847	-17,065,559	-1,509,712	-9.7%
Other Operating Revenue	2,647,544	2,702,021	54,477	2.1%
Total Operating Revenue	87,235,738	101,688,223	14,452,485	16.6%
Total Expenditures	-104,854,938	-109,268,132	-4,413,194	-4.2%
Net Operating Revenue	-17,619,200	-7,579,909	10,039,291	0.0%
Non-Operating Revenue and Expenses	12,209,038	12,062,928	-146,110	-1.2%
Revenue Over Expense	-5,410,162	\$4,483,019	\$9,893,181	(1)
	=====	=====	=====	

(1) Variance equals 9.9 % of total budgeted revenue.

	Budgeted	Actual	Variance Over/-Under Budget	Variance %
	-----	-----	-----	-----
Admissions	8,488	9,276	788	9.3%
Patient Days	71,092	77,116	6,024	8.5%
Average Daily Census	386.4	419.1	32.7	8.5%
Average Length of Stay	8.4	8.4	0.0	0.0%
Percentage Occupancy	64.4%	70.7%	6.3%	9.8%
Outpatient Clinic Visits	109,147	122,507	13,360	12.2%



UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455

January 23, 1987

TO: Board of Governors

FROM: Clifford P. Fearing  
Senior Associate Director

SUBJECT: Financial Projections for Regents Information

When the Board of Regents approved the 1986-87 budget the Hospital was in the initial weeks of a significant increase in occupancy. Because of this increase in activity the Board of Regents requested that the Hospital provide them with an interim year update on patient activity and financial operations.

In accordance with this request we will be presenting the attached financial projections to the Regents at their February meeting. These projections are those that were reviewed by the Board of Governors Finance Committee in November and are presented here for your information.

No action is being sought from the Regents, this will be provided for information only.

CPF:th

Attachment

University of Minnesota Hospital & Clinic  
 Summary Statement of Operations and Operating Cash Flow  
 For Fiscal Years 1985-86 and 1986-87

	1986-87 Board Approved	1986-87 Current Projection
	-----	-----
Gross Patient Charges	\$ 199,263,700	\$ 224,281,000
Deductions from Charges	31,037,200	36,151,100
Net Patient Charges	\$ 168,226,500	\$ 188,129,900
Other Operating Revenue	5,346,400	5,517,000
Non-Operating Revenue	23,776,600	22,840,900
Total Revenues	\$ 197,349,500	\$ 216,487,800
Total Expenditures	\$ 208,619,000	\$ 224,284,000
Excess of Revenues Over Expenses	\$ -11,269,500	\$ -7,796,200
Add Non-Cash Outlays:		
Depreciation	\$ 14,103,400	\$ 16,261,100
Campus Administration Expense	6,258,800	6,258,800
Net Increase/(Decrease) in Working Capital	2,347,900	-1,464,500
Net Funds Provided	\$ 11,440,600	\$ 13,259,200
Funds Applied:		
Capital Obligations:		
Principal Payment on Fixed-Rate Bonds	2,550,000	2,550,000
Direct Purchased Capital Equipment and Remodeling	4,108,500	5,108,500
Parking Ramp Sinking Fund	60,300	76,200
Reserve for Accrued Interest	4,721,800	4,402,300
Net Funds Applied	\$ 11,440,600	\$ 12,137,000
Total Cash Available from Operations	\$ 0	\$ 1,122,200
	=====	=====
Census:		
Admissions	16,950	18,200
Average Length of Stay	8.2	8.2
Patient Days	138,790	149,200
Average Daily Census	380.2	408.8
Clinic Visits	222,600	245,000





UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455

January 20, 1987

TO: Board of Governors

FROM: Clifford P. Fearing  
Senior Associate Director

SUBJECT: Bad Debts - Second Quarter, 1986-87

The total amount recommended for bad debt of Hospital and Clinic accounts receivable during the second quarter of 1986-87 is \$619,034.82, represented by 1076 accounts. Bad debt recoveries during the period amounted to \$2,562.77, leaving a net charge-off of \$616,472.05. This is 1.06% of gross charges for the quarter as compared to a budget of 1.33%.

A statistical summary is attached with detailed description of losses over \$2,000 and recoveries over \$200 for each of the months in the second quarter. We have also included additional reports with a breakdown of bad debts by residence and by admitting clinic service for the quarter and year-to-date.

Year-to-date bad debts have amounted to \$997,968.51, represented by 2527 accounts. Recoveries during these two quarters amounted to \$22,363.84, leaving a net charge-off of \$975,604.67. The total is equal to .84% as compared to a budgeted level of 1.33%.

Statistical summaries of year-to-date figures are also attached.

**UNIVERSITY OF MINNESOTA HOSPITAL AND CLINIC**

**BAD DEBT STATISTICS**

**OCTOBER 1986 THROUGH DECEMBER 1986**

	<b>Less Than \$2000</b>	<b># of Accounts</b>	<b>More Than \$2000</b>	<b># of Accounts</b>	<b>TOTAL AMOUNT</b>	<b>TOTAL # of ACCOUNTS</b>
<b>INPATIENT</b>						
Medicare (610) Non-Recoverable	\$ --	--	\$ --	--	\$ --	--
Bad Debt (701) Write-Offs	<u>30,702.66</u>	112	<u>212,956.86</u>	25	<u>243,659.52</u>	137
Total	30,702.66	112	212,956.86	25	243,659.52	137
Recoveries	(517.88)	11	.00	0	(517.88)	11
Net Total	<u>\$ 30,184.78</u>	112*	<u>\$ 212,956.86</u>	25*	<u>\$ 243,141.64</u>	137*
<b>OUTPATIENT</b>						
Medicare (610) Non-Recoverable	\$ 4,509.60	15	\$ 242,786.07	7	\$ 247,295.67	22
Bad Debt (701) Write-Offs	<u>82,543.93</u>	903	<u>39,469.82</u>	7	<u>122,013.75</u>	910
Total	87,053.53	918	282,255.89	14	369,309.42	932
Recoveries	(2,044.89)	55	.00	0	(2,044.89)	55
Net Total	<u>\$ 85,008.64</u>	918*	<u>\$ 282,255.89</u>	14*	<u>\$ 367,264.53</u>	932*
<b>INPATIENT AND OUTPATIENT TOTAL</b>						
	<u>\$ 115,193.42</u>	1030*	<u>\$ 495,212.75</u>	39	<u>\$ 610,406.17</u>	1069*
<b>MEDICARE BAD DEBTS</b>						
Inpatient (710)	\$ 1,642.00	4	\$ 4,187.27	1	\$ 5,829.27	5
Outpatient (710)	<u>236.61</u>	2	<u>.00</u>	0	<u>236.61</u>	2
Total	1,878.61	6	4,187.27	1	6,065.88	7
Recoveries	(000.00)	0	(000.00)	0	(000.00)	0
Net Total	<u>\$ 1,878.61</u>	15*	<u>\$ 4,187.27</u>	1	<u>\$ 6,065.88</u>	7*
<b>TOTAL NET BAD DEBT</b>						
	<u>\$ 117,072.03</u>	1036*	<u>\$ 499,400.02</u>	40*	<u>\$ 616,472.05</u>	1076*

NOTE: More than \$2,000 amount includes legal settlements totaling \$20,462.74

**DOLLARS BUDGETED**

**\$ 631,146.00**

UNIVERSITY OF MINNESOTA HOSPITAL AND CLINIC

BAD DEBT STATISTICS

OCTOBER 1986 THROUGH DECEMBER 1986

	LESS THAN \$100	# OF ACCOUNTS	\$100 - \$999	# OF ACCOUNTS	\$1000 - \$1999	# OF ACCOUNTS	\$2000 - \$9,999	# OF ACCOUNTS	\$10,000 +	# OF ACCOUNTS	TOTAL AMOUNT	TOTAL # OF ACCOUNTS
<b>INPATIENT</b>												
Medicare (610) Non-Recoverable	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0
Bad Debt (701) Write-Offs	1416.97	42	24,397.82	67	4,887.87	3	75,798.85	19	137,158.01	6	243,659.52	137
Total	\$1,416.97	42	\$24,397.82	67	\$4,887.87	3	\$75,798.85	19	\$137,158.01	6	\$243,659.52	137
Recoveries	(\$357.61)	10	(\$168.27)	1	\$0.00	0	\$0.00	0	\$0.00	0	(\$517.88)	11
Net Total	\$1,059.36	42 *	\$24,237.55	67 *	\$4,887.87	3 *	\$75,798.85	19 *	\$137,158.01	6 *	\$243,141.64	137 *
<b>OUTPATIENT</b>												
Medicare (610) Non-Recoverable	\$263.30	7	\$2,845.80	7	\$1,400.50	1	\$20,628.67	5	\$222,157.40	2	\$247,295.67	22
Bad Debt (710) Write-Offs	\$23,547.95	698	\$46,879.39	197	\$12,116.59	8	\$14,779.63	5	\$24,690.19	2	\$122,013.75	910
Total	\$23,811.25	705	\$49,725.19	204	\$13,517.09	9	\$35,408.30	10	\$246,847.59	4	\$369,309.42	932
Recoveries	(\$849.85)	48	(\$1,195.84)	7	\$0.00	0	\$0.00	0	\$0.00	0	(\$2,044.89)	55
Net Total	\$22,962.20	705 *	\$48,529.35	204 *	\$13,517.09	9 *	\$35,408.30	10 *	\$246,847.59	4 *	\$367,264.53	932 *
<b>INPATIENT AND OUTPATIENT TOTAL</b>	<b>\$24,021.56</b>	<b>747 *</b>	<b>\$72,766.90</b>	<b>271 *</b>	<b>\$18,404.96</b>	<b>12 *</b>	<b>\$111,207.15</b>	<b>29 *</b>	<b>\$384,005.60</b>	<b>10 *</b>	<b>\$610,406.17</b>	<b>1069 *</b>
<b>MEDICARE BAD DEBTS</b>												
Inpatient (710)	\$0.00	0	\$1,642.00	4	\$0.00	0	\$4,187.27	1	\$0.00	0	\$5,829.27	5
Outpatient (710)	\$63.24	1	\$173.37	1	\$0.00	0	\$0.00	0	\$0.00	0	\$236.61	2
Total	\$63.24	1	\$1,815.37	5	\$0.00	0	\$4,187.27	1	\$0.00	0	\$6,065.88	7
Recoveries	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0
Net Total	\$63.24	1 *	\$1,815.37	5 *	\$0.00	0 *	\$4,187.27	1 *	\$0.00	0 *	\$6,065.88	7 *
<b>TOTAL NET BAD DEBT</b>	<b>\$24,084.80</b>	<b>748 *</b>	<b>\$74,582.27</b>	<b>276 *</b>	<b>\$18,404.96</b>	<b>12 *</b>	<b>\$115,394.42</b>	<b>30 *</b>	<b>\$384,005.60</b>	<b>10 *</b>	<b>\$616,472.05</b>	<b>1076 *</b>

DOLLARS BUDGETED

\$631,146.00

\* Net total of accounts do not include recoveries.

NOTE: More than amount includes legal settlements totalling \$20,462.70

**UNIVERSITY OF MINNESOTA HOSPITAL AND CLINIC**

**BAD DEBT STATISTICS**

**JULY 1986 THROUGH DECEMBER 1986**

	<b>Less Than \$2000</b>	<b># of Accounts</b>	<b>More Than \$2000</b>	<b># of Accounts</b>	<b>TOTAL AMOUNT</b>	<b>TOTAL # of ACCOUNTS</b>
<b>INPATIENT</b>						
Medicare (610) Non-Recoverable	\$ ---	---	\$ ---	---	\$ ---	---
Bad Debt (701) Write-Offs	<u>79,251.99</u>	238	<u>305,641.24</u>	37	<u>384,893.23</u>	275
Total	79,251.99	238	305,641.24	37	384,893.23	275
Recoveries	<u>(3,653.83)</u>	27	<u>(6,765.64)</u>	2	<u>(10,419.47)</u>	29
Net Total	<u>\$ 75,598.16</u>	238*	<u>\$ 298,875.60</u>	37*	<u>\$ 374,473.76</u>	275*
<b>OUTPATIENT</b>						
Medicare (610) Non-Recoverable	\$ 9,698.64	28	\$ 335,860.46	11	\$ 345,559.10	39
Bad Debt (701) Write-Offs	<u>188,617.63</u>	2185	<u>70,017.30</u>	12	<u>258,634.93</u>	2197
Total	198,316.27	2213	405,877.76	23	604,194.03	2236
Recoveries	<u>(8,073.07)</u>	140	<u>(3,871.30)</u>	1	<u>(11,944.37)</u>	141
Net Total	<u>\$ 190,243.20</u>	2213*	<u>\$ 402,006.46</u>	23*	<u>\$ 592,249.66</u>	2236*
<b>INPATIENT AND OUTPATIENT TOTAL</b>						
	<u>\$ 265,841.36</u>	2451*	<u>\$ 700,882.06</u>	60	<u>\$ 966,723.42</u>	2511*
<b>MEDICARE BAD DEBTS</b>						
Inpatient (710)	\$ 4,134.00	10	\$ 4,187.27	1	\$ 8,321.27	11
Outpatient (710)	<u>559.98</u>	5	<u>.00</u>	0	<u>559.98</u>	5
Total	4,693.98	15	4,187.27	1	8,881.25	16
Recoveries	<u>(000.00)</u>	0	<u>.00</u>	0	<u>(000.00)</u>	0
Net Total	<u>\$ 4,693.98</u>	15*	<u>\$ 4,187.27</u>	1	<u>\$ 8,881.25</u>	16*
<b>TOTAL NET BAD DEBT</b>						
	<u>\$ 270,535.34</u>	2466*	<u>\$ 705,069.33</u>	61*	<u>\$ 975,604.67</u>	2527*

NOTE: More than \$2,000 amount includes legal settlements totaling \$31,476.28

DOLLARS RECORDED

\$1,328,374.00

UNIVERSITY OF MINNESOTA HOSPITAL AND CLINIC

BAD DEBT STATISTICS

JULY 1986 THROUGH DECEMBER 1986

	LESS THAN \$100	# OF ACCOUNTS	\$100 - \$999	# OF ACCOUNTS	\$1000 - \$1999	# OF ACCOUNTS	\$2000 - \$9,999	# OF ACCOUNTS	\$10,000 +	# OF ACCOUNTS	TOTAL AMOUNT	TOTAL # OF ACCOUNTS
<b>INPATIENT</b>												
Medicare (610) Non-Recoverable	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0
Bad Debt (701) Write-Offs	3160.85	90	51,648.03	133	24,443.11	15	111,713.59	27	193,927.65	10	384,893.23	275
<b>Total</b>	<b>\$3,160.85</b>	<b>90</b>	<b>\$51,648.03</b>	<b>133</b>	<b>\$24,443.11</b>	<b>15</b>	<b>\$111,713.59</b>	<b>27</b>	<b>\$193,927.65</b>	<b>10</b>	<b>\$384,893.23</b>	<b>275</b>
Recoveries	(\$503.21)	20	(\$3,150.62)	7	\$0.00	0	(\$6,765.64)	2	\$0.00	0	(\$10,419.47)	29
<b>Net Total</b>	<b>\$2,657.64</b>	<b>90 *</b>	<b>\$48,497.41</b>	<b>133 *</b>	<b>\$24,443.11</b>	<b>15 *</b>	<b>\$104,947.95</b>	<b>27 *</b>	<b>\$193,927.65</b>	<b>10 *</b>	<b>\$374,473.76</b>	<b>275 *</b>
<b>OUTPATIENT</b>												
Medicare (610) Non-Recoverable	\$437.00	11	\$4,640.83	14	\$4,620.01	3	\$33,307.07	7	\$302,553.39	4	\$345,559.10	39
Bad Debt (710) Write-Offs	\$54,660.18	1685	\$114,200.38	487	\$19,757.07	13	\$34,313.57	9	\$35,703.73	3	\$250,634.93	2197
<b>Total</b>	<b>\$55,097.98</b>	<b>1696</b>	<b>\$118,841.21</b>	<b>501</b>	<b>\$24,377.08</b>	<b>16</b>	<b>\$67,620.64</b>	<b>16</b>	<b>\$338,257.12</b>	<b>7</b>	<b>\$604,194.03</b>	<b>2236</b>
Recoveries	(\$2,750.57)	114	(\$5,322.50)	141	\$0.00	0	(\$3,871.30)	1	\$0.00	0	(\$11,944.37)	141
<b>Net Total</b>	<b>\$52,347.41</b>	<b>1696 *</b>	<b>\$113,518.71</b>	<b>501 *</b>	<b>\$24,377.08</b>	<b>16 *</b>	<b>\$63,749.34</b>	<b>16 *</b>	<b>\$338,257.12</b>	<b>7 *</b>	<b>\$592,249.66</b>	<b>2236 *</b>
<b>INPATIENT AND OUTPATIENT TOTAL</b>	<b>\$55,005.05</b>	<b>1786 *</b>	<b>\$162,016.12</b>	<b>634 *</b>	<b>\$48,820.19</b>	<b>31 *</b>	<b>\$168,697.29</b>	<b>43 *</b>	<b>\$532,184.77</b>	<b>17 *</b>	<b>\$966,723.42</b>	<b>2511 *</b>
<b>MEDICARE BAD DEBTS</b>												
Inpatient (710)	\$0.00	0	\$4,134.00	10	\$0.00	0	\$4,187.27	1	\$0.00	0	\$8,321.27	11
Outpatient (710)	\$132.74	3	\$427.24	2	\$0.00	0	\$0.00	0	\$0.00	0	\$559.98	5
<b>Total</b>	<b>\$132.74</b>	<b>3</b>	<b>\$4,561.24</b>	<b>12</b>	<b>\$0.00</b>	<b>0</b>	<b>\$4,187.27</b>	<b>1</b>	<b>\$0.00</b>	<b>0</b>	<b>\$8,881.25</b>	<b>16</b>
Recoveries	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0
<b>Net Total</b>	<b>\$132.74</b>	<b>3 *</b>	<b>\$4,561.24</b>	<b>12 *</b>	<b>\$0.00</b>	<b>0 *</b>	<b>\$4,187.27</b>	<b>1 *</b>	<b>\$0.00</b>	<b>0 *</b>	<b>\$8,881.25</b>	<b>16 *</b>
<b>TOTAL NET BAD DEBT</b>	<b>\$55,137.79</b>	<b>1789 *</b>	<b>\$166,577.36</b>	<b>646 *</b>	<b>\$48,820.19</b>	<b>31 *</b>	<b>\$172,884.56</b>	<b>44 *</b>	<b>\$532,184.77</b>	<b>17 *</b>	<b>\$975,604.67</b>	<b>2527 *</b>

NOTE: More than \$2,000 amount includes legal settlements totalling \$20,462.74.

DOLLARS BUDGETED

\$1,328,374.00

\* Net total of accounts do not include recoveries.

SECOND QUARTER FISCAL YEAR - 1987  
and YEAR-TO-DATE BAD DEBTS  
BY STATE

STATE	SECOND QUARTER NUMBER	SECOND QUARTER AMOUNT <sup>1</sup>	YEAR- TO-DATE NUMBER	YEAR- TO-DATE AMOUNT <sup>1</sup>
Alabama			7	\$ 339.92
Alaska	1	\$ 23.00	2	52.08
Arizona	15	16,827.31	18	17,315.83
Arkansas	2	449.82	3	643.27
California	8	740.20	30	562.35
Colorado	18	1,646.55	20	1,707.37
Delaware				
District of Columbia	1	20.00	1	20.00
Florida	5	4,927.04	12	16,441.88
Georgia	3	4,490.01	6	4,966.44
Hawaii				
Idaho	2	237.33	2	237.33
Illinois	1	210.90	14	1,062.84
Indiana	3	53,831.38	7	54,024.24
Iowa	5	713.78	13	1,736.62
Kansas			3	739.00
Kentucky	1	75.00	1	75.00
Louisiana				
Maine				
Maryland	8	2,209.38	8	2,209.38
Massachusetts	1	69.00	5	258.97
Michigan	1	47.80	3	266.60
Minnesota	884	455,123.02 <sup>2</sup>	2097	702,055.98
Mississippi	1	172.80	1	172.80
Missouri	1	22.00	2	316.58
Montana	3	131.94	4	516.04
Nebraska	2	40,356.11	3	40,369.07
Nevada			1	22.22
New Hampshire				
New Jersey				
New Mexico			1	123.20

STATE	SECOND QUARTER NUMBER	SECOND QUARTER AMOUNT <sup>1</sup>	YEAR- TO-DATE NUMBER	YEAR- TO-DATE AMOUNT <sup>1</sup>
New York	1	304.57	16	1,741.26
North Carolina			1	98.00
North Dakota	16	2,095.71	47	25,971.91
Ohio	2	3,700.54	3	3,870.26
Oklahoma	2	207.80	2	207.80
Oregon				
Pennsylvania				
Puerto Rico				
Rhode Island				
South Carolina	1	20.00	2	302.46
South Dakota	41	23,490.34	62	63,168.98
Tennessee			3	95.50
Texas	4	2,746.48	9	13,357.10
Utah			1	120.38
Vermont				
Virginia				
Washington			1	27.38
West Virginia				
Wisconsin	41	3,977.51	98	21,482.44
Wyoming				
Unidentified	<u>1</u>	<u>152.50</u>	<u>17</u>	<u>16,149.03</u>
TOTAL	<u>1076</u>	<u>\$619,034.82</u>	<u>2527</u>	<u>\$997,968.51</u>

<sup>1</sup>These figures do not include recoveries to bad debt.

<sup>2</sup>The Minnesota figures include not only Minnesota bad debts, but also includes some group bad debt, including Medicare and Legal categories.

SECOND QUARTER FISCAL YEAR - 1987  
and YEAR-TO-DATE BAD DEBTS  
BY ADMITTING SERVICE

ADMITTING SERVICE	SECOND QUARTER NUMBER	SECOND QUARTER AMOUNT <sup>1</sup>	YEAR- TO-DATE NUMBER	YEAR- TO-DATE AMOUNT <sup>1</sup>
Anesthesiology				
Dentistry			1	9.93
Dermatology				
Family Practice	1	517.88	1	517.88
GYN	2	4,499.06	6	6,791.77
GYN Oncology	10	3,152.26	23	11,165.48
Lab. Medicine & Pathology				
Medicine-Blue	2	610.02	3	4,090.24
-Green	6	7,025.55	10	9,529.77
-Masonic(Oncology)	9	3,475.98	14	5,852.98
-Purple			1	2,213.99
-Red A	5	10,975.27	7	11,509.00
-Red B	1	202.70	1	
-Rose A	1	297.97	3	403.22
-Rose B				
-White A	7	1,122.15	11	3,931.83
-White B	9	9,827.24	11	10,787.55
-Yellow A	2	108.60	2	108.60
-Yellow B	1	31.00	1	31.00
Neurology	1	16,311.67	5	16,879.69
Neuro-epil	3	1,720.89	3	1,720.89
Neurosurgery	6	4,988.04	13	7,472.94
New Born - General	2	5,865.07	4	6,602.03
Obstetrics - General	1	131.57	4	489.72
Ophthalmology	3	801.36	7	1,710.60
Orthopaedic Surgery	10	1,918.65	24	10,821.59
Otolaryngology	2	600.85	8	3,938.13
Pediatrics-General	7	5,897.61	16	25,692.45
-Neurology			2	265.00
-Neurosurgery	1	125.00	1	125.00
-Ophthalmology	1	3,054.47	1	3,054.47



ADMITTING SERVICE	SECOND QUARTER NUMBER	SECOND QUARTER AMOUNT <sup>1</sup>	YEAR- TO-DATE NUMBER	YEAR- TO-DATE AMOUNT <sup>1</sup>
-Orthopaedic	1	3,133.23	2	4,224.91
-Otolaryngology				
-Surgery Green			1	20.00
-Surgery Orange	2	1,089.72	3	1,863.17
-Urology	1	11.61	1	11.61
Physical Med. & Rehab.	1	88.62	2	111.74
Psychiatry - Child			1	1,734.05
- Adult	5	12,637.51	11	17,549.69
Radiology				
Surgery -Blue	9	45,992.00	14	54,010.48
-Orange	5	2,881.95	7	3,557.15
-Purple	3	52,594.13	5	53,671.30
-Red	6	8,998.74	8	11,735.36
-White	5	1,372.08	7	3,836.34
Therapeutic Radiology				
Urology	4	6,407.48	8	7,114.41
Unknown	7	31,020.86	33	87,859.61
Outpatient	<u>934</u>	<u>369,546.03</u>	<u>2241</u>	<u>604,754.01</u>
TOTAL	<u>1076</u>	<u>\$619,034.82</u>	<u>2527</u>	<u>\$997,968.51</u>

<sup>1</sup>These figures do not include recoveries to bad debt.



UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455

January 23, 1987

TO: Board of Governors

FROM: Clifford P. Fearing  
Senior Associate Director

SUBJECT: Update on Hospital Appropriation Review by the State Department  
of Finance

Following discussions with the State Department of Finance it appears that the Governor's budget recommendations will transfer \$6.6 million of the \$13.9 million Hospital appropriation to regular University operating funds. Of the \$6.6 million reduction, \$4.6 will continue to be provided to UMHC in support of instructional educational costs incurred by UMHC. An additional \$2 million will be transferred to the Medical School to support graduate medical education costs presently funded by UMHC which will also be transferred to the Medical School.

This will leave the Hospital special appropriation at approximately \$7.7 million for 1987-88.

If this proposal is passed in its present form it will essentially leave State support of UMHC at current levels.

CPF:th



UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Box 604  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455  
(612) 626-5003

Date: January 14, 1987

To: Planning and Development Committee  
Board of Governors

From: C. Edward Schwartz *C. E. Schwartz*

Subject: **UNIVERSITY OF MINNESOTA HOSPITAL AND CLINIC - MESABI REGIONAL  
MEDICAL CENTER AND LOCAL CLINIC AFFILIATION**

Our negotiations with the hospital in Hibbing and the two major clinics, the Mesaba Clinic and the Adams Clinic, have resulted in an affiliation between us. Our medical staff will enhance the medical offerings in Hibbing by providing on-site physician consultation services while hospital staff will assist Hibbing providers in marketing, computerized data transmission and continuing education. This agreement has been in the discussion stages for nearly six months and was finalized in late December. This agreement is another successful effort on the part of Dr. LaBree and our outreach department.

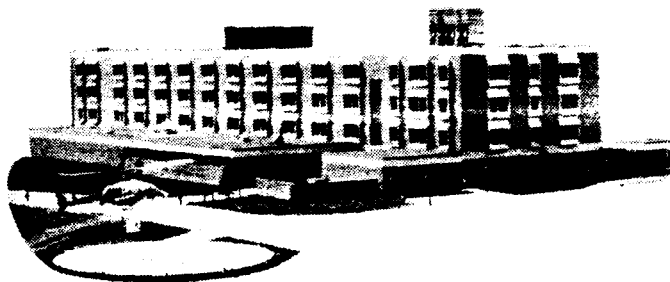
A copy of Mesabi Regional Medical Center's administrator's response is also included for your information.

CES:GLK:asf

Attachment

# Mesabi Regional Medical Center

750 East 34th Street, Hibbing, Minnesota 55746  
(218) 262-4881



TO: All Employees  
FROM: David M. Beach, Chief Executive Officer  
DATE: January 6, 1987  
RE: University of Minnesota Affiliation Update

The Board of Directors, Medical Staff and Administration are pleased to announce that the Mesabi Regional Medical Center and the Adams and Mesaba Clinics have approved a major affiliation with the University of Minnesota Hospital.

This major affiliation will incorporate areas such as, but not limited to, a broad spectrum of specialist visits, referral network development in Hibbing and the University's marketing support and assistance with continuing education.

The University of Minnesota/Mesabi Regional Medical Center affiliation also re-emphasizes the aspect of sequential care that at times can be very critical for the well being of our patients. To have additional expertise readily available in an established affiliation and to have referrals return to our hospital for the continuum of care, is what makes this type of relationship so very beneficial for all of our patients.

We want you, our employees, to be the first to know about this exciting and positive approach that your Medical Staff, Board of Directors and Administration are undertaking to ensure the success and long term viability for our health care facilities here in the central Range area. We are meeting with University officials on this Thursday and the details of the affiliation will be released to the news media within the next few weeks.

We will be communicating to you on an ongoing basis regarding the various programs and services that will be developing with this major affiliation. Many of you, I am sure, will be involved in one area or another and assisting with the overall growth of this dynamic concept.

It is our hope that you will actively support this positive approach, for within it lies much of our future.

# **Quality In Health Care: Time For Action**

**Metro Hospital Trustee Council**

**November, 1986**

# Metro Hospital Trustee Council

7150 CAHILL ROAD ♦ SUITE 314  
EDINA, MINNESOTA 55435  
612-941-3908

November 30, 1986

Dear Reader:

The Metro Hospital Trustee Council is pleased to share with you a copy of their most recent position statement, **Quality of Health Care: A Time For Action**.

This position statement was produced over an eight month period in 1986 with substantial input from a variety of sectors, including physicians, CEO's of hospitals, employers, HMO's, policy analysts, the public sector, labor, and insurers. Their assistance was very much appreciated, and many of the points of view we heard are represented in our statement.

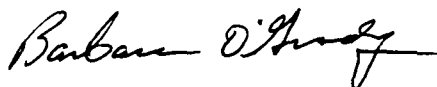
Quality in health care is a front burner issue in our community at this time. It is an ongoing concern for hospital trustees, and central to their basic role and responsibility.

This position statement provides a beginning framework for discussion and highlights some of the challenging questions we must answer in this community through our collective effort.

The leadership of the Metro Hospital Trustee Council is committed to giving their time and energy to the community effort that will advance both the science and the open process of assuring quality in health care.

We encourage you to join in the action.

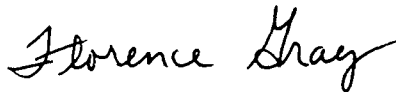
Sincerely yours,



Barbara O'Grady, President  
Metro Hospital Trustee Council  
Trustee - University Hospitals



Lee Canning, Chairman  
Task Force on Quality  
Trustee - Health Central



Florence Gray, Vice Chairman  
Task Force on Quality  
Trustee - Gillette Children's Hospital

Enclosure

POSITION STATEMENT ON QUALITY AND

COMMUNITY VALUES IN HEALTH CARE

Issued by :  
Task Force on Quality  
and Community Values  
Metro Hosp Trustee Council  
7150 Cahill Rd, Suite 314  
Minneapolis, MN 55435

POSITION STATEMENT ON QUALITY AND COMMUNITY VALUES

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## Task Force on Quality and Community Values

### I. INTRODUCTION

The trustees of hospitals and health care corporations have a special responsibility and accountability for the preservation of quality standards in the delivery of health care both to their organizations and to the community as a whole.

This task force was organized to consider the current status of defining and measuring quality, and to evaluate how quality is being affected by the changes resulting from competition in health care and new directions in health care policy.

This position statement focuses on the role and responsibility of the hospital trustee in providing good quality of care within their organization. It also emphasizes the responsibility of hospital trustees as community leaders to participate in the growing initiatives to address quality of care as part of the competitive marketplace.

#### Procedures

This task force deliberated from January - August 1986, and considered information from policy analysis, payors, community and public health leaders, peer review, providers, HMO's, employers, and labor.

This statement was approved by the Metro Hospital Trustee Council on November 19, 1986.

#### The Composition of the Task Force

- |  |   |
|--|---|
| 1. Lee Canning, Chair<br>Health Central, Inc.  | 2. Florence Gray, Vice Chair<br>Gillette Children's Hospital        |
| 3. Carlos Luis<br>Mounds-Midway  | 3. Frances Naftalin<br>Lifespan                                     |
| 5. Tom Mattison, past CEO<br>Mercy Medical Center<br>Representing the Council of Comm Hosp | 6. Paul Bowlin, MD<br>Representing Minnesota<br>Medical Association |
| 7. Barbara O'Grady, Council President<br>University Hospitals                              |   |
| 8. LuVerne Molberg, Staff Consultant<br>Metro Hospital Trustee Council                     | 9. Barbara Dixon, Trustee Staff<br>MN Hospital Association          |

II. PREAMBLE

WE BELIEVE THAT . . .

- o HOSPITAL TRUSTEES HAVE A RESPONSIBILITY TO UNDERSTAND AND TO PRESERVE COMMUNITY VALUES RELATING TO QUALITY HEALTH CARE.
- o QUALITY OF CARE ENCOMPASSES THE ENTIRE CONTINUUM OF CARE AND MUST BE ADDRESSED IN A COORDINATED MANNER, WITHIN EACH ORGANIZATION AND WITHIN THE COMMUNITY.
- o PERSONAL RESPONSIBILITY FOR HEALTH IS AN ESSENTIAL INGREDIENT OF QUALITY AND A BASIC COMMUNITY VALUE.
- o THE ACHIEVEMENT OF QUALITY OF CARE IS A CHALLENGE TO THE ENTIRE COMMUNITY, NOT JUST PROVIDERS.
- o THE COSTS AND RISKS IN ACHIEVING QUALITY AND PRESERVING OUR COMMUNITY VALUES MUST BE SHARED AMONG PROVIDERS, CONSUMERS, AND BUYERS/PAYORS IN A FAIR AND EQUITABLE MANNER.
- o INFORMATION ON QUALITY OF CARE AND OUR COMMUNITY'S HEALTH STATUS MUST BE AVAILABLE TO ALL, BUT ESPECIALLY TO CONSUMERS AND BUYERS.
- o PROVIDERS HAVE A RESPONSIBILITY TO TAKE THE LEAD IN DEFINING QUALITY OF CARE, WORKING WITH CONSUMERS AND BUYERS.
- o ACCESS TO THE ACCEPTABLE BASIC STANDARD OF CARE VALUED IN THIS COMMUNITY MUST BE ASSURED FOR ALL POPULATIONS AS A COMPONENT OF QUALITY.

There are five theme questions that permeate this statement...

1. Why is quality of care an issue?

Quality of care is an evolving community value that cannot be taken for granted and must not be jeopardized by changing competitive forces in health care. Quality of health care directly affects the health of the community and subsequently all other aspects of our society.

2. How is quality to be measured?

This is a complex question that needs further explanation. The immediate danger is that the answer will be oversimplified by the preliminary steps now being taken in quality measurement.

The performance of physicians and other health professionals in hospitals and other health care settings, organizational performance, physical plant, technological and procedural innovation, plan performance, access to care, and community health status are all factors of quality of care. Patient satisfaction; patient compliance and appropriate use of services along the full continuum of care are also ingredients of quality.

3. Who should measure quality of care?

In principle, all affected stakeholders have a right and a responsibility to be involved in quality measurement and quality management.

In practice the measurement of quality should include an "insider self interest" component and an "outsider objective community interest" viewpoint.

4. At what point in the continuum of care should quality measurement occur?

Although the early focus is on physician performance in the hospital setting, the challenge is to understand and measure quality in all settings, at all levels of care, as delivered by all professionals.

5. What kind of measures should we have?

The goal must be to develop meaningful outcome measures on two levels: outcomes to the patient, and outcomes for the community as a whole. These outcome measures should consider short and long term results and the overall cost to society of quality compromises. Outcome measures must not be emphasized however, to the detriment of patient satisfaction and process. Severity indexing is essential to meaningful data.

### III. TASK FORCE FINDINGS

- A. There is a growing interest in quality of health care from a number of sectors and for a variety of reasons:
1. Concerns about poorly targeted government cutbacks.
  2. Potential negative consequences of the growing physician surplus.
  3. Growing pressures on providers to compete on price and quality.
  4. A shopping consciousness among consumers.
  5. More proactive "buying" of plans and services by employers to reduce or control costs.
  6. New developments in quality measurement systems.
  7. Growing concerns about quality from government as a buyer.
  8. The potential for payors' use of quality measurements in reimbursement.
  9. A shift from a health professional controlled system to a business and management controlled system.
  10. Need by hospital administrators to better manage resources, measure performance and compete on quality.
- B. Historically, quality measurement has emphasized inputs and process e.g. the qualifications of health professionals, and the quantity of tests and procedures administered. Now efforts are underway to focus on outcome measures i.e. what results were achieved for the patient and for the community as a whole, and what resources were used? The scope of quality measurement is expanding beyond hospitals to include physicians, HMO's, nursing homes, and home care. Our value assumptions underlying quality measurement have shifted from "more is better" to "less is better" to "value for money spent."
- C. Quality in general can focus on:
- 1) Service quality which has to do with process, patient cooperation, patient satisfaction, staff-patient relations, and comprehensiveness of care along the continuum.
  - 2) Medical practice standards--which has to do with incidence of illness and per case outcomes, and the approximate, efficient and effective use of resources.
  - 3) Community public health--which has to do with access, ethics, social justice, long term results, and public costs.

- D. Quality of care is multi-dimensional in nature and a total organizational responsibility. It encompasses technical competence, the art of care, patient expectations, cost, support systems, and organizational culture and morals. Thus it involves the interdisciplinary team of care givers in addition to the physician and spans the entire continuum of care.
- E. The federal government is moving toward incorporating more quality measures into its peer review programs. The peer review programs to date have primarily focused on hospitals and on utilization rather than quality. Over time, federal review requirements in HMO's long term care, ambulatory care, and home care can be expected. Our community values being in a proactive rather than a reactive role to any federal mandates on quality of care.
- F. Competition influences cost automatically, whereas quality and access concerns must be consciously built into the competitive system. The impact of competition on access for vulnerable populations (poor, minority, the life long chronically ill, elderly, uneducated, handicapped, uninsured) and the long term impacts on the community's overall health are not known. The community needs a health care system that responds to community values and to people, is coordinated on behalf of the patient, recognizes diversity, and focuses on health rather than just medical care. Dealing with vulnerable populations is a responsibility that cannot be avoided. The question is how...

#### IV. CONCLUSIONS

- A. A multi-dimensional quality measurement system focusing on outcomes is needed. The measurements of quality agreed upon must be perceived as fair and accurate by providers, consumers, and purchasers. There must be a demonstration period for all affected players to adjust to the new rules and learn to trust others to comply with them.
- B. Quality assessment should include both public and private sector services and both for profit and not for profit organizations.
- C. The measurement of quality is complex and costly. It is labor intensive and time consuming. Sophistication in the system will occur only as the cost/benefit of measuring quality is accepted by payors and providers alike.
- D. The system to define and measure quality will continue to develop incrementally. The measurement of quality in the outpatient setting and home care will be more complex because of the influence of socioeconomic and other factors. These systems will evolve because of both public demand and provider initiatives.
- E. It will be important to resist overstandardizing the practice of medicine as the system moves toward defining standards for quality and measuring outcomes against these standards. The measurement of quality is both a science and an art. It requires both objective systems and human judgement. If medical quality is defined as "the degree of adherence to a standard," there is a limit to how much physician practice can and should be standardized.

Our community faces a value decision in determining how conservative a practice style by physicians would be the desirable norm. The data we are currently collecting on physician practice styles and on quality is crude and should be understood in the context of its limitations.

- F. The information on quality will be of interest to providers, to purchasers of care, as well as to the general public and public officials. The community will be challenged to agree upon what information should remain proprietary as part of our competitive process, and what information should be made public as part of the public's right to know. The community has a strong stake in being informed, but confidentiality need also be protected. Providers have a right to review and comment on data prior to its release to the public.
- G. There are a number of unanswered questions and concerns over how information on quality should be used and released--including if it should be tied to payment for health care.

- H. Current quality assurance and quality management systems in hospitals are probably inadequate in light of the changes underway in the community to measure quality, and the buyers desire to know. Trustees will have an increasing role in quality assurance within their own organization, including patient advocacy. Current information received by hospital trustees is geared more to price and to malpractice concerns than to quality.
- I. Society, as well as the individual, is served by assuring the availability of health care. Inadequate access to health care costs society more in the long run.

The community must be vigilant in assuring that access to minimum service is standard and available to all. We all share in the responsibility to access. A statewide and/or regional community approach is far preferable to a national strategy relying on regulation.

- J. Quality will evolve only to the degree it is valued and given credibility by the organization's governing board and integrated as a priority into management systems.
- K. Buyers need to be sensitized to buy based on quality as well as on price.
- L. Continued emphasis on individual responsibility for healthy living and the prevention of illness will be imperative. Quality of health care begins with a quality lifestyle (nutrition, exercise, stress management, etc.).

V. RECOMMENDATIONS

Preamble: "Hospital trustees have a responsibility to understand and to preserve community values relating to quality health care."

A. THE HOSPITAL BOARD SHOULD DEVELOP POLICY ON THE MANAGEMENT OF QUALITY WITHIN THE ORGANIZATION TO INCLUDE THE:

- QUALITY ASSURANCE AND RISK MANAGEMENT SYSTEM
- CONTINUITY OF QUALITY BEYOND ACUTE CARE
- CREDENTIALING OF PHYSICIANS AND HEALTH CARE PROVIDERS
- COLLECTION AND DISSEMINATION OF INFORMATION ON PHYSICIAN PRACTICE STYLE
- USE OF INFORMATION ON INDIVIDUAL PHYSICIANS
- SYSTEM FOR PATIENT ADVOCACY
- THE AVAILABILITY OF PATIENT SUPPORT SERVICES (social work, etc.)

HOSPITAL TRUSTEES SHOULD BE REPRESENTED ON THE COMMITTEE RESPONSIBLE FOR IMPLEMENTING THE POLICIES OF THE BOARD ON QUALITY OF CARE.

TRUSTEES SHOULD URGE THEIR HOSPITALS TO UNDERTAKE INNOVATIONS IN QUALITY MEASUREMENT AND MANAGEMENT NOW RATHER THAN WAITING FOR THE ULTIMATE SYSTEM TO ARRIVE.

Preamble: "Quality of care encompasses the entire continuum of care and must be addressed in a coordinated manner within each organization and within the community."

B. ALL COMMUNITY STAKE HOLDERS NEED TO DEFINE A CONSENSUS AND DEVELOP A GENERAL DIRECTION OF THE FOLLOWING KEY QUESTIONS RELATED TO QUALITY:

- WHAT ARE WE MEASURING IN QUALITY ASSESSMENT ON PATIENT COMPLIANCE, ON INDIVIDUAL PROVIDER PERFORMANCE, ON THE ORGANIZATIONAL LEVEL, AND ON THE COMMUNITY LEVEL?
- WHAT IS THE ACCEPTABLE AND DESIRED MODE OF HEALTH CARE DELIVERY AND PHYSICIAN PRACTICE STYLE IN THIS COMMUNITY?
- WHAT ARE OUR COMMUNITY VALUES UNDERLYING QUALITY OF CARE? HAVE WE ADEQUATELY DEFINED THE ACCEPTABLE FLOOR FOR QUALITY?
- WHAT INFORMATION ON QUALITY NEEDS TO BE MADE AVAILABLE IN THE INTEREST OF AN "INFORMED PUBLIC?" WHO IS THAT "PUBLIC?"
- WHAT INFORMATION ON QUALITY NEEDS TO BE KEPT PRIVATE IN THE INTEREST OF PROPRIETARY OR PROFESSIONAL INTERESTS, CONFIDENTIALITY, AND LEGAL AND ETHICAL CONCERNS? SHOULD INFORMATION BE RELEASED ONLY IN AGGREGATE FORM OR ON INDIVIDUAL PROVIDERS?



- WHO WILL BEAR THE MAJOR COSTS FOR THE DEVELOPMENT AND REFINEMENT OF AN ACCEPTABLE QUALITY MEASUREMENT TECHNOLOGY AND FOR ITS IMPLEMENTATION IN THE SYSTEM?
- WHEN AND TO WHAT DEGREE SHOULD INFORMATION ON INDIVIDUAL PHYSICIAN PRACTICE PATTERNS OR ORGANIZATIONAL PERFORMANCE BE TIED DIRECTLY TO REIMBURSEMENT?
- HOW WILL ACCESS TO THE MINIMUM SERVICES BE ASSURED TO THE VULNERABLE POPULATIONS IN OUR COMMUNITY? HOW WILL SERVICES BE ADAPTED FOR THESE POPULATIONS?

Preamble: "Personal responsibility for health is an essential ingredient of quality and a basic community value."

- C. EDUCATION OF THE PATIENT IN SELF CARE AND FOLLOW UP TECHNIQUES SHOULD BE CONSIDERED BASIC TO A QUALITY OUTCOME AND IS A SHARED RESPONSIBILITY BETWEEN THE TEAM OF PROVIDERS AND THE PAYOR. THIS IS ESPECIALLY IMPORTANT IN LIGHT OF THE MOVE TOWARD EARLIER DISCHARGE OF HOSPITALIZED PATIENTS. RESOURCES SHOULD BE MADE AVAILABLE BY PAYORS TO ASSIST INDIVIDUALS IN ASSUMING MORE RESPONSIBILITY FOR SELF CARE. PROVIDERS SHOULD DEVELOP EDUCATIONAL PROGRAMS THAT ARE UNDERSTANDABLE TO THE PATIENT AND SENSITIVE TO CULTURAL AND ECONOMIC DIFFERENCES.

Preamble: "The achievement of quality of care is a challenge to the entire community, not just providers."

- D. THE COMMUNITY SHOULD PROCEED COLLECTIVELY INTO MORE INTENSE DIALOGUE ON THE DEFINITION OF QUALITY STANDARDS, THE IMPLEMENTATION OF THESE STANDARDS ACROSS THE CONTINUUM OF CARE, AND THE METHOD FOR COLLECTION AND SHARING INFORMATION ON QUALITY. PROVIDERS SHOULD TAKE A LEADERSHIP ROLE IN INITIATING THESE DISCUSSIONS. TRUSTEES SHOULD ASSIST IN CONVENING THIS EFFORT AND PLAY AN INTEGRAL ROLE IN THE DISCUSSIONS, TOGETHER WITH ALL KEY AFFECTED CONSTITUENCIES.
- E. ALL PROVIDERS, HMO'S AND HEALTH CARE ORGANIZATIONS SHOULD HAVE AN OUTSIDE ENTITY INVOLVED IN MEASURING QUALITY TO ASSURE OBJECTIVITY AND GIVE CREDIBILITY.
- F. THE COMMUNITY BUYER SYSTEM SHOULD TAKE A LEADERSHIP ROLE IN DEMONSTRATING THE IMPACT OF QUALITY FACTORS ON PURCHASING DECISIONS AS THE COMMUNITY DEMONSTRATION PROCEEDS.

Preamble: "The achievement of quality of care is a challenge to the entire community, not just providers."

"The costs and risks in achieving quality and preserving our community values must be shared among providers, consumers, and buyers/payors in a fair and equitable manner."

- G. THE EMPLOYER COUNCIL OF THE MINNESOTA COALITION ON HEALTH SHOULD TAKE A LEADERSHIP ROLE IN EDUCATING EMPLOYERS ON HOW TO PURCHASE HEALTH CARE BASED ON QUALITY AS WELL AS ON PRICE.
- H. EMPLOYERS SHOULD WORK WITH LABOR IN DESIGNING PROGRAMS TO INFLUENCE THE ATTITUDES OF EMPLOYEES ON POTENTIAL CHANGES IN BENEFIT PACKAGES THAT ADDRESS SHARED PROVIDER AND CONSUMER RESPONSIBILITY FOR QUALITY OUTCOMES.
- I. EMPLOYERS AND LABOR SHOULD CONDUCT EMPLOYEE SATISFACTION SURVEYS TO MEASURE THE PERCEIVED QUALITY OF BOTH INPATIENT AND OUTPATIENT SERVICES RECEIVED, AS WELL AS EMPLOYEE SATISFACTION WITH THE OVERALL PLAN.
- J. THE MINNESOTA COALITION ON HEALTH SHOULD CONTINUE ITS CONSIDERATIONS ON QUALITY AND SHOULD ENCOURAGE THE LABOR AND EMPLOYER COUNCILS AND THE LABOR/MANAGEMENT COMMITTEES BEING FORMED TO KEEP QUALITY A HIGH PRIORITY AGENDA ITEM IN THEIR DISCUSSIONS.
- K. EMPLOYERS, PAYORS, AND PROVIDERS SHOULD JOINTLY PROJECT THE COSTS OF DEVELOPING A QUALITY MEASUREMENT SYSTEM AND A STRATEGY FOR INCLUDING IT IN THE PREMIUMS.

Preamble: "Information on quality care and our community's health status must be available to all, but especially to consumers and buyers. Providers can use this information to continually monitor and upgrade their performance."

- L. THE COUNCIL OF COMMUNITY HOSPITALS AND MEMBER HOSPITALS IN COOPERATION WITH OTHER APPROPRIATE RESEARCH ORGANIZATIONS SHOULD IMPLEMENT A STUDY THAT SAMPLES DISCHARGED PATIENTS TO EVALUATE THE QUALITY OF CARE RECEIVED WITHIN THE HOSPITAL AND THE CONTINUITY OF CARE AFTER DISCHARGE.
- M. DATA ON PHYSICIAN PRACTICE STYLES SHOULD NOT BE USED BY PAYORS OR OTHERS IN A PUNITIVE MANNER AGAINST PHYSICIANS BUT RATHER AS A TOOL FOR EDUCATION TO CHANGE THEIR BEHAVIOR. TRUSTEES SHOULD PROMOTE THE EDUCATION OF PHYSICIANS IN THEIR HOSPITALS ON VARIATIONS IN PRACTICE PATTERNS.

- N. ALL PAYORS SHOULD SHARE THE INFORMATION ACQUIRED FROM A SEVERITY MEASURE SYSTEM WITH THE WIDER COMMUNITY AND SEEK COMMUNITY INPUT INTO REFINEMENT OF THE SYSTEM TO IMPROVE VALIDITY AND RELIABILITY OF THE DATA. INFORMATION FROM MEDICARE AND MEDICAID, SHOULD ALSO BE MORE ACCESSIBLE.
- O. THE COUNTY AND STATE MEDICAL ORGANIZATIONS SHOULD TAKE A LEADERSHIP ROLE IN STIMULATING PROGRAMS TO ASSESS PHYSICIAN PERFORMANCE AND ASSIST PHYSICIANS WHO ARE NOT IN CONFORMANCE WITH THE QUALITY PERFORMANCE STANDARDS AND NORMS DEVELOPED BY THIS COMMUNITY.

Preamble: "Providers have a responsibility to take the lead in defining quality of care, working with consumers and buyers."

- P. HOSPITALS AND OTHER HEALTH CARE PROVIDERS SHOULD MAKE QUALITY ASSURANCE A MAJOR ORGANIZATIONAL PRIORITY AND COMMIT ADEQUATE RESOURCES FOR A SUBSTANTIAL AND PROGRESSIVE PROGRAM TO BE IMPLEMENTED. THEY ALSO HAVE A RESPONSIBILITY TO COMMUNICATE TO THE PUBLIC ON AN ONGOING BASIS INFORMATION ON THE QUALITY OF CARE BEING PROVIDED IN THEIR ORGANIZATION.
- Q. HEALTH CARE PROVIDERS SHOULD THINK OF THEMSELVES AS FACILITATORS OF HEALTH AND TAKE MORE RESPONSIBILITY FOR PREVENTION AND FOLLOW UP, WORKING WITH OTHERS TO ACHIEVE COORDINATION OF PATIENT CARE, TO MEASURE QUALITY OF CARE, AND TO PROVIDE PUBLIC HEALTH SERVICES.
- R. A PROVIDER COUNCIL SHOULD BE DEVELOPED TO FORMULATE A CONSENSUS PROVIDER POSITION ON QUALITY STANDARDS AND RELATED ISSUES OF MUTUAL CONCERN. THE HOSPITAL TRUSTEE COUNCIL SHOULD TAKE A LEADERSHIP ROLE IN BRINGING THE PROVIDERS TOGETHER.
- S. EMPLOYERS, LABOR, CONSUMERS, AND PROVIDERS SHOULD WORK TOGETHER TO DEVELOP/IMPLEMENT A DATA COLLECTION SYSTEM ON QUALITY. PROVIDERS SHOULD TAKE THE LEAD IN THIS EFFORT.
- T. THE COUNTY/STATE MEDICAL ASSOCIATIONS SHOULD ALSO TAKE A LEADERSHIP ROLE IN BEGINNING TO DEVELOP QUALITY MEASUREMENT STANDARDS FOR AMBULATORY CARE AND CARE IN THE PHYSICIAN'S OFFICE. THESE MEASUREMENT SYSTEMS SHOULD INCLUDE THE PROFESSIONAL TEAM APPROACH TO CARE.

Preamble: "Access to the acceptable basic standard of care valued in this community must be assured for all populations as a component of quality."

- U. PAYORS SHOULD REIMBURSE HEALTH CARE AT A LEVEL THAT WILL ASSURE CONFORMANCE WITH THE COMMUNITY'S STANDARDS FOR QUALITY OF CARE. SOME LEVEL OF COVERAGE SHOULD BE AVAILABLE FOR ALL INDIVIDUALS FROM EITHER PUBLIC FUNDS OR PRIVATE INSURANCE.

# **Metro Hospital Trustee Council**

## **Summary Highlights of 1986**

**Metro Hospital Trustee Council**  
**7150 Cahill Road, Suite 314**  
**Edina, Minnesota 55435**  
**December, 1986**

# Metro Hospital Trustee Council

7150 CAHILL ROAD ♦ SUITE 314  
EDINA, MINNESOTA 55435  
612-941-3908

December 30, 1986

Dear Hospital Trustee:

On behalf of the Metro Hospital Trustee Council, I am pleased to make available to you a copy of the Summary Report of our activities for 1986.

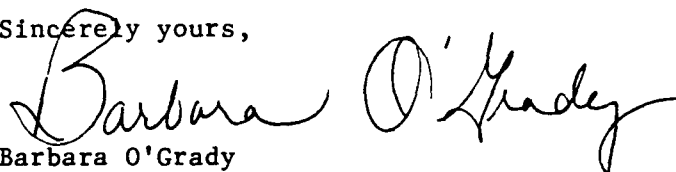
We have included in this document the basic philosophy and mission of the Council together with a brief summary of the major policy positions we have taken since our origin eight years ago. We would be interested in any comments or reactions you have on the Council's past and future. Please feel free to contact our staff consultant, LuVerne Molberg, or Connie Morrill at 941-3908.

The Council remains firm in the mission that in complex social and economic problems, voluntary solutions are preferable to and usually more effective than government imposed solutions. In that spirit, the Council renewed its commitment to continue its voluntary community leadership role. We will be participating in the significant community policy discussions that could affect our hospital organizations and our community at large in the future.

It is a most challenging and demanding period in which to serve as a voluntary hospital trustee as the health care system continues to undergo unprecedented change. The need for informed and dedicated trustee leadership has never been greater. The Trustee Council serves as a resource to us in that role.

It has been my privilege to serve as President of the Council in 1986.

Sincerely yours,



Barbara O'Grady  
President  
Chairperson, University Hospitals

Encl.

## METRO HOSPITAL TRUSTEE COUNCIL

### SUMMARY HIGHLIGHTS OF 1986

#### INTRODUCTION

The Trustee Council was organized in 1978 in the belief that in complex social and economic problems, voluntary solutions are preferable to and usually more effective than government imposed solutions. This mission was further refined to recognize and support market forces as a major tool for increasing productivity and containing costs in the delivery of health care.

The Trustee Council supports the dual responsibility of the hospital trustee to the individual hospital organization and to the wider community. The Council exists to influence public policy on issues affecting the wider community. Its members support the principle that local problems should be resolved at the local level. Thus they strive to help develop a community consensus among the key interested groups and constituencies who will be affected by the changes occurring on the local health care scene.

#### LEADERSHIP

Trustee Council leadership is active in four different ways:

Issue Analysis

Public Policy Development

Community Networking

Trustee Development

The Officers for 1986 were:

President	Barbara O'Grady, University Hospitals
Vice-President	William Geydesen, United Hospitals
Treasurer	Joan Nickells, Mpls. Children's Hospital

GOALS AND PRIORITIES FOR 1986

1. STRONG TRUSTEE LEADERSHIP ON KEY PUBLIC POLICY ISSUES.

FOLLOW UP: Graduate Medical Education

NEW FOCUS: Quality of Care and Community Values  
Long Term Care

ONGOING: Price Disclosure and Data Issues  
Market Forces and Buyer Initiatives

2. STRONG ACTIVE LINKAGES WITH KEY CONSTITUENCIES.

MINNESOTA LEGISLATURE

Hold second annual Legislative Reception

COUNCIL OF COMMUNITY HOSPITALS

Regular column in TRUSTEE newsletter  
Policy issue coordination

MINNESOTA HOSPITAL ASSOCIATION

Linkage to the Trustee Committee  
Policy issue coordination

MINNESOTA MEDICAL ASSOCIATION , HENNEPIN COUNTY MEDICAL SOCIETY  
RAMSEY COUNTY MEDICAL SOCIETY

Coordinate activities on quality issues  
Coordinate activities on bio-medical ethics issues

MINNESOTA COALITION ON HEALTH CARE COSTS

Monitor and encourage employer purchasing initiatives  
Monitor and encourage labor purchasing initiatives

TWIN CITY COMMUNITY PROGRAM FOR AFFORDABLE HEALTH CARE

Monitor and influence activities of the Community Buyer  
System

MINNESOTA DEPARTMENT OF HEALTH

Coordinate on data issues  
Review reports on health care system

METRO HEALTH PLANNING BOARD

Participate in Evaluation project

CITIZEN'S LEAGUE

Review health policy reports

**3. INVOLVEMENT AND COMMITMENT FROM ALL MEMBERS OF THE METRO HOSPITAL TRUSTEE COUNCIL**

**Opportunities to serve on task forces**

**Discussion opportunities at monthly meetings**

**Attendance at Trustee Conferences and Legislative Reception**

**Balance in leadership from east and west hospitals**

**4. STRONG LINKAGES BETWEEN THE TRUSTEE COUNCIL AND THE MEMBER HOSPITAL AND HOSPITAL CORPORATION BOARDS.**

**Annual summary of Council activities to all trustees**

**Dissemination of position statements to all trustees**

**Regular President's Column and news articles on the Trustee Council in TRUSTEE newsletter**

**Encouraging board member attendance at Trustee Conferences**



## COUNCIL ACTIVITIES

### ISSUE ANALYSIS

The Council developed a position statement on quality of care and community values entitled **Quality in Health Care: Time For Action**. This statement was widely circulated in the community and will serve as the basis for Council leadership policy initiatives, and community dialogue on this topic for the coming months.

The Council also provided a written commentary on the Health Systems Plan.

### PUBLIC POLICY LEADERSHIP

#### Council Philosophy on Public Policy Leadership

The hospital trustees as voluntary leaders of their organizations have both the opportunity and the responsibility to represent the community interest on health care policy issues. Since they do not have a paid vested interest in the health care delivery system, they bring a unique voice to the issues.

The Trustee Council provides a focus for trustees to come together from competing organizations to consider the common public issues that will affect all of their organizations and the wider community interest.

Through the Council, the trustee leadership has an opportunity to be kept informed on policy issues that will affect the health care system and the community as a whole, to deliberate those issues together, and to develop a trustee consensus position on the issues.

In their community leadership role, trustees can influence elected officials and other community decision makers based on the issue positions developed within the Council.

The Council also sponsors educational conferences planned by trustees for trustees to provide a wider forum for all trustees to discuss the significant community health policy issues of concern to the Council.

It is the conviction of the Metro Hospital Trustee Council that trustee leaders should only be lobbying for and promoting positions that they have studied, deliberated and helped to develop.

## The Policy Positions of the Council

- \*Support increased competition among all providers.
- \*Support price conscious buyer initiatives by employers, employees and government in purchasing health care plans.
- \*Support the need for initiatives from all sectors of the community to make the marketplace work.
- \*Support an active Ethics Committee within hospitals, and local solutions to address community concerns on ethical issues in health care.
- \*Support separation of graduate medical education costs from patient care costs.
- \*Support a local initiative to oversee and assure a quality graduate medical education program in our community.
- \*Support a strong leadership role for trustees within hospitals to develop policy on the management of quality of care.
- \*Support a combined effort between providers and purchasers to develop the measures for quality of care.
- \*Support a local community effort to develop a consensus on a strategy for gathering and sharing data on quality of care.
- \*Support a broad based community solution to financing the health care of the uninsured through coverage from public funds or private insurance sources.
- \*Support guaranteed access to an acceptable standard of care for all populations.
- \*Supported the Evaluation Project to track important changes occurring in cost, quality, and access over a ten year period.
- \*Supported termination of Certificate of Need.
- \*Supported voluntary bed reduction in 1978.

## TRUSTEE DEVELOPMENT

### Guest Resource Presentations

The Council heard presentations during 1986 from the following resources in the community.

David Brown M.D.	Dean of the Medical School
Mary Kay Zagaria	Twin City Community Program
David Hunt	Twin City Community Program
Laird Miller	Honeywell
John Kingrey	Minnesota Hospital Association
Jim Koppel	Council of Community Hospitals
Malcolm Mitchell	Metro Health Planning Board
Margit Berg	Metro Health Planning Board
Neal Vanselow M.D.	University Health Sciences

The Council also viewed the video entitled "Hospital Self Evaluation: A Commitment to Excellence."

### Hospital Trustee Conferences

The Minnesota Hospital Trustee Conference sponsored two conferences in 1986. These conferences are planned by hospital trustees for trustees and provide an opportunity for sharing expertise and points of view with trustees, CEO's and physicians from other hospital organizations from around the state.

May 6, 1986	"Entrusting Tomorrows Hospital to Today's Trustee"
Oct.31, 1986	"Quality in Health Care: The Next Competitive Wave"

## COMMUNITY NETWORKING

Representatives of the Trustee Council were active in wider community issues in a number of arenas.

### COUNCIL OF COMMUNITY HOSPITALS

Co-Sponsors of the newsletter TRUSTEE  
Monthly column by Council President  
Joint leadership meetings to discuss data issues

### HEALTH EDUCATION RESEARCH FOUNDATION

Council members serving on the Board include:

Stan Hill  
David LaVine  
Allen Housh  
LuVerne Molberg, Council Staff

### MINNESOTA COALITION

Council member Chairman: David LaVine

Council members on Board: Barbara O'Grady  
LuVerne Molberg, Council staff

Participants on the Information Alliance:

Barbara O'Grady  
Frank Bremer  
Lee Canning  
LuVerne Molberg, Council Staff

Participation in the study and the planning of the Healthy Babies project:

Joan Nickells

### TWIN CITIES COMMUNITY PROGRAM FOR AFFORDABLE HEALTH CARE

Council members on Board: Florence Gray  
Barbara O'Grady  
David LaVine

### UNIVERSITY OF MINNESOTA HEALTH SCIENCES ADVISORY COMMITTEE

Council appointee: Vern Hoium

CITIZEN'S LEAGUE/SENATOR DURENBERGER COMMUNITY FORUM

Council representative: Barbara O'Grady

METRO HEALTH PLANNING BOARD

Council members serving on the Evaluation Committee:

Lee Canning  
Stan Hill

MINNESOTA MEDICAL ASSOCIATION

Follow up discussions on position statement on bio-medical ethics

MINNESOTA HOSPITAL ASSOCIATION

Council members serving on Trustee Committee:

Joan Nickells, Co-Chair  
Vern Hoium  
Barbara O'Grady

AMERICAN HOSPITAL ASSOCIATION COUNCIL ON GOVERNANCE

Chairman Elect: Vern Hoium

NATIONAL VOLUNTARY TRUSTEE ORGANIZATION

Attendance at conferences  
Exchange of information on position statements

PENNSYLVANIA HOSPITAL TRUSTEE ASSOCIATION

Shared information on position statements of the Council

## COMMITTEE AND TASK FORCE MEMBERS

### TASK FORCE ON QUALITY AND COMMUNITY VALUES

Lee Canning, Chair	Health Central Systems
Florence Gray, Vice Chair	Gillette Children's
Carlos Luis	Mounds-Midway
Fran Naftalin	Lifespan, Inc.
Barbara O'Grady	University Hospitals
Paul Bowlin M.D.	Minn. Medical Association
Tom Mattison	Council of Community Hospitals
LuVerne Molberg	Council Staff Consultant
Barbara Dixon	Minnesota Hospital Association

### MINNESOTA HOSPITAL TRUSTEE CONFERENCE

Robert Christenson, Chair	Health Central Enterprises
Pat Pardun, Coordinator	Council of Community Hospitals
Barbara Klemme	Metropolitan Medical Center
Frank Bremer	Carondelet
Vern Hoiium	Unity Medical Center
Jeffrey Kaufmann	University Hospitals
LuVerne Molberg	Council Staff Consultant
Barbara Dixon	Minnesota Hospital Association

### LEGISLATIVE RECEPTION

Vern Hoiium	Unity Medical Center
Sam Sivanich	Hennepin County Medical Center
P.J. Doyle, Alternate	Hennepin County Medical Center
LuVerne Molberg	Council Staff Consultant
Lon Heinitz	Trustee, health lobbyist

### NOMINATING AND BUDGET COMMITTEE

#### Nominations

Barbara O'Grady, Council President  
Frank Bremer, Immediate Past President, East Council  
Lee Canning, Immediate Past President, West Council

#### Budget

Joan Nickells, Treasurer  
Barbara Klemme, President Elect  
Stan Hill, President Elect

## A SAMPLING OF POTENTIAL ACTIVITIES FOR THE COUNCIL FOR 1987

In September of 1986, the Council considered its future priorities and interests. A number of ideas emerged in that meeting and in subsequent discussions about challenges that should be addressed in the future.

- \* Developing a Code of Ethics for hospital trustees
- \* Following up on implementation of the report **Quality in Health Care: Time for Action**
- \* Monitoring the Evaluation Project of the Metro Health Planning Board and bringing it up to date
- \* Identifying the principles that should guide a hospital board as it makes decisions in a competitive environment
- \* Following national activities related to graduate medical education
- \* Gathering information on current models of quality assurance within metropolitan hospitals and making that information available to the general public

These and other ideas will be considered as the new leadership of the Trustee Council assumes responsibility at the end of the year and sets the agenda for 1987.

# Hospitals become strange bedfellows

## Economic necessity results in mergers by 4 major groups

By Maura Lerner  
Staff Writer

In the hospital business, this is what's known as the mating season.

One after another, hospitals in the Twin Cities are declaring their intentions to tie the knot. They're merging at an almost breathless pace, in ways they never would have expected five years ago. But it's less out of love than economic ty.

The signs are everywhere. In September, five St. Paul area hospitals joined forces under a single new management company, HealthEast. A few weeks later, two companies that run a total of six local hospitals announced they would merge under the name HealthOne. Shortly afterwards, Abbott Northwestern and Methodist, two of the busiest medical centers, said they planned to link up under a single management umbrella.

If all the announced mergers go through, just four companies will control the hospital care of nearly 60 percent of Twin Cities' patients.

In these new mergers, the hospitals remain separately owned, but they share a single management team. That, many say, is part of a new trend that's not only changing the face of medicine, but may determine which hospitals survive and which fail in the next few years.

"It's very apparent that these sorts of relationships are necessary for survival," said John Reiling, a driving force behind the new HealthOne company.

Donald Wegmiller, president of the new HealthOne, agrees. "It's clear in this market to every observer that we do have more capacity —

more hospital capacity and physicians — than we actually need. Logic tells you there's likely to be some shakeout. It seems to us that one of the ways to minimize the impact on individual hospitals is banding together."

For many, banding together seems to be the only answer to growing competition in the medical marketplace.

And these days, competition for patients is fierce. The problem: empty beds. On an average day last year, more than half of the region's 10,332 licensed hospital beds were empty. In 1985, the average occupancy rate in the Twin Cities area was only 45 percent, compared with more than 70 percent in 1975, according to the Metropolitan Health Planning Board.

Hospital use has dropped sharply as a result of government and other efforts to control health care costs. So hospitals, with all that unused space, are looking for new ways to cut costs, hold onto patients and increase market share.

And that's what the hospital management groups say they have to offer. "There's a ton of different ways as a system that we can help," said Reiling, president of operations for HealthEast. One way is to streamline office staffs and consolidate administrative areas, such as accounting and purchasing, in a single office.

Some other group strategies:

■ Concentrating some medical specialties into what one official calls "centers of excellence." For example, in 1983, Fairview decided to merge its adolescent drug and alco-

Hospitals continued on page 11M

Continued from page 1M

hol treatment programs into one site — Deaconess Hospital — rather than running separate programs at all its centers. Similarly, groups may consolidate open heart surgery in one hospital, newborn intensive care in another, and so on.

■ Pooling money for marketing and advertising.

■ Running other businesses outside the hospital walls. These days, planners say, it's not enough to be in the hospital business only. They're diversifying," said Malcolm Mitchell, director of the Metropolitan Health Planning Board. "They're now dealing with everything from housing to home care to nursing homes to hospice care. It's almost birth to grave." Some of the hospital groups are also buying or, for a fee, managing doctors' clinics.

■ Launching joint ventures with other hospitals or groups. Together, they may buy high-tech equipment, run such things as diagnostic clinics and emergency rooms, and even sell malpractice insurance.

The strategies are as varied as the groups themselves. And throughout the country, those groups are on the rise. The number of hospitals owned or managed by hospital chains grew from 1,877 in 1980 to 2,480 in 1985, a 32 percent jump, according to the American Hospital Association. About 43 percent of all community hospitals are now operated as part of a group. Many of those are church-related groups, yet the fastest growing sector is in the for-profit hospital system, such as Humana or Hospital Corp. of America.

In Minnesota, which has a long tradition of nonprofit hospital care, the for-profits haven't made much headway. But the competition is no less aggressive.

And in the Twin Cities area, which has 34 hospitals, four nonprofit management groups have emerged as the dominant players:

■ HealthOne, which operates six local hospitals (Metropolitan Medical Center, United, Mercy, Unity, St. Paul Children's and Golden Valley), also runs 24 hospitals in rural Minnesota and neighboring states.



# HOSPITALS: Strategies vary for merged firms

■ LifeSpan, which runs Abbott Northwestern, Minneapolis Children's Medical Center, Sister Kenny Institute, and, as of January, hospitals in Morris and Cambridge, Minn. It's still negotiating with Methodist Hospital.

■ Fairview, which operates the three local Fairview hospitals, also runs hospitals in Princeton, Milaka and Waseca, Minn., as well as in Shell Lake, Wis., and Des Moines, Iowa. It also jointly owns a doctors' clinic in Oxboro, Minn.

■ And HealthEast, which includes Mounds Park, Midway, St. John's Northeast and Eastside hospitals and Bethesda Lutheran Medical Center, all in the east metro area.

A few smaller groups run a handful of other local hospitals, while others including a few prominent players such as North Memorial, Hennepin County and the University of Minnesota Hospital — are still independent. But the game isn't over yet.

"You have to assume we're talking to others, and we are," said Gordon Sprenger, president of LifeSpan.

"Frankly," said HealthEast's Relling, "in today's market, everyone talks to everyone."

But talks don't necessarily lead to mergers, as Gordon M. (Gus) Donhowe, Fairview's chief operating officer, is quick to point out. "There have been a great number of mating dances," he said, "but not as many marriages as proposals."

"Our objectives," he added, "aren't necessarily to expand simply by acquiring somebody. Our objective is to grow in market share."

In fact, all four hospital groups are jockeying for position to increase market share and geographic distribution. Both are essential, they say, to compete for contracts with health maintenance organizations (HMOs) and other insurers that control the patients go for health care.

The assumption is that the big "purchasers" of health care, like HMOs, will find it easier and cheaper to strike deals with large groups than

individual hospitals. But are the large groups really able to run at a savings?

"It's not at all clear," admits Donhowe. "It's clear to us that, if done right, your unit costs can be lower. But that doesn't mean it automatically happens."

In fact, the management groups may add new layers of cost, particularly in such areas as marketing and advertising. "You have to believe with the amount of advertising (that) there's a new cost," said LifeSpan's Sprenger. "That's the price of competition. Five years ago, we had no marketing or advertising people on our staff. Today we have five. That in itself tells the change that has occurred."

But John G. Anderson, a health care analyst with Paul Ellwood & Associates, says there's only one way these hospital groups really could save money: by closing hospitals, either in full or in part.

"It's not the kind of thing that is talked about bluntly, certainly not in public," he said. But "I think everybody understands that the dynamic is present. It's no longer going to be possible to support all of the hospital capacity that we've built. To pay a whole lot of people to run at 35 percent (occupancy) is ridiculous, compared with paying a few to run at 80 percent."

Mitchell, of the Health Planning Board, has predicted that as much as half the hospital space in the Twin Cities will close in a few years. Other estimates range from one-fourth to one-third.

"Most of the hospital administrators look to the next five years with the question of if they still will be operating," said Anderson. "Downtown, it looks like a real catfight."

But he's doubtful what role the hospital groups will play in the shake-out. "We see no indication that the hospital industry is interested in (closing hospitals) voluntarily," he said. "Hospitals have political lives in themselves. They don't just fold their tent and say, 'we're not needed anymore.'"

In fact, the hospital groups admit that they're caught in a bind. They see themselves as both a defense against hospital closings and a first step in that direction.

By banding together, they argue, hospitals can improve their financial position and patient base, and may avoid the need to close. But at the same time, they admit, hospital groups may need to consolidate services and close some buildings down the road.

"If that's the long-term decision, it gives you an opportunity to do that in a rational way," said Relling of HealthEast.

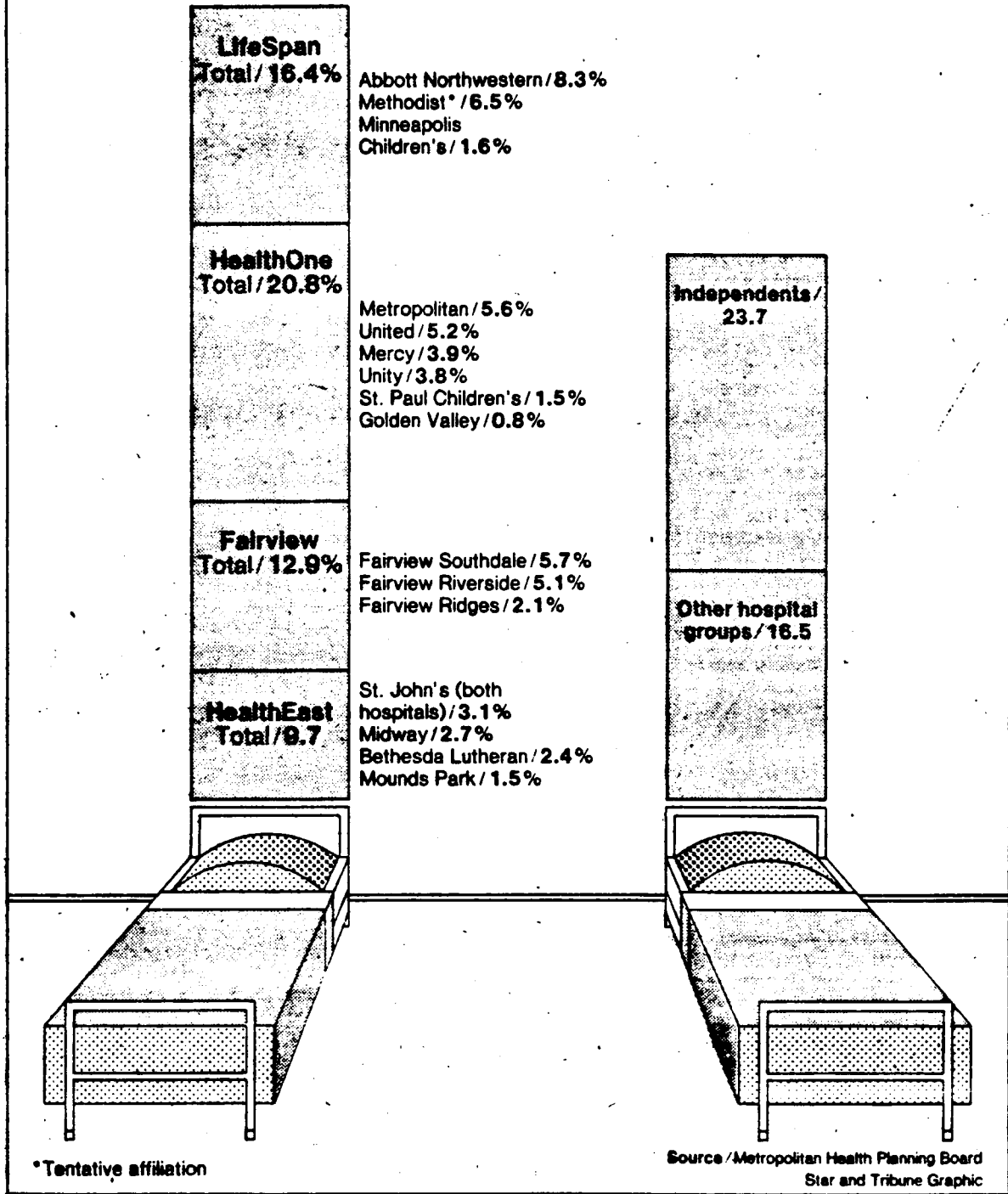
Will independent hospitals be able to survive on their own? That depends, some say, on their location and market niche — whether they offer something unique, such as the teaching and research facilities at the University of Minnesota Hospital.

But others are more skeptical. Says LifeSpan's Sprenger: "I think there will be very few, if any, independent institutions that won't be part of any system."

Sprenger says he believes that virtually all of the area's hospitals eventually will be run by "three or four" groups. And that, he admits, could mean less competition in the health care market. "That's certainly a risk," he said. "But on the other hand, you're going to have three or four very strong competitors."

## Hospital groups in the Twin Cities /

Four major hospital groups are jockeying for position in the Twin Cities market. The chart shows the hospitals in each group and the market share of each, based on 1985 admissions.



## Litchfield doctor, author William A. Nolen dies

By Roman Augustoviz  
Staff Writer

Dr. William A. Nolen, 58, a small-town Minnesota surgeon who became a nationally known author, died Saturday in University of Minnesota Hospital in Minneapolis. He had undergone quintuple bypass heart surgery there Dec. 10 after suffering his third heart attack in about a week.

Nolen, of Litchfield, Minn., gained celebrity status with his first book, "The Making of a Surgeon," published in 1970. It made the New York Times best seller list and brought frequent invitations to ap-

pear on "The Tonight Show," "The Merv Griffin Show" and other national programs.

He wrote about controversial subjects, Leitch said, such as male menopause, impotence and lumpectomy (tumor removal for breast cancer) when radical mastectomy was the common procedure.

Outside his two careers, Nolen enjoyed hockey, until his first heart bypass operation in 1975, and tennis and racquetball. He had his second bypass operation in 1982.

"He figured he had only so many years left after his last bypass," Leitch said, "but he never showed any fear. He was joking when I sent him to the Twin Cities even though he knew how serious his condition was. They had to rush him into surgery" after his third heart attack.

Nolen was born March 20, 1928, in Holyoke, Mass., and received his surgical training as an intern and resi-

dent at Bellevue Hospital in New York City before moving to Litchfield.

Nolen is survived by his wife, Joan; sons James and Julius, both of Minneapolis, and William D. of Washington, D.C.; daughters Jody of Minneapolis, Anna Rahman of Torrence, Calif., and Mary of Chicago; mother Katherine of Ware, Mass.; sisters Mary McGrath of Simsbury, Conn., and Judy Crimmins of Wilbraham, Mass., and brother James of Ware, Mass.

Nolen continued on page 2A

Services will be held at 11 a.m. Tuesday at the Church of St. Philip, 306 Holcombe Av. N., Litchfield. Visitation will be from 4 to 9 p.m. today at Johnson-Hagglund Funeral Home, 316 Sibley Av. S., Litchfield.

Leitch, a colleague of Nolen's at the Litchfield Clinic. "He taught many how to do appendectomies and hernias and lot of times assisted us ... We loved him for that."

In his early years at Litchfield, Nolen often had spare time, so he started writing. He always used a pencil and always wrote on unlined paper. Even before surgery he would write or read if he had spare time.

His articles have appeared in medical publications and magazines such as McCall's and Esquire, and his book reviews appeared frequently in the Minneapolis Star and Tribune.

"He really helped out the family doctors in the area," said Dr. Cecil



Dr. William Nolen gained national attention in 1970 with his first book.

# 'U' chief transplant surgeons are workaholics

By Gordon Slovut / Staff Writer

**T**hey have two of the most glamorous jobs at University of Minnesota Hospital.

Outside the hospital they aren't particularly well known. But around the operating rooms there is no doubt that Dr. Steve Ring and Dr. Nancy Ascher are very important surgeons.

Ring, 41, is chief of heart transplantation, and he has done so many heart transplants — about 60 of the university's 101 — that he has lost track.

Ascher, 37, is chief of liver transplantation, and she has done almost all of the university's 105 liver transplants — probably 85 or 90.

Ring and Ascher are known as workaholics around the hospital, but that's not unusual. Most surgeons at University Hospital become workaholics as they divide their time between operating rooms, research laboratories, classrooms and examining rooms.

Ring, who has been chief heart transplant since 1983, said he is still awed midway through the operation "when you look in the chest (after a diseased heart has been removed) and there is nothing there."

Heart surgery at the university has become so safe that all but two of Ring's 60 transplant patients are alive. He has done hundreds of other heart operations — many to correct abnormalities in infants, to bypass clogged coronary arteries in adults and to freeze heart tissue that causes potentially lethal heart rhythm irregularities.

Ascher has been chief of liver transplantation since 1982 when Dr. John Najarian, chief of surgery, asked her to restart a program that had been aban-

Ascher is more awed by work in the laboratory which may eliminate the need for many liver transplants.

"It may be possible to inject cells from a donor liver into a recipient, have those cells take over liver function, making the transplant unnecessary, giving the patient's own liver time to recover," Ascher said. "Conceivably one donor adult liver could provide cells for 10 infants."

Ascher is working with other university scientists on developing the liver cell transplant. "We don't know the best place to put them; it could be in the spleen, in the liver, or elsewhere," she said.

Ring and Ascher also participate in other transplants.

Ring works with Dr. Stuart Jamieson, director of the university's heart and lung institute, on heart-lung transplants and on the development of the university's next major organ transplantation program — lung transplantation.

Every four months Ascher takes a turn for a month as a kidney transplant, the program Najarian continues to supervise closely himself.

"I've done hundreds of kidneys," she said.

There are many differences between Ring, who is almost always serious, and Ascher, who likes to joke.

"Nancy really keeps things alive around here," Ring said.

Asked what he would do if drugs were developed that prevented heart disease, corrected congenital heart defects in infants and restored damaged hearts, Ring said he had never thought about turning his back on surgery.

were injured and he could no longer operate, he replied soberly that he would do research and teach.

Asked what she would do if cell transplantation made her job obsolete, Ascher smiled. "I think I'd just drink martinis," she said.

Then she added: "You want a serious answer? The cell injection won't be a replacement for all liver transplants, it won't cure biliary atresia (a blockage that severely scars the liver). But I could do other research. If I weren't in this, I think I'd like to work on AIDS research."

Ring grew up in a Philadelphia suburb, the son of a prosperous businessman, played baseball and basketball in high school, attended Brown University and Harvard Medical School.

"I wasn't an outstanding athlete," he said. "I suppose that a lot of surgeons were jocks in high school because athletes are action-oriented, and you have to be action-oriented in surgery."

He got interested in surgery when, as a medical student, he spent a few weeks on the kidney transplant service of a Harvard-affiliated hospital in Boston. He liked the drama of surgery and "the challenge — I've always liked challenges; in the medical profession you find mostly over-achievers, few under-achievers."

He was accepted for a surgery residency at Duke University and was attracted to heart surgery. "In heart surgery, you can have a very positive effect on people's lives," he said.

Eventually, he wound up in the research laboratory of Dr. Rob-

the University of Minnesota as head of cardiovascular surgery. Anderson asked Ring to come along, and within a few years Ring was head of heart transplantation.

Ring and his wife, Denise, who has a master's degree in business administration and does consulting work, have two children, a son, Willie, 17, and a daughter, Ashley, 11.

Ascher was born in Detroit, the daughter of an allergist. She was an undergraduate and a medical student at the University of Michigan, where she and another undergraduate, Robert Caplan, were married. Caplan is chairman of obstetrics and gynecology at Park-Nicollet Medical Center.



## SURGEONS: Research would be alternative

Ascher came to Minnesota for her surgical residency and stayed on with a transplant fellowship. In 1982 she asked Dr. Frank Starzl of the University of Pittsburgh, the world's leading liver transplanter, what he thought about her as an applicant for a surgery position there.

"He said, 'Why don't you think about doing liver transplants?'" she said.

Pittsburgh already had a liver transplanter and Minnesota didn't.

Ascher asked Dr. Najarian about restarting the liver program here and he said yes and hired her.

Ascher and Caplan have no children.

Liver transplantation isn't nearly as advanced — nor as successful — as heart transplantation.

"I have been to a lot of funerals," Ascher said. "With livers, if things don't go well, it seems to drag on and on and you become very close to the family."

Her longest-living survivor is Jamie Fiske, the 5-year-old girl from Massachusetts who got a transplant Nov. 5, 1982, after her father appeared on national television for a donor organ.

The liver transplant survival rates are improving: 25 percent among earlier 1982 transplants, 40 percent in 1983, 60 percent in 1984, and 85 percent in 1985 and 1986.

In a heart transplant, the surgeon has everything under control. Once the chest is open, everything is accessible and in full view. There is no

seals are connected to a heart-lung pump. From a technical standpoint, Ring said, the heart transplant often is easier than repairing defective heart valves.

In the liver transplant, surgeons must feel their way because the organ is tucked into a cramped area of the abdomen. The liver is the body's chemical factory and one of its chief products is the chemical that causes the blood to clot. A failing liver produces little or no clotting factor so the patient is loaded with as much clotting factor — extracted from donated blood — as possible.

"Bleeding is a serious problem," Ascher said.

She said the operation takes six hours when everything goes perfectly, and she has spent 18 hours on her feet in the operating room when it hasn't.

"To be a transplant surgeon," she said, "you have to have stamina and be stubborn."

Ring said he thinks the next major advances in organ transplantation will come from scientists who will develop drugs to prevent rejection of the donor organ but not damage other organs — as cyclosporine now sometimes damages kidneys — and not dampen the recipients' resistance to infection and disease.

Once that is accomplished, he said, the next step probably will be the successful use of hearts from other species. He said research efforts are underway at the university on cross-species transplants.

Ring and Ascher are both physically

Ring plays tennis two or three times a week. He often spends vacations canoeing with Denise and the children. "The Boundary Waters are perfect," he said.

Ascher plays racquetball regularly and jogs 4 or 5 miles around the Minneapolis lakes several mornings a week at a respectable pace of 8 minutes, 30 seconds per mile.

Their days start at 6 a.m. and usually end at 9 p.m., and they generally take no more than two weeks or so of vacation a year. Ascher tries to get out a bit early on Thursday nights.

"My favorite TV show is 'L.A. Law,'" she said. "I asked a lawyer on an airplane the other day what he thought about the show, and he said it was terrible, he couldn't stand it, it wasn't realistic. I feel the same way about 'St. Elsewhere.' I suppose a lawyer would like 'St. Elsewhere.'"

Ring said his love for medicine hasn't been transmitted to his son.

"I think it's because he sees the kind of life I lead. I wouldn't want to be doing anything else in the world, though."

Ascher, who spends vacations either in New York museums or lying in the sun, isn't foreclosing the possibility that she and her husband may transmit their love for medicine to another generation.

"My mother was 40 when she had me," Ascher said. "And I have a younger sister."

Does that mean she's going to have children?

"I haven't decided that yet," she said.



Staff Photo by Joey McLeister



Staff Photo by Charles Bjorgen

Dr. Nancy Ascher / Chief of liver transplantation, she is in awe of work in the laboratory, which may eliminate the need for many liver transplants.



Staff Photo by Joey McLeister

Dr. Steve Ring/ Chief heart transplant surgeon since 1983, he said he is still awed midway through surgery "when you look in the chest (after a diseased heart has been removed) and there is nothing there."

# 'U' designated as research center for AIDS

**By Lewis Cope**  
Staff Writer

The University of Minnesota Hospital received federal designation Monday as the first AIDS-treatment research center in the Midwest, opening the way for area AIDS patients to get new, experimental drugs against this killer disease.

The first patients are expected to start getting drugs in about a month.

At least 60 will participate in studies involving up to a half-dozen drugs by the end of the year, said Dr. Henry Balfour, the University of Minnesota virus expert who will direct the new program.

Balfour's team will get more than \$5 million in grants from the federal National Institutes of Health to cover the program's costs over the next 4½ years. During that period more than 350 patients are expected to partici-

pate in various drug-treatment studies.

"This will be a real advantage to patients throughout the Midwest," he said. There are now 19 federally designed AIDS Treatment Evaluation Units, but most are on the East and West coasts, where the largest number of AIDS cases have been. Until the Minnesota center got this designation, "The closest has been in Pittsburgh, which is 887 miles

away," Balfour said.

He said that some patients are expected to come to Minnesota from Chicago and elsewhere in the Midwest to participate, but that the majority are likely to be Minnesotans. Patients will have to be checked regularly in the Twin Cities. Doctors at St. Paul-Ramsey Medical Center and Hennepin County Medical Cen-

AIDS continued on page 7A



## AIDS Continued from page 1A

ter are co-investigators for the study, and other Twin Cities doctors also will be involved in some of the research.

There have been 155 confirmed cases of AIDS in Minnesota so far, but only 72 of these patients are still alive, according to the Minnesota Department of Health. It predicts that the total number of cases in the state will reach somewhere between 1,000 and 2,000 by the end of 1990.

Balfour said the best hope for the near future is finding drugs that can extend the lives of AIDS patients long enough for even better drugs to come out of the laboratories. Within a year to 18 months, he said, some drugs may be tried in patients who have picked up the virus but haven't yet become ill, in hopes they will prevent the disease from developing in them.

Here's how the studies are expected to unfold:

■ One of the first drugs likely to be studied in the University Hospital program is AZT. About 25 Minnesota AIDS patients, and more than 3,000 across the nation, already are getting this drug. It is the first and so far only one proved capable of extending the lives of some AIDS patients, and the only experimental drug that has been available to Minnesota AIDS patients.

The federal designation will allow more patients to get AZT, and others to start getting one of the half-dozen experimental drugs that have come out of laboratories in the last few months, Balfour said. "Most Minnesota AIDS patients will be able to participate if they choose," he said. "No one will be turned away for lack of funds."

■ Computers linking the 19 centers will enable them to share results quickly. "If any new treatment approach is promising, we want to know that quickly," so that more patients can have a chance to bene-

fit, Balfour said. While only a few patients in the Twin Cities or any other city might be benefiting, the pooled results from 19 centers should make any encouraging results quickly apparent. On the other hand, if a drug is causing serious side effects, that also will become quickly apparent, and its use can be curtailed, he said. AZT causes anemia in some patients, requiring blood transfusions.

■ "We are in a unique situation to study patients not yet ill," Balfour said. Thousands of Minnesotans have picked up the AIDS virus but haven't yet developed AIDS. Some have relatively minor symptoms, such as night sweats and fatigue, called ARC (AIDS-related complex). Others have no symptoms at all. Not all of these patients will develop AIDS, studies indicate, but there is no way to know which ones will.

Once some relatively safe drugs that can attack the AIDS virus are found, they can be tried in patients who haven't yet developed AIDS, in hopes that this may keep the virus in check. If this works, AIDS might never occur in some or many people who otherwise would develop the deadly disease. Balfour said that because the Minnesota researchers will be dealing with relatively few cases of AIDS compared with other states, they can put a lot of effort into this research area.

Antibiotics and most other drugs combat bacteria, not the much smaller viruses. Most viral illness, like the common cold, must run their course. Balfour has been a national leader in research on virus-fighting drugs. He helped test acyclovir which can control some herpes infections, and other antiviral drugs.

Other members of the team include several researchers at the University of Minnesota, Dr. Margaret Simpson at Hennepin County Medical Center and Dr. Keith Henry at St. Paul-Ramsey Medical Center.

# U researcher Yunis links genetic defects, cancer

By Delores Lutz  
Staff Writer

Cancer develops in a series of 15 separate steps linked to genetic defects, a University researcher reported in today's issue of The New England Journal of Medicine.

In the future, that knowledge will help doctors fight cancer better by allowing them to accurately predict the course of each patient's disease and then tailor-make the treatment, Dr. Jorge Yunis, a professor of laboratory medicine and pathology who co-authored the article, said in an interview Wednesday.

"If you have 10 patients, you can treat it as 10 different diseases rather than as one or two," Yunis said.

Refined laboratory techniques might be available for routine use in about two years, he said.

Yunis and his colleagues found 15 types of chromosome defects in a study of 71 patients with follicular lymphoma, the most common cancer of the lymph system. The disease strikes about 11,000 people in the United States each year.

Ten of the defects — which included missing, extra or misplaced genes — appeared to influence the cancer's development or the re-



Jorge Yunis

sponse to treatment.

"It's not just one cancer gene or growth factor, but several," Yunis said. "We think we now have the clue, and we expect we will be finding (the defects) in other solid tumors (such as cancer of the colon or breast)."

Lymphoma patients usually have only one chromosome defect when the disease begins, but some develop additional duplications and deletions of the chromosome's bands, the researchers reported.

Particular defects were associated with a rapid development of the disease, while other defects occurred in patients whose cancer progressed slowly, the researchers reported.

Among those who had small-cell lymphoma with only one chromosome defect, the disease developed so slowly that they did not need treatment for one to four years. Such patients could be expected to live for 10 to 15 years after diagnosis, Yunis said.

"Treatment does not seem to do that much for them," he said. "The cells are not dividing, and they are not sensitive to chemotherapy. When the disease becomes worse, many of them are curable with chemotherapy."

Patients with additional defects developed large-cell lymphoma, failed to respond to treatment and did not live longer than three years.

Patients with certain chromosome abnormalities were overwhelmed by certain treatments.

"Some chemotherapy is too aggressive," Yunis said, and patients with some defects do best with no treatment at all. The findings are similar to Yunis' earlier study of leukemia patients.

# Medical-Cost Trend After 1990 Disputed

## Growth Rate May Soar Unless Care Is Rationed

By DAVID STIPP

Staff Reporter of THE WALL STREET JOURNAL

Recent slowing of the growth of hospital costs is misleading, and the costs will skyrocket after about 1990 without "painful" health-care rationing, according to a study by a prominent Boston medical economist.

"I know of no arithmetic short of wiping out the hospital system that would prevent high increases in hospital costs unless access to expensive high-technology medicine is limited, asserts William B. Schwartz, a professor at Tufts University School of Medicine.

Dr. Schwartz's views, published in a study in today's issue of the *Journal of the American Medical Association*, already are causing blood pressures in medical circles to rise because of the study's controversial conclusions. Many medical specialists argue that there are still plenty of effective ways to cut hospital costs.

### Dangerous Complacency

Health-care specialists concur, however, that the study sounds an alarm that needs to be heard. They are worried that a recent slowing of hospital-cost growth has resulted in a dangerous complacency about the continuing rise in health-care costs overall. "I think we are lulled by recent progress," says Rashi Fein, a medical economist at Harvard Medical School. Dr. Schwartz "has performed a useful service by getting people to recognize that we haven't licked the problem," he adds.

Dr. Schwartz's study claims that shortening hospital stays and other cost-cutting measures are little better than treating a brain tumor with aspirin. He acknowledges that such efforts have relieved economic headaches—in 1984, the last year covered by the study, community-hospital costs rose only 2.1% when adjusted for inflation, compared with average annual rises of 6.8% from 1977 to 1983. But these statistics, Dr. Schwartz says, mask alarming growth in hospital costs that eventually will necessitate major surgery for the health-care system.

The problem, he explains, is that hospital stays can be shortened only so much, and that only so many nonessential medical procedures can be eliminated. He figures that by 1990 or so, such cutbacks will be exhausted.

Meanwhile, the real factors behind skyrocketing hospital costs—our growing and aging population; higher costs for hospital labor and supplies; and the introduction of new and expensive technology—won't have been addressed. Among these, he notes, only costs associated with new technology, which account for about half of hospital-cost increases, can be limited.

"I think we'll have to ration health care as the British do," he says. High-technology heart surgery, for example, "would be given to young patients expected to have a promising response. But with an old, very sick patient with multiple diseases, we might not do the procedure."

### Dispute Over Rationing

While medical specialists generally support Dr. Schwartz's view that current efforts to contain hospital costs haven't solved the problem, many of them disagree with his prediction that painful health-care rationing is likely. Hospital costs, which accounted for about 39% of the nation's \$425 billion health-care bill in 1985, "are very important," says Regina Herzlinger, a medical economist at Harvard Business School. "But you can't validly leap from their cost increases to a conclusion that total health-care costs are rising out of control."

Moreover, Dr. Schwartz's critics argue, the U.S. health-care system remains heavily marbled with fat that if trimmed would reduce medical costs more than his analysis indicates. Doctors are encouraged to use many things that haven't yet been proved valuable, says Arnold Relman, editor of the *New England Journal of Medicine*. For example, "drug manufacturers run major marketing campaigns that encourage use of new drugs that may be less cost-effective" than existing ones, Dr. Relman says.

Dr. Schwartz's critics also assert that health maintenance organizations, or HMOs, and similar groups promise major savings by making the health-care industry more competitive. HMOs offer group health care to employers for a flat annual fee—an arrangement that encourages minimizing unnecessary treatment. Studies show that with HMOs, health-care costs are cut 15% to 25%, compared with traditional health insurance arrangements.

Such savings have only begun to be realized, asserts Alain Enthoven, a Stanford University business professor specializing in health issues. "Only about 35 million Americans belong to HMOs" and similar organizations, he says. "And we still don't have cost-conscious consumers who, if they choose more expensive health care, must pay for it."

Dr. Schwartz stresses that he supports cost reductions via HMOs and the like, which he estimates can cut U.S. health care costs \$20 billion to \$25 billion in 1983 dollars. But he argues that HMO costs, like hospital costs, are rising rapidly. And HMOs' savings come largely from limiting hospital stays and can only temporarily offset forces pushing up health-care costs.

### New Technology

Some medical specialists counter Dr. Schwartz's arguments with the assertion that new technology reduces medical costs. For example, angioplasty, a procedure in which balloons are inserted through blood vessels and then inflated to unclog blocked arteries, are an increasingly popular, relatively inexpensive alternative to open-heart surgery.

Dr. Schwartz argues, however, that such high-technology procedures are usually less traumatic than traditional treatments and hence tend to expand the pool of patients who can be treated. That negates the technologies' cost savings.

The expected curtailing of access to expensive new technology probably will take place indirectly at first, says Dr. Schwartz.

Slowed growth of government health expenditures, including those for Medicare, already is reducing hospitals' ability to buy the latest equipment. And with their markets shrinking, medical-technology concerns probably will scale back research and development, slowing introduction of new medical technology. "That's painful," says Dr. Schwartz. "But not as painful as having to tell people they can't have what is already there."

Ultimately, he adds, harder choices will have to be made unless Americans are willing to see hospital costs—now about 4% of the U.S. gross national product—become an increasingly large fraction of the GNP. And some experts say hard choices already are beginning to be made. "We're in the middle of rationing and cutting back," says Richard Egdahl, director of the Boston University Health Policy Institute. "The real issues now are ensuring quality as we ration and making sure the poor aren't denied access to health care."



UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455

January 26, 1987

Mr. C. Edward Schwartz  
Director  
The University of Minnesota  
Hospital and Clinic  
Box 604  
Harvard Street at East River Road  
Minneapolis, MN. 55455

Dear Ed:

On behalf of the Board of Governors of The University of Minnesota Hospital and Clinic, it is with great regret that I accept your resignation as the Director of the Hospital and Clinic effective March 1, 1987.

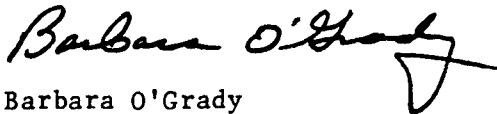
It has been a very real pleasure for me to work with you over the past two years as Chair of the Board, and the two years previous to that as a member of the Board. I have valued our working relationship. You have kept me and the Board informed of policy issues early in their development and encouraged a climate of open communication between Board members and your staff in order to develop the best strategies for the benefit of the Hospital's future.

While we will miss your leadership and creativity at the Hospital and Clinic as well as in the Twin Cities community, you have provided us with important leadership at a critical time in our development. You were responsible for the successful completion of Unit J before the scheduled completion date and under budget. You managed the move of the hospital successfully. You organized a strategic planning process and brought together the diverse elements of this complex organization to focus on our future together. You developed the marketing strategy while at the same time focusing efforts on a Patients First Program. Your sense of balance and vision is truly remarkable. You have demonstrated a caring attitude for patients, hospital staff, medical staff, University staff, Board members, Regents, and the community. You have created an image of the Hospital and Clinic as a caring institution as well as a competent one and an important community as well as a state and national resource.

Mr. C. Edward Schwartz  
January 26, 1987  
Page Two

I know the Board joins me in thanking you for the significant contributions you have made to The University of Minnesota Hospital and Clinic. We have benefited tremendously from your time here with us. We wish you great success and happiness in your new position.

Sincerely,



Barbara O'Grady  
Chair  
Board of Governors

BOG/kf

cc: Neal A. Vanselow, M.D.  
Board of Governors Membership



BARBARA O'GRADY  
Director

**RAMSEY COUNTY  
PUBLIC HEALTH NURSING SERVICE**

150 E. Kellogg Blvd. - St. Paul, Minnesota 55101

Metro Hospital Trustees Conference #14:

May 5, 1987 - all day  
St. Paul Radisson Hotel

Title: Hospital-Physician Relationships:  
Corporate-Cooperative-Competitive

Minnesota Hospital Association Trustee Retreat:

July 10, 1987 - evening  
July 11, 1987 - all day  
Cragun's Resort

# Metro Hospital Trustee Council

7150 CAHILL ROAD ♦ SUITE 314  
EDINA, MINNESOTA 55435  
612-941-3908

MONTHLY NEWS SUMMARY

January 1987

## 1. Health Coverage For the Uninsured

At least three reports have been issued calling for state legislative action to establish funding for the uninsured. The Children's Defense Fund proposes coverage for children age 6 and under. The Citizen's League report recommends phased in coverage with some overall limits. The Minnesota Department of Health recommends an insurance pool funded from the general fund, savings in the welfare program, and fees from those insured and from employers. There is an expectation that this issue will be considered during the 1987 session, but that any approach to funding will be guarded. All these reports call for the continuance of "charity care" to address those who fall between the cracks.

## 2. 1988 Budget

The draft budget for 1988 from the Office of Management and Budget proposes some dramatic changes in both Medicare and Medicaid.

Medicare: \* Lump physician payments for all inpatient services into DRG payments to hospitals

\* Replace the cost-based capital reimbursement system with a prospective system.

Medicaid: \* Another attempt to cap Federal payments to states for Medicaid

\* Federal incentives to states to put Medicaid recipients into pre-paid plans.

The debates on these issues will be heated.

## 3. Changes in Leadership

All Minnesotans will miss Senator Dave Durenburger chairing the Senate Finance Health Subcommittee as Maine Democrat George Mitchell assumes that position in 1987.

## 4. Interesting Trends (From literature review)

Marketing: A Houston hospital holds a drawing to give away one free delivery/month in OB.

HMO's: HMO's continue to do more aggressive marketing and to offer more benefit options to survive.

(over)

**BOARD OF GOVERNORS  
1986 SELF-EVALUATION SURVEY**

**SUMMARY OF RESULTS**

**ASSESSMENT OF STRUCTURE AND COMPOSITION:**

1.	Does the Board of Governors consist of a workable number of members to function efficiently and effectively?	<u>12</u> Yes	<u>0</u> No
2.	Is there an appropriate mix of professional talents and skills among Board members?	<u>9</u> Yes	<u>3</u> No
3.	Is the Board membership appropriately varied to ensure a breadth of representation?	<u>11</u> Yes	<u>1</u> No
4.	Is the Committee structure appropriate for the management of issues?	<u>11</u> Yes	<u>1</u> No

- Almost half of all respondents suggested that, in the future, Board membership be modified to enhance the level of "business expertise" and "orientation to industry."

**ASSESSMENT OF PROCESS:**

5.	Was your orientation to the Board of Governors thorough and useful?	<u>10</u> Yes	<u>2</u> No
6.	Are Board meetings scheduled at appropriate intervals?	<u>12</u> Yes	<u>0</u> No
7.	Are monthly agendas organized in a way that allow priority issues to be discussed at appropriate times?	<u>10</u> Yes	<u>2</u> No
8.	Are the Board of Governors business meetings conducted efficiently?	<u>11</u> Yes	<u>1</u> No
9.	Is the background material included in the agenda packets clear, concise and relevant?	<u>11</u> Yes	<u>1</u> No
10.	Is an appropriate level of information being transmitted from the Committees to the Board?	<u>11</u> Yes	<u>1</u> No



11.	Are staff members responsive in answering questions and providing necessary information outside of scheduled business meetings?	<u>12</u> Yes	<u>0</u> No
12.	Do you receive an adequate amount of information on continuing education opportunities offered by external groups?	<u>9</u> Yes	<u>3</u> No
13.	Is the level of continuing education or enrichment information provided at the Board meetings adequate?	<u>9</u> Yes	<u>3</u> No
14.	Are your requests made of the Board Office being met?	<u>12</u> Yes	<u>0</u> No

- One third of respondents felt that more time should be allowed for discussion of priority issues; that less time should be spent on review of informational items from committees. Recent changes to this effect were cited as being positive.
- The background material included in the agenda packet was cited as being very clear and concise. One third of respondents expressed a strong preference to receive packets sooner.
- One fourth of those responding felt an inadequate amount of information is provided regarding continuing education opportunities available through external groups. The same respondents felt that more enrichment information should be provided at Board meetings.

**ASSESSMENT OF PERFORMANCE:**

15.	Are members of the Board generally familiar with the marketplace and the environmental factors affecting the Hospital and Clinic?	<u>2</u> Almost Always	<u>8</u> Often	<u>2</u> Sometimes	<u>0</u> Rarely
16.	Does the Board employ a strategic plan in charting the direction of the Hospital and Clinic that anticipates or responds to environmental factors?	<u>2</u> Almost Always	<u>3</u> Often	<u>5</u> Sometimes	<u>2</u> Rarely
17.	Are measurable financial objectives used to monitor Hospital performance?	<u>6</u> Almost Always	<u>4</u> Often	<u>2</u> Sometimes	<u>0</u> Rarely

18. Does the Board make informed decisions on medical staff appointments, reappointments and clinical privileges that result in fulfillment of its responsibility for ensuring a properly functioning medical staff?

5                      4                      2                      1  
Almost Always      Often                      Sometimes                      Rarely

19. Are quality assurance mechanisms used by the Board in a way that allows it to evaluate the quality of care provided at the Hospital and Clinic?

3                      7                      1                      1  
Almost Always      Often                      Sometimes                      Rarely

20. Does the Board effectively monitor Hospital personnel policies and compensation plans?

6                      2                      4                      0  
Almost Always      Often                      Sometimes                      Rarely

21. Does the Board effectively monitor Hospital purchasing policies and practices?

6                      6                      0                      0  
Almost Always      Often                      Sometimes                      Rarely

22. Does the Board strike an appropriate balance in dealing with governance decisions verses management decisions?

6                      4                      2                      0  
Almost Always      Often                      Sometimes                      Rarely

23. Does the Board play an effective role in evaluating the Hospital Director?

3                      2                      2                      3                      2  
Almost Always      Often                      Sometimes                      Rarely                      Don't Know

24. Do Board members handle matters of apparent or potential conflict of interest appropriately?

5                      4                      1                      1                      1  
Almost Always      Often                      Sometimes                      Rarely                      Don't Know

25. Do Board members generally initiate formal and informal opportunities for communicating with constituencies and members of the community?

2                      3                      3                      2                      2  
Almost Always      Often                      Sometimes                      Rarely                      Don't Know

• A majority of respondents would like to discuss the Hospital's "strategic direction" more frequently and clearly.

- With regard to both medical staff credentialling and quality assurance monitoring, one third of respondents noted that the Board is relying very heavily on staff for guidance in these areas. This was not viewed as being inappropriate. Rather, respondents reiterated the importance of Board members being familiar with the process employed by staff in monitoring quality and credentialling medical staff. Familiarity with the process, then, makes results "more meaningful."
- Some respondents reported feeling slightly more knowledgeable about purchasing policies than personnel policies. Knowledge of purchasing policy is reportedly derived from quarterly summaries.
- The Board is willing to play a more active role in evaluating the Hospital Director.
- Nearly all respondents expressed a desire to see themselves and their fellow Board members take a more active role in communicating with constituencies and members of the community.

JAN 05 1987

# minnesota hospital ASSOCIATION



REPRESENTING nonprofit hospitals

December 30, 1986

Ms. Barbara V. O'Grady  
Board Chairman  
University of Minnesota Hospital & Clinic  
Director  
Ramsey County Public Health Nursing Service  
150 East Kellogg Boulevard  
St. Paul, MN 55101

Dear Barb:

As this year comes to an end, I want to let you know how much the Minnesota Hospital Association appreciates the dedicated leadership of C. Edward Schwartz as a member of the MHA Board of Trustees this year.

MHA serves as the primary voice for Minnesota's hospitals at the State Legislature and the Federal Congress, and it is through the wise counsel and active participation of Mr. Schwartz and his colleagues on the Board that we are able to successfully carry out that mission.

Please convey our sincere appreciation to the other members of the University of Minnesota Hospital Board for Mr. Schwartz's outstanding service. We are looking forward to his continued service as Chairman-elect of the MHA Board next year.

Sincerely,

Stephen Rogness  
President

SR/mjk

c: C. Edward Schwartz

# COMMUNIQUE

Independent Study Program for Hospital and Health Care Facility Administrators

November 1986

UNIVERSITY OF MINNESOTA — MINNEAPOLIS Volume XII, No. 3

## STRATEGIC GOVERNANCE

by Vernon E. Weckwerth, Ph.D.  
Director of ISP

NOV 19 1986

The health field has seen an increasing use of the adjective "strategic" in its writing and verbalization.

The initial use of strategic was in converting what used to be the common term "long-range planning" into "strategic planning." That distinction became necessary as the turbulence in the field increased, because the long-range plans of five and ten year horizons were totally unrealistic and, in addition, as people looked back on what they had planned a decade before they saw most of them as questionable, if not erroneous.

More importantly, however, was that strategic planning was linked to several things: increased competition; the reality that runaway costs were impairing health service delivery organizations from being able to provide the increased spectrum of services; that payors and employers would not pay and that market segmentation due to marketing sector analysis was forcing differentiated and more specific services and service targeting.

Thus strategic planning became a necessity for hospitals as well as other deliverers in the health field.

One can add to this the growth of the multi's, the changes in prepayment and the opposition by business and industry to having their largest expense be health care coverage. The coalition of these forces forced a strategic planning approach, that is, an explicitness in deciding in advance what was to be done selectively.

The obvious next step in the process was to assure that what was to be done was carried out. That produced strategic management -- a targeting of the management flows to do what was to be done "the right way" but specifically to those services (or lines of business) that were strategic to the plan.

Strategic Governance cont. on page 14

## Strategic Governance continued

It required a linkage among the management steps specific to each strategic service. It thus displaced the generic Management by Objective approach with one targeted for each service (or line).

This mixing of method and approach in decision making has generated major organizational problems that are about to explode:

1. The management of the cadre of those who are managing the targeted strategic services (an across lines issue) and
2. The mechanisms for answering whether all that which is being done via both the strategically managed services and those "left over" are doing any good.

The first item will have to be unfolded elsewhere because it is not the point of this writing, but it is critical to any organization using strategic management. It must solve how to manage the strategic managers.

The second potential explosion requires the ways to deal with the "so what good have we done" and how does that link back to the mission...historically poorly done by governance.

In the Governance, Administration, Management model (which I've used for years - i.e. wing flaps and bird seed), it is clear that Governance has only three functions:

1. determining the right things for the organization
2. monitoring management's right ways of doing those right things and
3. answering the ultimate question as an outcome, "Has the good we've done, done the intended good?" i.e. the right things as derived from our purpose and mission.

This means that we must place the adjective "strategic" in front of Governance if we are going to use strategic planning implemented by strategic management.

The obvious response at this point is that Governance (owners or boards) must have already done the strategic governance or there wouldn't have been strategic management. That implies, however, that there is a rational flow between governance's deciding the right things and management's doing it the right way. There is little evidence that that is true. As cited for years, one can learn how to manage without any linkage to what it is that one manages--MBO or strategic notwithstanding.

It is far more plausible to see that Governance was not even aware of what was really happening. There was little realization what its decision making was being led by planning, management and marketing technicians. Most voluntary boards were overwhelmed by the incredible turbulence in the health field, even the multis became engrossed in their own corporate restructurings while many owned hospitals had not differentiated the social versus organizational good anyway. They weren't societally obligated organizations anyway, they were businesses.

Reduced to rather crass terms, "strategic" governance rarely exists, unless one wants that to mean rubber stamping what was presented as the strategic plan which was usually created by management for rubber stamping by governance.

Those strategic governance decisions were nearly always directed toward "hows". Governance considered (because management proposed it) structural changes (merger, managed, ventures, etc.) which masked the "whats", the right things for the hospitals right exist under societal obligations. The governance decisions were frequently driven by considerations of survival, bottom line, competition, market share,

etc., which are criteria of "hows" and right ways rather than right things (but appealing to governance because it could monitor them).

Even more devastating, however, is that the third function of governance, evaluation of the good done, was driven to using criteria that were merely reflections of management objectives, and did not address the good done, nor was it fed back to decide whether these were right things.

In essence, governance failed. It frequently vacated it's obligation due to deception or ignorance.

Strategic governance means that those governing will have to decide what are the right things for the health organization based on the values, beliefs and societal rights to exist. Once it has made that clear, the admissible boundaries for strategic planning have been laid which then will require the strategic alternatives to be congruent with the strategic right things. At that point the decisions will be a choice among what strategic alternatives are to be pursued by management, whether implemented by strategic management or not, but, finally, it must invoke the criteria on evaluating the results that are not just those of strategic management but those that relate to the good done. The good done criteria must be congruent with those criteria used to make the strategic governance decisions originally on what are the right things.

In essence, strategic governance must "shape the future", not just respond to opportunity. It must determine how it fulfills societal obligations not merely approve management's preferences. It must use the strategic information (meaning more than mere marketplace detail) but governance would decide its strategy. Governance would demand clarity of choices congruent with its strategic priorities which must come from the requirements of the people it is obligated to serve. Governance would

choose. It would then assure that management manage (strategically or otherwise) by monitoring with an end-in-view that the organization results fulfill the good-to-be-done criteria, not just management's objectives.

In a capsule, what is currently occurring is that strategic management is determining the inclusions in the strategic plan which results in acquiescence by governance. The impact is, at a minimum, that governance is weak. But potentially, if the field continues as it is, there could be massive organizational malfeasance which will be industry wide. One possible future is that the entire existing delivery structure will decompose. The conjectured impact on the citizenry is massive disenfranchisement with denial of access. This in turn would force a national restructuring.

Each of us can construct our own scenarios of the outcome - mostly bleak for most people. Clearly massive absence of rights to health service would not be tolerated for long, because health is too critical to the human condition to remain unavailable and unaccessable to all for very long.

Clearly the above logic includes a conceptualization of governance that is far beyond health care delivery as "only a business". All criteria for strategic planning and management for business are necessary. They are not sufficient for strategic governance for health service delivery.

Adding the adjective "strategic" to governance may not cure the massiveness of governance difficulty to date but it could force governance to fulfill its three functions. It could force governance to decide the right things first and to evaluate the good done using criteria of our health service delivery. It could achieve making sure that we can locally decide the future of health service delivery - a unique American value.

BOARD OF GOVERNORS  
HOSPITAL DIRECTOR'S REPORT

January 28, 1987

- 1) TRANSITION IN THE HOSPITAL DIRECTOR'S OFFICE
  
- 2) PATIENT VISITOR PARKING RAMP
  
- 3) UNIVERSITY: MESABI REGIONAL MEDICAL CENTER AGREEMENT
  
- 4) CHAIRMANSHIP SEARCH EFFORTS
  - \*Neurology
  
  - \*Pediatrics



**The University of Minnesota Hospital and Clinic  
Board of Governors**

**SURVEY REGARDING MEETING TIME**

On January 28, 1987 the Board of Governors expressed a preference to meet later in the day. In 1986 the average length of Board meetings was 2 hours. Please indicate your preference for a meeting time.

- \_\_\_\_\_ 1. Fourth Wednesday of each month; 2:00 - 4:00 P.M.
- \_\_\_\_\_ 2. Fourth Wednesday of each month; 2:30 - 4:30 P.M.
- \_\_\_\_\_ 3. Fourth Wednesday of each month; 3:00 - 5:00 P.M.
- \_\_\_\_\_ 4. Another day of the week would be more convenient.  
Please indicate preference for day of the week:  
\_\_\_\_\_.

\_\_\_\_\_  
Signature

Please mail your responses to Kay Fuecker by **March 1, 1987.**

**The University of Minnesota Hospital and Clinic**

**Board of Governors**

**February 25, 1987**

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**\*\*\*\* OTHER ATTACHMENTS \*\*\*\***

- "Heart Murmurs, The Minneapolis Heart Institute vs. the University of Minnesota Hospital", Corporate Minnesota Report, February, 1987
- "1 Day Surgery May Cost More in Doctor's Office", Minneapolis Star and Tribune, January 23, 1987
- "Discount Surgery Just Myth, Group Says", Minnesota Daily, January 23, 1987
- "Duluth Doctor Recommended for Hospital VP Position", Minnesota Daily, January 26, 1987
- "U Hospital's Financial Projection Improves", Minnesota Daily, February 13, 1987
- "U May Invest More in HMO Management Company", Minnesota Daily, February 16, 1987
- "Medicine's New Vision", National Geographic, January, 1987

**\*\*\*\* ADDITIONAL ENCLOSURE \*\*\*\***

June 30, 1986 Audited Financial Statements

**The University of Minnesota Hospital and Clinic  
Board of Governors**

February 25, 1987  
1:30 P.M.  
555 Diehl Hall

**AGENDA**

- |      |  |             |
|------|--|-------------|
| I.   | <u>Approval of January 28, 1987 Minutes</u>  | Approval    |
| II.  | <u>Chairman's Report</u><br>-Mr. Robert Latz                                       | Information |
| III. | <u>Hospital Director's Report</u><br>- Mr. C. Edward Schwartz                      | Information |
| IV.  | <u>Committee Reports</u>   |             |
|      | A. <u>Planning and Development Committee</u><br>- Ms. B. Kristine Johnson          |             |
|      | 1. Quarterly Purchasing Report   | Approval    |
|      | B. <u>Joint Conference Committee</u><br>- Mr. George Heenan                        |             |
|      | 1. Credentials Committee/Medical Staff-Hospital Council Report and Recommendations | Approval    |
|      | C. <u>Finance Committee</u><br>- Mr. Robert Nickoloff                              |             |
|      | 1. 1985-86 Audited Financial Statements  | Information |
|      | 2. Primary Care Network Management Company, Inc.                                   | Approval    |
| V.   | <u>Other Business</u>  |             |
| VI.  | <u>Adjournment</u>   |             |

**MINUTES**

**Board of Governors**

**The University of Minnesota Hospital and Clinic**

**January 28, 1987**

**CALL TO ORDER:**

Chairman Barbara O'Grady called the January 28, 1987 meeting of the Board of Governors to order at 1:40 P.M. in 555 Diehl Hall.

**ATTENDANCE:**

Present: Leonard Bienias  
David Brown, M.D.  
Shelley Chou, M.D.  
Phyllis Ellis  
Donald Gilmore  
George Heenan  
Kris Johnson  
Robert Latz  
David Lilly  
Jerry Meilahn  
James Moller, M.D.  
Barbara O'Grady  
Ed Schwartz  
Neal Vanselow, M.D.

Absent: Al Hanser  
Robert Nickoloff

**APPROVAL OF THE MINUTES:**

The Board of Governors seconded and passed a motion to approve the minutes of the December 17, 1987 meeting as written.

**CHAIRMAN'S REPORT:**

Chairman Barbara O'Grady introduced Donald Gilmore, the new student representative to the Board of Governors. Don is a first year Hospital Administration student. Ms. O'Grady also introduced Ms. Sandy Benton, Ms. Michelle Johnson, and Mr. Scott Thorson, all Hospital Administration students, Ms. Bev Hall, AFSME Business Manager, and Ms. Dee Lutz of the Minnesota Daily.

#### **NOMINATING COMMITTEE REPORT:**

Ms. Phyllis Ellis reported that George Heenan, Neal Vanselow, M.D. and she met on January 2, 1987. She reviewed the criteria used by the committee in evaluating candidates. The Committee unanimously recommended Robert Latz as Chairman and Robert Nickoloff as Vice Chairman for 1987. The Board seconded and passed a motion to accept the Nominating Committee Report. Ms. O'Grady then passed the chairman's gavel to Mr. Latz.

#### **HOSPITAL DIRECTOR'S REPORT:**

The parking ramp, Mr. Schwartz reported, is open and operational with revenues increasing daily. The tunnel construction is proceeding well. The indoor work is scheduled for completion in the next 4-8 weeks.

Mr. Schwartz reported that negotiations with the hospital in Hibbing and two of the major clinics there, the Mesabi Clinic and the Adams Clinic, had resulted in an affiliation agreement. With this agreement, University staff physicians will be providing on-site consultation in Hibbing. Additionally, Hospital staff will be assisting Hibbing providers in marketing, computerized data transmission and continuing education.

There are two chairmanship position searches under way, Mr. Schwartz reported. He reported he is on the Neurology Search Committee and Greg Hart is on the Pediatrics Search Committee. Both committees are reviewing applications, although the Pediatrics Search is nearing the interview stage.

Dr. Neal Vanselow reported the Hospital Director Search Committee will be chaired by Dean David Brown and includes the following Board members: Robert Latz, Shelley Chou, M.D., Robert Nickoloff, and James Moller, M.D. The first meeting was held on January 29, 1987 and on February 3 & 4 the committee will interview 5 executive search firms. The Board of Governors will be given an opportunity to interview the candidates.

Dr Vanselow also noted he has recommended Greg Hart's appointment as Interim Director. The Regents will act on that recommendation at their February 13, 1987 meeting.

#### **MAGNETIC RESONANCE IMAGING PRESENTATION:**

Dr. William Thompson, Chairman of the Department of Radiology, did a comprehensive presentation on magnetic resonance imaging. Dr. Thompson discussed current application of magnetic resonance imaging and reviewed utilization figures of the MRI at our hospital. He also noted that research is being done on this imaging technique with the Gray Biological Research Institute. The Department of Radiology will be proposing the acquisition of a second MRI for the hospital in approximately four months.

#### **FINANCE COMMITTEE REPORT:**

Mr. Jerry Meilahn and Mr. Cliff Fearing reviewed that statement of operations for December, 1986 and for the first six months of the fiscal year. The year-to-date admissions are running 9.3% above budget while patient days are 8.5% above budget. The average length of stay is 8.4 days, as budgeted. The outpatient clinic visits are running 12.2% above budget for the fiscal year. Revenues exceed expenses year-to-date by \$4,483,019; this represents a variance of 9.9% of total budgeted revenue.

Accounts Receivable, Mr. Fearing reported, totaled \$70,858,919 as of December 31, 1986 and represented 107.6 days outstanding. The increase in receivables occurred primarily in the Medicare and Medical Assistance categories.

Mr. Meilahn reviewed the net bad debts for the second quarter of the fiscal year. Those bad debts totalled \$616,472.05. This sum represents 1.06% of gross charges. A bad debt level of 1.33% had been budgeted. The Board of Governors seconded and passed a motion approving a bad debt write off of \$616,472.05 for the second quarter of the 1986-87 fiscal year.

Mr. Schwartz briefly noted that the Primary Care Network is currently conducting a comprehensive review of the status of the health plan. They will be asking each of the investors for an additional capital contribution. Mr. Schwartz will be discussing this issue in more depth with the Planning and Development and Finance Committees in February.

#### **BOARD OF GOVERNORS SELF-EVALUATION SURVEY:**

Ms. Nancy Janda reviewed the results of the 1986 Board of Governors self-evaluation survey. There were four primary areas where Board members recommended some change. They included:

- In the future, Board membership might be modified to enhance the level of business expertise and orientation to industry.
- More time could be allowed at Board meetings for discussion of priority issues. An increased emphasis on longer term strategic thinking was recommended.
- The Board members would enjoy receiving more information on continuing education opportunities.
- Board members expressed a desire to continue developing closer ties with the community and constituencies.

Members of the Board also discussed the potential for moving the time of the Board meeting back an hour or so.

#### **OTHER BUSINESS:**

Ms. Barbara O'Grady presented a gift of appreciation from the Board of Governors to Mr. Ron Werft, former Secretary to the Board of Governors and

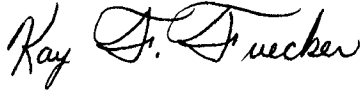
current Associate Director. Mr. Werft has accepted the position of Vice President and Chief Operating Officer of the Santa Barbara Cottage Hospital.

Mr. Latz reported that a dinner honoring Ed Schwartz is being planned for February 21, 1987. More information will be forthcoming.

**ADJOURNMENT:**

There being no further business, the January 28, 1987 meeting of the Board of Governors was adjourned at 3:10 P.M.

Respectfully submitted,



Kay F. Fuecker  
Secretary  
Board of Governors Office



MINUTES  
Planning and Development Committee  
February 12, 1987

**CALL TO ORDER**

Committee Chairman, Ms. B. Kristine Johnson, called the February 12, 1987 meeting of the Planning and Development Committee to order at 3:05 p.m. in Room 8-106 in the University Hospital.

Attendance: Present            B. Kristine Johnson, Chair  
                                 Leonard Bienias  
                                 S. Albert Hanser  
                                 Geoff Kaufmann  
                                 Peter Lynch, M.D.  
                                 C. Edward Schwartz  
                                 William Thomas  
                                 Ted Thompson, M.D.

                                 Staff            Fred Bertschinger  
   Cliff Fearing  
   Steve Grygar  
   Greg Hart  
   Nancy Janda  
   Mark Koenig  
   John LaBree, M.D.  
   Lou Vietti

Discussion was held on choosing a day and time for future Planning and Development meetings. The second Monday of the month from 12:15 - 2:15 was the agreed-upon choice. Lunch will be provided at 12:00. Nancy Janda will send out the necessary notice.

**APPROVAL OF MINUTES**

The minutes of the December 10, 1986 meeting were approved as distributed.

**PCN-MC 1987 BUSINESS PLAN**

Mr. Schwartz and Steve Grygar discussed documents concerning PCN that had been distributed prior to the meeting. Among the items discussed was the marketing program for Health Partners.

The committee endorsed the project with the understanding that it would be re-evaluated in six to nine months.

#### **QUARTERLY PURCHASING REPORT**

Mr. Koenig and Mr. Vietti explained how the purchasing report was compiled and what each section entailed. Mr. Vietti discussed the various sections of the report and answered questions. Mr. Koenig reported that purchases were up \$1 million this period and this was due to the purchase of a computer. The purchasing manual will be distributed to new members.

The committee endorsed the Quarterly Purchasing Report.

#### **CHILDREN'S HEALTH SYSTEM STUDY**

Mr. Kaufmann reported that UMHC has held three meetings with St. Paul Children's Hospital and from those meetings a vision statement was drafted. Herman Smith, a consulting firm from Hinsdale, Illinois, is doing the feasibility study and have had representatives in Minneapolis who have interviewed physicians and administrators from both hospitals. They report that they are hearing the same things from staffs in both hospitals. The study will be completed April 1 and Herman Smith will make recommendations to both hospitals on the feasibility of networking.

#### **MIST (Medical Information System via Telephone)**

The 24-hour referral center handles numbers of calls from physician to physician, patient to physician, etc. The volume has increased considerably over the past two years which warranted a look at splitting off physician-to-physician calls, especially for follow-up. A committee has looked at methods to address such a modification to the system.

The committee found that the University of Alabama has a system that is open 24 hours a day and handles physician to physician calls and referral of patients. The operator stays on the line to see if further help is needed. The committee is looking into the system in more detail - budgets, etc. - and will report back to the Planning and Development Committee in a couple of months when they have more solid information.

#### **UPDATE ON PATIENTS FUND SOLICITATION**

Mr. Bertschinger reported on the annual Patients Fund Drive whose goal is to tap the vast resources that are available at UMHC. There is tremendous potential; although a small number of employees took part, the amount of money collected was up. There is a strong need from social services and the transplant assistance fund for families of patients who can't meet present needs. No final figures are in because staff are still sending in contributions.

#### **ADJOURNMENT**

The Planning and Development Committee adjourned at 4:35 p.m.

Respectfully submitted,



Ann Frohrig  
Secretary

Planning and Marketing



UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455

February 18, 1987

TO: Members of the Board of Governors

FROM: C. Edward Schwartz

REGARDING: Quarterly Purchasing Report

Attached is a copy of the Hospital's Quarterly Purchasing Activity report for the period November, 1986 through January, 1987.

This report will be reviewed in detail and submitted for your approval at the February Board meeting.

If you have any questions regarding the report before our meeting, please feel free to call me.

CES/kf

Attachment

UNIVERSITY OF MINNESOTA HOSPITAL AND CLINIC  
 ADMINISTRATIVE REPORT ON PURCHASING ACTIVITY  
 PERIOD OF NOVEMBER 1986 - JANUARY 1987

I. PURCHASE ORDER ANALYSIS

RANGE	NUMBER OF P.O.'S	TOTAL DOLLAR VALUE
\$ 0 - \$ 499	5241	\$832,597.43
\$ 500 - \$1,999	1835	\$1,933,052.44
\$ 2,000 - \$4,999	451	\$1,360,875.89
\$ 5,000 - \$9,999	188	\$1,322,529.15
\$10,000 - OVER	217	\$6,701,584.70
 TOTAL PURCHASE ORDER	 7932	 \$12,150,639.61

II. CONFIRMING ORDERS

\$ 0 - \$ 99	118	\$6,099.61
\$ 100 - \$ 499	230	\$56,439.09
\$ 500 - \$ 999	87	\$62,968.08
\$1,000 - \$1,999	70	\$101,025.82
\$2,000 - OVER	41	\$177,850.23
 TOTAL CONF. ORDERS	 546	 \$404,382.83
  TOTAL	  8478	  \$12,555,022.44

III. SET ASIDE AWARDS

(Attachment C)

IV. PURCHASE AWARDS TO OTHER THAN APPARENT LOW BIDDER

(Attachment A)

V. SOLE SOURCE

(Attachment B)

VI. VENDOR APPEALS

(Attachment D)

VII. UNIVERSITY HOSPITAL CONSORTIUM ACTIVITY

(Attachment E)

## ATTACHMENT A

## IV. Purchase Award to Other Than Low Bidder, #5,0000.00 or More

BID # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
1. 86-651	Surgikos/Drape, Shoulder Pack	\$ 8,342.40	\$ 5,184.00	Materials
	Reason: Split sheet does not have adhesive or plastic around split.			
2. H064419	Coulter/Hematology Analyzer	\$115,371.00	\$101,000.00	Labs
	Reason: System does not have automatic bar code sampling. Throughput is too slow.			
	Coulter/Hematology Analyzer	\$115,371.00	\$ 99,000.00	Labs
	Reason: System does not have automatic bar code sampling, or closed tube auto sampling. Throughput is too slow. Delivery date is unacceptable.			
3. H065001	Datascope/EKG Monitor	\$ 17,000.00	\$ 5,036.00	Rehab
	Reason: The low bidder did not meet the following specifications: Monitor did not feature four (4) independent traces, did not have a high level ECG data output for each channel, and did not feature a signal loss indication for each channel.			
	Quinton/EKG Monitor	\$ 17,000.00	\$ 15,800.00	Rehab
	Reason: The low bidder did not meet the following specifications: Monitor did not feature four (4) independent traces, did not have a high level ECG data output for each channel, and did not feature a signal loss indication for each channel.			
4. 87-9	International Medical/Anesthesiology Masks	\$ 35,726.00	\$ 22,976.00	Materials
	Reason: The masks did not fit the patient's face adequately, thereby making airway management very difficult. Also, the masks did not distribute pressure well, causing abrasions on pressure points.			

BID # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
	Ohio/Anesthesiology Masks	\$ 35,726.00	\$ 23,501.88	Materials
	Reason: The masks did not fit the patient's face adequately, thereby making airway management very difficult. Also, the masks did not distribute pressure well, causing abrasions on pressure points.			
5. H066053	Fisher/Blood Gas Analyzer	\$ 13,950.00	\$ 11,025.00	Labs
	Reason: Analyzer does not have a printer or a thermistor controlled air bath. It also will not provide status information for sensitivity, drift or response stability.			
	IL/Blood Gas Analyzer	\$ 13,950.00	\$ 11,919.60	Labs
	Reason: Analyzer does not have a printer or a thermistor controlled air bath. It also will not provide status information for sensitivity, drift or response stability.			
6. 86-779	Cook/Triple Lumen Catheters	\$ 42,000.00	\$ 41,250.00	Materials
	Reason: No samples received as requested.			
	Burron/Triple Lumen Catheters	\$ 42,000.00	\$ 40,000.00	Materials
	Reason: Catheter is difficult to insert. Dilator is too flexible to pass easily through subcutaneous tissue and the wire is not sufficiently stiff and is more difficult to remove from plastic loop.			
7. 86-780	Argon Med./Venous Catheter Tray (Line #7) Radial Artery Tray (Line #8)	\$ 21,275.00	\$ 12,627.00	Materials
	Reason: Same item was bid for both lines although specifications called for two different lengths of catheters. Catheter was not adequately tapered for easy insertion and there was no lidocaine in kit.			

BID # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
8. 86-775	Consolidated Medical/Adult Electrode Reason: Electrode failed defibrillation recovery test per specifications.	\$ 12,350.00	\$ 10,750.00	Materials
	American Hospital Supply/Adult Electrode Reason: Electrode was not individually packaged.	\$ 12,350.00	\$ 9,950.00	Materials
	American Hospital Supply/Adult Electrode Reason: Electrode had poor adhesion, poor trace quality and unacceptable impedance.	\$ 12,350.00	\$ 10,450.00	Materials
	C.R. Bard/Adult Electrode Reason: Electrode failed specifications for impedance.	\$ 12,350.00		Materials
	Graphic Controls/Adult Electrode Reason: Electrode was not individually packaged.	\$ 12,350.00	\$ 10,000.00 11,500.00	Materials
	Graphic Controls/Adult Electrode Reason: No samples received.	\$ 12,350.00	\$ 11,500.00	Materials
	Colonial Hospital Supply/Adult Electrode Reason: Electrode was not individually packaged.	\$ 12,350.00	\$ 11,000.00	Materials
9. H66745	Data Design/Financial Acct. Software System Reason: Shortcomings of the software included: application dependent requirements, cross application tools, support of the system and product line.	\$162,400.00	\$122,000.00	Fin. Acct.
10. H66744	Sensor Medics/Oscillograph Recorder Reason: Amplifiers are not suitable for nerve traffic.	\$ 24,035.00	\$ 23,685.00	Labs

BID # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
11. 87-70	Twin City Drug/Ames "Stix"  Reason: Twin City Drug cannot handle standing shipping requirements as specified.	\$ 18,073.64	\$ 16,827.47	Labs
12. 86-757	C.F. Anderson/Dressing, Adaptic  Reason: Weave of the dressing is too tight and there is too much petroleum emulsion on the dressing. Edges of the package roll or tear incorrectly, causing the product to become contaminated.	\$ 13,457.06	\$ 11,007.36	Materials
13. 86-688	American Hospital Supply/Skin Closure, Steri-Strips  Reason: Package is difficult to open. The strip has a tendency to fold back on to itself making it unusable. Only one end of the product is perforated, making it unacceptable for a number of procedures.	\$ 11,376.00	\$ 5,929.92	Materials
	Beiersdorf/Skin Closure, Steri-Strips  Reason: Package is difficult to open. The strip has a tendency to fold back on to itself making it unusable. Only one end of the product is perforated, making it unacceptable for a number of procedures.	\$ 11,376.00	\$ 7,338.24	Materials
14. 86-757	Cheesebrough-Pond/Kerlix Roll, Sterile  Reason: Dressing does not have adequate bulk to absorb drainage. Edges of the dressing fray easily and become caught in the wound.	\$ 48,044.16	\$ 37,065.60	Materials
	C.F. Anderson/Kerlix Roll, Sterile  Reason: Dressing does not have adequate bulk to absorb drainage. Edges of the dressing fray easily and become caught in the wound.	\$ 48,044.16	\$ 43,464.96	Materials



BIL # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
15. 86-687 Line #2	Kendall/Long Term, Semi-Permeable Dressing  Reason: Dressing sticks to itself during application, and is narrower than the specific product. A major teaching inservice would be required prior to any use of the product offsetting cost savings.	\$ 7,747.20	\$ 7,620.48	Materials
Line #1 and #2	Medline/Long Term, Semi-Permeable Dressing  Reason: Dressing does not adhere well, or provide a good seal, and it is difficult to apply. Package is difficult to open.	\$ 19,497.60	\$ 15,753.60	Materials
16. 86-777	Davol/Closed Wound Suction Kits  Reason: Evacuator is too stiff, making it difficult to activate. Needle was dull and the package difficult to open aseptically.	\$ 15,750.00	\$ 11,220.00	Materials
	Stryker Corp./Closed Wound Suction Kits  Reason: Based upon evaluations conducted in 1985, product was found to be unacceptable.	\$ 15,750.00	\$ 14,700.00	Materials
17. H066074	Control Data/Labs Computer System  Reason: Many features and functions specified would be lost by converting to the proposed system. Conversion to the proposed system at other sites was not to the degree of successfulness UMHC expected. The proposed system struggled with workloads of much less magnitude than UMHC's. The vendor can not supply a system that has proven successful, within the necessary time frame.	\$1,500,000.00	\$1,451,463.00	Labs
	Rubicon/Labs Computer System  Reason: The hardware proposed is not capable of sufficient response times and anticipated growth. Disk capacities for long-term archives is not adequate. No agreement for a co-development relationship for applications software could be attained. Increases expected from software modifications, placed this proposal higher than the one awarded. Inadequate software.	\$1,500,000.00	\$1,266,278.00	Labs

BID # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
18. 86-750	C.R. Bard/Adhesive Remover Reason: Vendor cannot meet specified delivery time frames.	\$ 12,675.00	\$ 6,288.75	Materials
19. 86-756 Line #18	C.R. Bard/Fecal Pouch Reason: Vendor cannot meet specified delivery time frames.	\$ 9,450.00	\$ 6,075.00	Materials
	United/Fecal Pouch Reason: Product is for fecal incontinence, not ostomy.	\$ 9,450.00	\$ 6,360.00	Materials
	Hollister/Fecal Pouch Reason: Vendor cannot meet specified delivery time frames.	\$ 9,450.00	\$ 8,450.00	Materials
20. 86-756 Line #15	Hollister/Skin Barrier 4 x 4 Reason: Vendor cannot meet specified delivery time frames.	\$ 13,065.00	\$ 12,525.00	Materials
21. 86-744	AMSCO/Sterilization Wrap Reason: Holes formed in the wrap during claving. Wrap does not drape well, has too much memory and has an offensive odor.	\$ 96,283.64	\$ 72,476.32	Materials
22. 86-747	Red Line/6" Ace Bandage Reason: Bandage does not conform well to body limbs and is too thick, making it hard to work with and not allowing the skin to breathe.	\$ 6,481.20	\$ 6,138.00	Materials
23. 86-654	American V. Mueller/Skin Stapler Reason: Packaging is poor. Difficult to remove stapler from the package and maintain sterility. Stapler misfired or failed to fire on occasion.	\$ 12,254.00	\$ 11,592.00	Materials

BID # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
24. 86-670	Pilling/4mm Aortic Punch Reason: Instrument is too long, making it hard to control. Open shaft allows blood and tissue to become lodged inside the instrument causing sticking and malfunction.	\$ 6,719.04	\$ 4,860.00	Materials
25. 86-653	Richards Medical/Skin Marking Pencil Reason: Tip of pencil is too fine and the color is not dark enough.	\$ 6,126.00	\$ 4,320.00	Materials
	SMS Inc./Skin Marking Pencil Reason: Packaging is not sealed tightly. Plastic/paper makes it difficult to determine if package is intact.	\$ 6,126.00	\$ 3,960.00	Materials
	Codman & Shurtleff/Skin Marking Pencil Reason: Pencil does not have a ruler and the color is not dark enough.	\$ 6,126.00	\$ 4,920.00	Materials
26. 87-90	Wilcox Paper/Tidy Wipes Reason: Product disintegrates when wet, tears easily, leaves a visible film on surfaces and leaves hands sticky.	\$100,195.20	\$ 39,160.80	Materials
	Transhealth/Tidy Wipes Reason: Product disintegrates when wet, tears easily, leaves a visible film on surfaces and leaves hands sticky.	\$100,195.20	\$ 40,572.00	Materials
	Aslesens/Tidy Wipes Reason: Product disintegrates when wet, tears easily, leaves a visible film on surfaces and leaves hands sticky.	\$100,195.20	\$ 40,924.80	Materials
	Apache Paper/Tidy Wipes Reason: Product disintegrates when wet and tears easily.	\$100,195.20	\$ 57,330.00	Materials

BID # P.O. #	VENDOR/ITEM	TOTAL \$ VALUE	\$ VALUE LOW BIDDER	DEPT.
27. H67159	Carl Storz Endoscopy/Ureteroscope	\$ 28,970.00	\$ 27,545.00	OR
	Reason: Ureteroscope System offered was not compatible with existing ACMI System.			
28. H50000	Amdahl/Disk Drives for IBM System	\$348,155.00	\$293,845.00	ISD
	Reason: Lease option requested was not offered by lower bidder. Other specifications involving move costs and warranty were not addressed.			

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## ATTACHMENT B

## V. SOLE SOURCE

VENDOR	CONTRACT/ P.O. NUMBER	VALUE	DEPARTMENT	PRODUCT
Pilling	H322025	\$5,772.60	O.R.	Instruments
Medical Eng. Corp.	H322016	\$10,440.00	O.R.	Stent Kits
LKB Instrument	H323224	\$2,000.00	Labs	Fluorometer Rental
USCI	H048513	\$7,896.00	M.S./CSP	Heart Catheters
Cooper Lasersonics	H065253	\$86,155.00	O.R.	CUSA Equipment
Aesculap	H065615	\$3,990.00	O.R.	Microtron Drill
Codman	H324126	\$3,813.00	O.R.	Instruments
Pilling	H324127	\$3,918.00	O.R.	Instruments
V. Mueller	H324129	\$11,755.86	O.R.	Instruments
Medical Eng. Corp.	H324312	\$7,500.00	O.R.	Stents
Cardiovascular Ins.	H325023	\$3,900.00	O.R.	Cardiotomy Suckers
TNA Diversified	H066100	\$2,634.00	Nursing	Wardrobes
Midas Rex	H066362	\$52,380.52	O.R.	Drill System
Codman	H066363	\$7,246.00	O.R.	Retractor System
Hewlett-Packard	H066350	\$4,545.45	O.R.	Defibrillator
Storz Instruments	H066361	\$37,345.00	O.R.	Camera System
American Hospital	H066360	\$4,425.33	O.R.	Hypothermia Saw
AMSCO	H066351	\$4,356.00	O.R.	A.V. Arm
Hewlett-Packard	87-38	\$14,096.40	Labs	EKG Supplies
Cooper-Sonics	H065253	\$86,155.00	O.R.	CUSA Console
Burroughs	H065257	\$37,957.92	I.S.D.	CRT's
McDonnell-Douglas	H066762	\$24,000.00	I.S.D.	Microdata Expansion Ports
Leitz (Roger Meill)	H065270	\$22,900.00	Labs	Cryostat
Alpha Therapeutics	H065262	\$7,320.00	Labs	Erythropoietin
Zimmer-Page	H066752	\$7,634.00	O.R.	Sternal Saw
D.L. Phillips	H066760	\$5,266.70	Facilities	PTS System Labor & Supplies
Narco	H066761	\$142,608.00	Cardio	Monitoring Equip
Minnesota Utility	H065271	\$2,733.00	Facilities	Conduit
Medtronic	87-84	OPEN	Materials	Repair/Parts for Pacemakers
N.B.I.	H049956	OPEN	Materials	Word Processor Maintenance
Winkley	87-85	OPEN	Materials	Artificial Limbs
R. J Houck	H049974	\$2,400.00	Plan/Mktg	Advertisements
Naegle Outdoor	H049992	\$47,022.00	Plan/Mktg	Advertisements
Analtech	H069702	\$4,903.65	Labs	Silica Gel Plate
Pel-Freez	H067418	\$8,018.00	Labs	Human Serum
Radio-Assay	H069703	\$3,831.20	Labs	Glucagon Kit
Northern X-Ray	H035800	\$22,900.00	Radiology	X-Ray Equipment
Cardiac Pacemakers	H066754	\$7,995.00	O.R.	Implant. Defib- rillator Equip.
Cardiac Pacemakers	H066755	\$22,090.00	O.R.	Implant. Defib.
Storz	H326977	\$5,873.60	O.R.	Instruments
Zimmer-Page	H327144	\$3,274.20	O.R.	Ototomes
TOTAL		\$739,051.43		

ATTACHMENT C

III. SET ASIDE AWARDS

A. AWARDED BIDS

CATEGORY	VENDOR	TOTAL DOLLAR VALUE
Cleaning	Your Way Cleaning	\$1,575.00
Radiology Supplies	Quality Medical	\$599.40
Carpeting	Lakes Enterprises	\$2,762.00
	TOTAL AWARDED BIDS	\$4,936.40

B. DEPARTMENTAL PURCHASES

NOVEMBER 1986

P.O. NUMBER	VENDOR	TOTAL DOLLAR VALUE
1. H321763	Sexton Data Products	\$733.50
2. H063325	Quality Medical	\$655.55
3. H322353	Audio Visual Wholesalers	\$449.00
4. H322376	Audio Visual Wholesalers	\$247.07
5. H055856	Audio Visual Wholesalers	\$14.20
6. H065130	Quality Medical	\$121.92
7. H064528	Quality Medical	\$377.95
8. H323668	Budget Paper	\$88.60
9. H322388	Art Materials	\$356.40
10. H322392	Halcon	\$3,395.75
11. H322469	Halcon	\$155.28
12. H323003	Halcon	\$103.85
13. H323017	Quality Medical	\$29.06
14. H322791	Home Hospital Equip.	\$656.64
15. H065262	Lakes Enterprises	\$760.00
	NOVEMBER TOTAL	\$8,144.77

DECEMBER 1986

1. H325198	Home Health Equipment	\$388.08
2. H324338	Halcon	\$155.28
3. H324398	Quality Medical	\$40.56
4. H323832	Audio Visual Wholesaler	\$71.54
5. H064499	Quality Medical	\$43.55
6. H065139	Quality Medical	\$245.90
7. H065143	Quality Medical	\$49.20
8. H065145	Quality Medical	\$1,004.00
9. H062522	Your Way Cleaning Service	\$3,080.00
10. H065992	Quality Medical	\$43.55
11. H065993	Quality Medical	\$24.00
12. H065148	Quality Medical	\$30.65
13. H066355	Lee's Upholstery	\$1,912.02
	DECEMBER TOTAL	\$7,088.33

III. SET ASIDE AWARDS

B. DEPARTMENTAL PURCHASES - cont'd

JANUARY 1987

1.	H067152	Lee's Upholstery	\$1,912.00
2.	H327304	Halcon	\$232.92
3.	H327209	Halcon	\$172.80
4.	H327115	Halcon	\$103.52
5.	H326901	Halcon	\$151.20
6.	H326985	Halcon	\$388.20
7.	H326555	Halcon	\$439.96
8.	H326577	Halcon	\$3,395.75
9.	H326445	Halcon	\$155.28
10.	H326459	Home Hospital Equipment	\$656.64
11.	H326099	Halcon	\$155.28
12.	H325674	Quality Medical	\$384.48
13.	H325673	Halcon	\$234.00
14.	H325756	Office Machine Sales	\$844.20
15.	H325582	Halcon	\$189.80
16.	H325380	Halcon	\$776.40
17.	H066701	Quality Medical Products	\$140.25
18.	H325900	Budget Paper	\$44.30
19.	H325970	Enrica Fish Bookstore	\$97.75
20.	H066786	Quality Medical Products	\$279.77
21.	H066706	Quality Medical Products	\$814.00
22.	H066707	Quality Medical Products	\$90.50
23.	H066709	Quality Medical Products	\$477.95
24.	H326965	Audio Visual Wholesalers	\$124.11
25.	H326963	Audio Visual Wholesalers	\$942.20
26.	H326961	Eike Interiors	\$191.50
27.	H066712	Quality Medical Products	\$296.80
		JANUARY TOTAL	\$13,691.56

C. QUARTERLY GRAND TOTAL

Awarded Bids	\$4,936.40
November Purchases	\$8,144.77
December Purchases	\$7,088.33
January Purchases	\$13,691.56
GRAND TOTAL	\$33,861.06

ATTACHMENT D

VI. VENDOR APPEALS

1. Vendor Name: Johnson & Johnson  
Nature of Purchase: Gauze Sponges (4 x 4 and 2 x 2)  
Amount of Award: \$32,352.70  
Reason for Appeal: Vendor contended that absorbancy and packaging of their product should meet UMHC's specifications. Product was re-evaluated and found acceptable.
  
2. Vendor Name: International Medical  
Nature of Purchase: Patient Sampling Kits  
Amount of Award: \$17,500.00 (est.)  
Reason for Appeal: Vendor appeal was based on their contention that submission of their sample was as requested. Due to inadequate specifications and unclear instructions, it was decided to rebid with new specifications.



ATTACHMENT E

VII. UNIVERSITY HOSPITAL CONSORTIUM ACTIVITY

1. Nature of Purchase: Forms  
Consortium Vendor Name: Standard Register  
Purchase Order #: H322244  
Value of Purchase: \$ 844.00  
Value of Next Lowest Bidder: \$ 937.00  
Savings: \$ 93.00
2. Nature of Purchase: Forms  
Consortium Vendor Name: Standard Register  
Purchase Order #: H323434  
Value of Purchase: \$ 8,604.00  
Value of Next Lowest Bidder: \$ 9,560.00  
Savings: \$ 956.00
3. Nature of Purchase: Forms  
Consortium Vendor Name: Standard Register  
Purchase Order #: H326250  
Value of Purchase: \$ 3,498.75  
Value of Next Lowest Bidder: \$ 3,887.50  
Savings: \$ 388.75
4. Nature of Purchase: Forms  
Consortium Vendor Name: Standard Register  
Purchase Order #: H325793  
Value of Purchase: \$ 772.60  
Value of Next Lowest Bidder: \$ 858.49  
Savings: \$ 85.80
5. Nature of Purchase: Holter Monitoring Equipment  
Consortium Vendor Name: Marquette  
Purchase Order #: H67421  
Value of Purchase: \$ 50,617.50  
Value of Next Lowest Bidder: Not Bid  
Savings: \$ 2,530.88
6. Nature of Purchase: Defibrillator  
Consortium Vendor Name: Hewlett Packard  
Purchase Order #: H066350  
Value of Purchase: \$ 4,545.45  
Value of Next Lowest Bidder: Sole Source  
Savings: N/A
7. Nature of Purchase: AV Arm  
Consortium Vendor Name: Amsco  
Purchase Order #: H66351  
Value of Purchase: \$ 4,356.00  
Value of Next Lowest Bidder: Sole Source  
Savings: N/A

8.	Nature of Purchase:	EKG Unit/Trauma Room
	Consortium Vendor Name:	Hewlett Packard
	Purchase Order #:	H66094
	Value of Purchase:	\$ 9,587.06
	Value of Next Lowest Bidder:	Not Bid
	Savings:	\$ 611.94
9.	Nature of Purchase:	Labs-EKG Machine
	Consortium Vendor Name:	Hewlett Packard
	Purchase Order #:	H66095
	Value of Purchase:	\$ 11,467.06
	Value of Next Lowest Bidder:	Not Bid
	Savings:	\$ 731.94
10.	Nature of Purchase:	Forms
	Consortium Vendor Name:	Standard Register
	Purchase Order #:	H323754
	Value of Purchase:	\$ 850.80
	Value of Next Lowest Bidder:	\$ 945.20
	Savings:	\$ 94.40
11.	Nature of Purchase:	Forms
	Consortium Vendor Name:	Standard Register
	Purchase Order #:	H324724
	Value of Purchase:	\$ 3,042.00
	Value of Next Lowest Bidder:	\$ 3,380.00
	Savings:	\$ 338.00
12.	Nature of Purchase:	Forms
	Consortium Vendor Name:	Standard Register
	Purchase Order #:	H324746
	Value of Purchase:	\$ 840.00
	Value of Next Lowest Bidder:	\$ 840.00
	Savings:	\$ 0
	TOTAL SAVINGS:	\$ 5,830.71

MINUTES  
Joint Conference Committee  
Board of Governors  
February 11, 1987

**ATTENDANCE:** Present: George Heenan, Chair  
Phyllis Ellis  
Patricia Ferrieri, M.D.  
Donald Gilmore  
Greg Hart  
James Moller, M.D.  
Michael Popkin, M.D.

Absent: Bruce Work, M.D.

Staff: Jan Halverson  
Nancy Janda  
Geoff Kaufmann  
Barbara Tebbitt

Guest: Al Dees

**APPROVAL OF MINUTES**

The minutes of the December 10, 1986 meeting of the Joint Conference Committee were approved as submitted.

Mr. Heenan also introduced the new members of the Committee.

**SEVERITY INDEXING POSITION PAPER**

Mr. Dees presented a draft of a position paper on severity indexing and quality measurement. The Committee discussed the statement extensively, and asked that revisions be made, emphasizing areas of support, areas of needed study, and current and future actions as it relates to severity indexing at University Hospital. Mr. Dees and Mr. Hart agreed to incorporate the Committee's suggestions into a second draft of the paper.

**MEDICAL STAFF-HOSPITAL COUNCIL REPORT**

Dr. Moller presented the recommendations of the Credentials Committee as approved by the Medical Staff-Hospital Council.

The Joint Conference Committee acted to endorse the Credentials Committee report and recommendations and forward the report for approval to the Board of Governors.

As part of the Credentials Committee discussion, Dr. Moller indicated that he will be appointing a committee to coordinate the application of laser technology within the Hospital. Dr. Moller also indicated that he noted in the recent Board evaluation several Board members expressed an interest in learning more of the credentials process. The Joint Conference Committee asked Dr. Moller to elaborate on the process used by the Credentials Committee with the full Board of Governors at a future meeting.

#### **CLINICAL CHIEFS REPORT**

Mr. Hart reported on recent meetings of the Clinical Chiefs, which have been spent primarily in discussion of legislative matters and the University budget request.

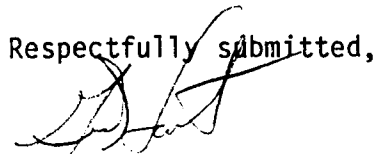
#### **OTHER**

Mr. Heenan asked that the Committee members give some thought to future agenda items.

#### **ADJOURNMENT**

The meeting was adjourned at approximately 6 p.m.

Respectfully submitted,



Greg Hart

GH/kj



UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455

February 18, 1987

TO: Members of the Board of Governors

FROM: James H. Moller, M.D., Chief of Staff  
Chairman, Medical Staff-Hospital Council

REGARDING: Credentials Committee/Medical Staff-Hospital Council  
Report and Recommendations

The Medical Staff-Hospital Council and the Joint Conference Committee have approved the attached Credentials Committee Report and Recommendations.

I am forwarding these recommendations to you for your review and approval on February 25, 1987. If you should have any questions, please feel free to call me.

Thank you.

JHM/kff

Attachment



UNIVERSITY OF MINNESOTA  
TWIN CITIES

The University of Minnesota Hospital and Clinic  
Harvard Street at East River Road  
Minneapolis, Minnesota 55455

February 4, 1987

TO: Medical Staff-Hospital Council  
FROM: Henry Buchwald, M.D.  
Chairman, Credentials Committee  
SUBJECT: Credentials Committee Report and Recommendations

The Credentials Committee after examining all pertinent information provided to them concerning the professional competence and other necessary qualifications, hereby recommend the approval of provisional status and clinical privileges to the following applicant to the medical staff of The University of Minnesota Hospital and Clinic.

<u>Department of Medicine</u>	<u>Category</u>
Craig A. Henke	Attending - ER

The following physicians have submitted applications and supporting documentation requesting addition of clinical privileges. The Committee has reviewed and considered their requests and hereby recommend approval.

<u>Department of Dermatology</u>	<u>Category</u>	<u>Privileges Requested</u>
Maria D. Hordinsky	Attending	Add: Use of Argon and carbon dioxide laser for the therapy of cutaneous lesions

<u>Department of Surgery</u>	<u>Category</u>	<u>Privileges Requested</u>
Arnold S. Leonard	Attending	Add: Use of CO <sub>2</sub> , Argon, and Yag lasers for clinical surgery-liver, lung, skin lesions and other abdominal tumors

<u>Department of Urology</u>	<u>Category</u>	<u>Privileges Requested</u>
Marcos H. Pinto	Attending	Add: Extracorporeal Shockwave Lithotripsy

Addition of clinical privileges continued:

<u>Department of Therapeutic Radiology</u>	<u>Category</u>	<u>Privileges Requested</u>
Tae Kim	Attending	Add: Hyperthermia Treatment
Chung Lee	Attending	Add: Hyperthermia Treatment
Seymour Levitt	Attending	Add: Hyperthermia Treatment
Roger Potish	Attending	Add: Hyperthermia Treatment

The following physicians are completing their provisional status and are eligible for regular appointments as members of the medical staff of The University of Minnesota Hospital and Clinic. The Committee has reviewed recommendations concerning their appointment and hereby recommend approval.

<u>Department of Dermatology</u>	<u>Category</u>	<u>Date Eligible</u>
Valda Kaye	Attending	December 25, 1986
<u>Department of Laboratory Medicine and Pathology</u>		
William Vine	Attending	December 25, 1986
<u>Department of Medicine</u>		
Arnold Adicoff	Clinical	August 26, 1986
<u>Department of Pediatrics</u>		
Ora Pescovitz	Attending	December 25, 1986
David Steinhorn	Attending	December 25, 1986
<u>Department of Physical Medicine and Rehabilitation</u>		
Essam Awad	Clinical	December 25, 1986
<u>Department of Radiology</u>		
Gunnar Lund	Attending	December 25, 1986

MS-HC  
February 4, 1987  
Page 3

The Committee recommends acceptance of the resignation of medical staff appointment from the following physician.

<u>Department of Medicine</u>	<u>Category</u>
Coleman I. Smith	Attending

HB/cf



**Minutes**  
**Meeting of the**  
**Board of Governors Finance Committee**  
**The University of Minnesota Hospital and Clinic**  
**January 28, 1987**

**MEMBERS** Edward Ciriacy, M.D.  
**PRESENT:** Clifford Fearing  
William Krivit, M.D.  
J.E. Meilahn  
C. Edward Schwartz

**MEMBERS** Carol Campbell  
**ABSENT:** Al Hanser  
Robert Nickoloff  
Vic Vikmanis

**STAFF:** Kay Fuecker  
Greg Hart  
Nancy Janda  
Nels Larson  
Dan Rode  
Barbara Tebbitt

**CALL TO ORDER:** The meeting of the Finance Committee was called to order by Mr. Jerry Meilahn at 10:15 A.M. in the Dale Shepherd Room of the Campus Club.

**MINUTES:** The minutes of December 17, 1986 Finance Committee meeting were approved as written.

**12/17/86** Mr. Fearing reported the Hospital continues to experience a  
**FINANCIAL** high census level. For December, admissions totaled 1,448  
**STATEMENTS:** (249 above budgeted levels), average length of stay was 8.3 days, and patient days were 12, 106 (1,578 days above budget). The average daily census for December was 394 and 409 for the first 21 days of January. Outpatient visits were 24.3% above budget with the increase in activity in nearly all clinics areas, but the largest in Medicine, Psychiatry, and Urology.

The Hospital shows a favorable variance of total revenues over expenses of \$9,893,181, Mr. Fearing Reported.

Patient care charges through December totaled \$116,051,761 and were 15.9% above budget. Routine revenue was 8.0% above budget and reflected our favorable patient day variance. Ancillary revenue was approximately \$13,448,000 (19.4%)

above budget and reflected (1) the favorable variance in both admissions and clinic visits; and (2) the utilization of ancillary services per patient being higher than anticipated. Inpatient ancillary revenue has averaged \$6,686 per admission compared to the budgeted average of \$6,199 per admission. Outpatient revenue per clinic visit has averaged \$169 compared to the budgeted average of \$153.

Mr. Fearing reported operating expenditures through December 4.2% above budgeted levels and continues to relate to the increase in demand for patient services and was seen primarily in increased personnel costs and patient care supplies.

Mr. Hart reported a number of factors have had an effect on the Hospital's high census levels, etc.: 1) recent personnel additions such as Dr. Jamieson; 2) new contracts with HMO's; 3) increased activity in liver transplants; and 5) the new building.

**1986-87  
FINANCIAL  
PROJECTIONS FOR  
REGENTS  
INFORMATION:**

When the projected 1986-87 Hospital budget was submitted to the Board of Regents, the Hospital was experiencing higher than normal occupancy levels. The Regents requested the Hospital submit an interim financial report during the year to keep them informed on the financial status of UMHC. Mr. Fearing and Mr. Hart will be presenting the year-end forecasts at the February Regents meeting.

**1987-88 BUDGET  
SCHEDULE:**

Mr. Nels Larson reported Administration will be presenting the projected budget for 1987-88 for Finance Committee discussion in March and approval from the Finance Committee and the Board of Governors in April.

**BAD DEBTS:**

Mr. Dan Rode reported total bad debts for the second quarter of 1986-87 of \$619,034.82, representing 1076 accounts.

Recoveries of \$2,562.77 were made, leaving a net charge-off of \$616,472.05. A motion was seconded and passed to approve the write-off.

Mr. Rode discussed the increase in accounts receivable and informed the Committee that a detail work plan to reduce the receivables was being developed and would be shared with the Committee in February.

**LEGISLATIVE  
UPDATE:**

Mr. Fearing reported a proposal by the legislature to reduce the Hospital special appropriation as follows: 1) \$4.6

million "to be transferred" to the University General Operations and Maintenance Fund, then theoretically given back to the Hospital for instructional costs; 2) \$2 million "to be transferred" to the Medical School along with \$2 million in faculty costs currently paid for by the Hospital 3) This will leave the Hospital with a special of \$7.7 million. The risk is that the Hospital will not receive the entire \$6.6 million back and that all or a part of it will be reallocated within the University. The immediate impact of this proposal is the Hospital will lose \$250,000 - \$300,000 in interest income on the money "to be transferred" to the University and the Medical School because "non special" funds are not received at the beginning of the year, but over the year as funds are needed.

**UNIVERSITY  
HOSPITAL CON-  
SORTIUM MAL-  
PRACTICE  
INSURANCE  
PROJECT:**

Mr. Fearing reported that UMHC and 20-25 other members of the University Hospital Consortium (UHC) are attempting to set up a captive insurance company for additional medical malpractice insurance. Details of the structure, cost and UMHC's participation should be known by June of 1987. The purpose of this process is to attempt to arrange for insurance coverage over UMHC's present coverage of \$1 million per person, \$3 million per incident and \$5 million annual aggregate coverage.


**PRIMARY CARE  
NETWORK**

The Committee discussed the present status of Primary Care Network Management Company, Inc. in a confidential session regarding trade secret information. This issue will be discussed by the Board of Governors in February, 1987.

**ADJOURNMENT:**

There being no further business, the meeting was adjourned at 11:45 A.M.

Respectfully submitted,



Kay F. Fuecker  
Recording Secretary



UNIVERSITY OF MINNESOTA  
TWIN CITIES

University Hospital and Clinic  
420 Delaware Street S.E.  
Minneapolis, Minnesota 55455

February 25, 1987

**TO:** Board of Governors Finance Committee  
**FROM:** Clifford P. Fearing  
Senior Associate Director  
**SUBJECT:** Report of Operations for the Period  
July 1, 1986 through January 31, 1987

The Hospital's operations through the month of January continued to reflect both inpatient admissions and outpatient visit activity that were above budgeted levels. In addition, we continued to experience ancillary service utilization that was higher than anticipated. To highlight our position:

**Inpatient Census:** For the month of January, inpatient admissions totaled 1,607 or 118 above budgeted admissions of 1,489. Our overall average length of stay for the month was 8.3 days. Patient days for January totaled 12,669 and were 921 days above budget. The increase in admission levels continued to be primarily in the areas of Medicine, Pediatrics, Surgery, and Urology.

To recap our year-to-date inpatient census:

	1985-86	1986-87	1986-87		%
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Variance</u>	<u>Variance</u>
Admissions	10,247	9,977	10,883	906	9.1
Avg.Lnth.of Stay	8.3	8.3	8.3	0	0.0
Patient Days	84,289	82,840	89,785	6,945	8.4
Percent Occupancy	66.3	64.2	70.7	6.5	10.1
Avg.Daily Census	392.1	385.3	417.6	32.3	8.4

**Outpatient Census:** Clinic visits for the month of January totaled 20,167 or 1,501 (8.0%) above budgeted visits of 18,666. The increase in activity was experienced in nearly all clinic areas with the largest increases occurring in Medicine, Psychiatry, and Urology. CUHCC (Community University Health Care Center) visits for the month of January totaled 4,189, or 1205 (40.4%) above budgeted visits of 2,984, while Home Health visits of 791 for the month were 473 (37.4%) below budgeted visits of 1,264.

Report of Operations - January, 1987  
Page two

To recap our year-to-date outpatient census:

	1985-86	1986-87	1986-87		%
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Variance</u>	<u>Variance</u>
Clinic Visits	127,995	130,292	142,674	12,382	9.5
CUHCC Visits	22,697	21,784	26,744	4,960	22.8
HHA Visits	4,961	8,766	5,783	-2,983	-34.0

**Financial Operations:** The Hospital's Statement of Operations shows total revenues over expense of \$ 2,796,527, a favorable variance of \$ 9,285,047.

Patient care charges through January totaled \$135,630,938 and were 15.6% above budget. Routine revenue was 8.2% above budget and reflected our favorable patient day variance. Ancillary revenue was approximately \$15,348,100 (18.9%) above budget and reflected (1) the favorable variance in both admissions and clinic visits; and (2) the utilization of ancillary services per patient being higher than anticipated. Inpatient ancillary revenue has averaged \$6,663 per admission compared to the budgeted average of \$6,199 per admission. Outpatient revenue per clinic visit has averaged almost \$170 compared to the budgeted average of \$153.

Operating expenditures through January totaled \$129,229,316 and were approximately \$6,292,800 (5.1%) above budgeted levels. The overall unfavorable variance continued to relate to the increase in demand for patient services and was seen primarily in increased personnel costs (salaries and fringe benefits) and patient care supplies (drugs, blood, medical supplies).

**Accounts Receivable:** The balance in patient accounts receivable as of January 31, 1987 totaled \$70,813,086 and represented 109.3 days of revenue outstanding. The overall increase in our patient receivables in January of 1.8 days occurred primarily in the Blue Cross/AWARE and Blue Cross Out-of-State categories.

**Conclusion:** The Hospital's overall operating position continues to be positive and above budgeted levels. Both inpatient and outpatient census levels remain above budget. We continue to monitor our demand for service closely and make those operating changes that are necessary and appropriate.

UNIVERSITY OF MINNESOTA HOSPITAL & CLINIC  
EXECUTIVE SUMMARY OF FINANCIAL ACTIVITY  
FOR THE PERIOD JULY 1, 1986 TO JANUARY 31, 1987

	Budgeted	Actual	Variance Over/-Under Budget	Variance %
	-----	-----	-----	-----
Patient Care Charges	\$117,328,964	\$135,630,938	\$18,301,974	15.6%
Deductions from Charges	-18,237,219	-20,685,787	-2,448,568	-13.4%
Other Operating Revenue	3,110,952	3,198,089	87,137	2.8%
Total Operating Revenue	102,202,697	118,143,240	15,940,543	15.6%
Total Expenditures	-122,936,561	-129,229,316	-6,292,755	-5.1%
Net Operating Revenue	-20,733,864	-11,086,076	9,647,788	
Non-Operating Revenue and Expenses	14,245,344	13,882,603	-362,741	-2.5%
Revenue Over Expense	\$-6,488,520 =====	\$2,796,527 =====	\$9,285,047 =====	(1)

(1) Variance equals 8.0 % of total budgeted revenue.

	Budgeted	Actual	Variance Over/-Under Budget	Variance %
	-----	-----	-----	-----
Admissions	9,977	10,883	906	9.1%
Patient Days	82,840	89,785	6,945	8.4%
Average Daily Census	385.3	417.6	32.3	8.4%
Average Length of Stay	8.3	8.3	0.0	0.0%
Percentage Occupancy	64.2%	70.7%	6.5%	10.1%
Outpatient Clinic Visits	130,292	142,674	12,382	9.5%

**\*\*\*\*\* OTHER ATTACHMENTS \*\*\*\*\***

Neil Feinberg's Shelf Game • The Sultans of Swatch at Nate's Clothing  
 Sun Country: The Little Airline that Could • Traits of Entrepreneurs

# CORPORATE REPORT *Minnesota*

FEBRUARY 1987 \$2.50



# HEART MURMURS

*The Minneapolis Heart  
 Institute vs. the  
 University of Minnesota  
 Hospital*

His artificial heart  
 implants made  
 history and  
 drew criticism  
 from the  
 competition.



**DR.  
 LYLE  
 JOYCE**  
 Cardiovascular  
 Surgeon,  
 Minneapolis  
 Heart  
 Institute



**DR.  
 JOHN  
 NAJARIAN**  
 Chief of Surgery,  
 University of  
 Minnesota  
 Hospital

"You can  
 only have  
 competition  
 between peers,  
 and we're not  
 dealing with  
 peers here."

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 U OF M  
 RM 6 MORRILL HALL  
 100 CHURCH ST SE  
 MINNEAPOLIS MN 55455

BHD



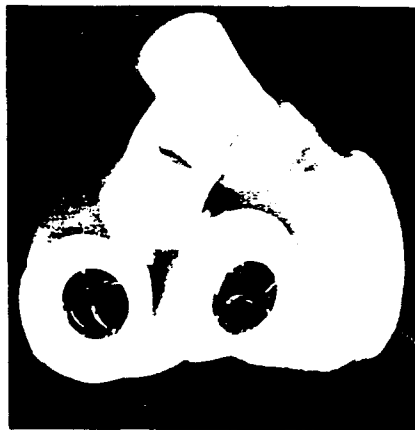
# Affairs of the Heart

*Just how much competition is good  
for the local heart transplant business?  
And for its consumers?*

BY JUDITH YATES BORGER

ON WEDNESDAY, December 11, 1985, Mary Lund, a 40-year-old mother and a secretary in a nursing home in Kensington, Minnesota, came down with a sore throat. Six days later, her body gripped in a deadly virus, she was admitted to Douglas County Hospital in Alexandria. As the disease attacked her heart

muscle, she was rushed by ambulance to Abbott Northwestern Hospital, where doctors from the Minneapolis Heart Institute determined that her heart was so severely damaged that she would not live without extraordinary measures.



THE MINI-JARVIK-7:  
ELEMENT IN A RIVALRY

There wasn't time to find a human heart that her body would accept, so that night Dr. Lyle Joyce made an incision in her chest, cut out her damaged heart, and replaced it with the mini-Jarvik-7, making Mary Lund the first woman in history to receive an artificial heart. The artificial heart was intended only as

a way to buy time, and three weeks later, citing Lund's improving condition, her doctors placed her on a waiting list for a human heart.

A few miles away, at the University of Minnesota Hospital, Chief of Surgery John Najjar-

ian watched the unfolding drama with a critical eye. When Abbott Northwestern announced that Lund would be placed on a waiting list for a heart transplant, Najarian, whose specialty is kidney transplants, told a questioning newspaper reporter that the move was "inappropriate" while her kidneys were not functioning. "If there is no problem with the Jarvik, why are they getting into this?" he asked.

Najarian's comments, which reflected his deep philosophical disagreement with the use of the artificial heart, shocked some people in the medical community, causing them to question the propriety of one doctor second-guessing another based on what he had read in the newspaper. But what's more telling, those comments crystallized a rivalry that's been going on for several years. The story of the love-hate relationship between the Minneapolis Heart Institute and The University of Minnesota is a story of heated competition, big dollars, considerable egos, and the development of the ultimate mechanical part, the human heart.

The story begins in December 1967 when Dr. Christiaan Barnard, who had studied at the University of Minnesota, performed the first human heart transplant. A month later, Barnard's classmate, Dr. Norman Shumway, performed the first American heart transplant at Stanford University. Arguing that doctors at the University of Minnesota Hospitals had all the immunological know-how to do their own heart transplants, Dr. Demetre Nicoloff, then associate professor of surgery, pushed hard for a similar program here.

On March 4, 1978, Nicoloff, then 45, headed the team that performed the university's first heart transplant. The patient lived almost two-and-a-half months before dying of a fungus infection. At his death, the new heart was fine,

*Judith Yates Borger is a Twin Cities free-lance journalist who often writes about health and business. She formerly was editor of Minnesota Business Journal.*



*In 1978 Dr. Demetre Nicoloff headed the team that performed the University of Minnesota's first heart transplant. Three years later he left his alma mater to help start the Minneapolis Heart Institute.*

but the drugs he had been given to suppress his immune system so he would not reject the heart had also suppressed his ability to fight off infection.

Nicoloff transplanted two more hearts while he was at the university. But perhaps more important to the overall program of heart surgery at the University of Minnesota, he presided over the full gamut of bread-and-butter heart surgeries. He repaired aneurisms, sewed in vessels to bypass blockages in the heart, and worked on the research in the development of the St. Jude Medical heart valve.

Nicoloff's association with the University of Minnesota began in 1958, when, fresh out of medical school at Ohio State University, he began his general surgery residency at the world-famous hospital on the banks of the Mississippi. By 1965 he had earned a Ph.D. in surgery, and by 1967 a Ph.D. in physiology, both at the University of Minnesota. In 1971 the university appointed

him associate professor of surgery.

When Nicoloff's boss, Dr. Richard Varco, another pioneer in open-heart surgery, retired as head of the department of cardiac surgery, Nicoloff believed he was in line to succeed Varco. But it was not to be. His boss, John Najarian, determined that Nicoloff did not have the academic credentials to head the department. So Nicoloff left.

It was not a happy parting. Dr. William Lindsay, who had assisted Nicoloff at the university's first heart transplant, left with him, as did some paraprofessionals. With the departure of Nicoloff and Lindsay — and the sudden death of Dr. Richard Lillehei, another famous University of Minnesota heart surgeon — the volume of cardiac surgery at the University of Minnesota dropped dramatically.


Nicoloff was suddenly faced with two choices: stay in town and build a private practice or leave for an academic appointment elsewhere. He didn't want to move his family — the quality of Twin Cities life had a part in his decision — so he stayed put.

Meanwhile, Dr. Rolf Andreassen, the first doctor in the Twin Cities to limit his practice to heart problems, and Dr. Robert Van Tassel, a cardiologist who also had studied at the University of Minnesota, had long been kicking around the idea of forming an affiliation of heart doctors that could be called an institute. But the idea didn't gel — everyone told them doctors were far too independent to be able to work together — until Nicoloff and Lindsay sat down with them and Dr. Fredarick Gobel, a cardiologist and, like the others, a University of Minnesota alumnus.


In July 1981, the doctors took 13,000 square feet of office space next door to Abbott Northwestern Hospital and

*Nicoloff (left) assisting Dr. Thomas Kersten with open-heart surgery at Abbott Northwestern. Doctors at the Minneapolis Heart Institute like to point out that their volume of heart surgery is double that of their closest competitor, University of Minnesota Hospital.*



## Minnesota Heart History



**Dr. William Lillehei (left)** is the doctor who performed the first heart transplant at the University of Minnesota. He is a world leader in heart surgery.



University alumni who made history: Dr. Christian Barnard (above left) and Dr. Lyle Joyce. Joyce is shown on left at Utah press conference with Dr. William DeVries (above right), following first artificial heart transplant in a human.

Minneapolis Heart Institute patients who have helped make history: Mary Lund (above left) and Nicole Christoffersen (above right).

*Abbott Northwestern's heart catheterization lab: sophisticated video and cushy viewing chairs.*

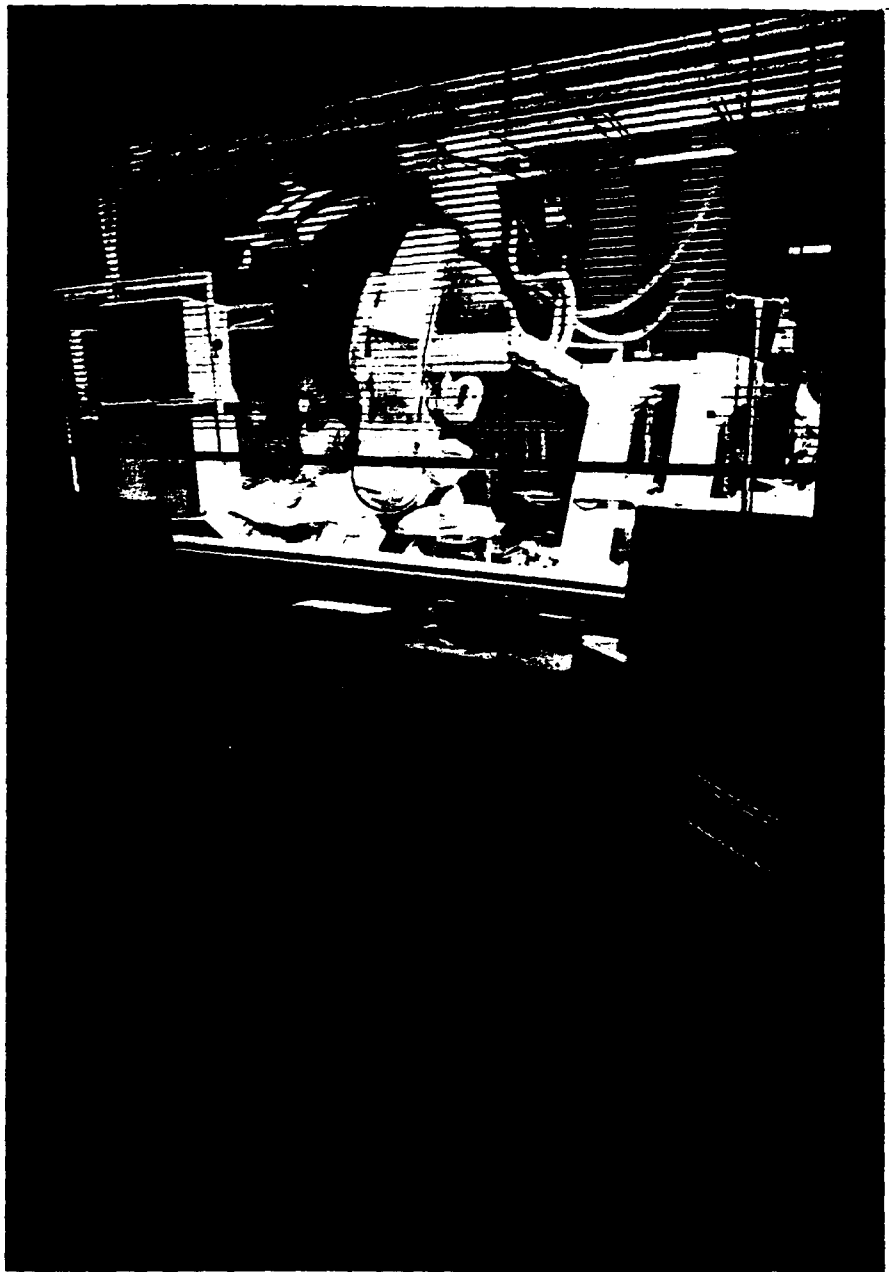
formed the Minneapolis Heart Institute. In December 1986, they moved into their own brand-new 55,000-square-foot building, also on the Abbott Northwestern campus. During the preceding five-and-a-half years the group had grown to 34 physicians, including adult and pediatric cardiologists, cardiothoracic surgeons, cardiovascular radiologists, and anesthesiologists.

Last year the Minneapolis Heart Institute saw 10,000 patients, more than half of them from outside the Twin Cities. Of those, some 5,000 underwent invasive diagnostic procedures. The doctors implanted 200 pacemakers and performed about 600 angioplasties, a procedure in which a clogged blood vessel is expanded by inflating a balloon inside of it. In all, the institute's surgeons, who now number 11, performed open heart surgery 1,500 times, about 950 at Abbott Northwestern Hospital, the rest at United in St. Paul, Fairview Southdale in Edina, and North Memorial in Robbinsdale.

The Minneapolis Heart Institute, which employs 100 people, has annual revenues of \$20 million. But those figures tell only part of the story. The institute's cardiovascular services generate additional revenues of \$55 million and result in the employment of another 800 people at Abbott Northwestern alone.

The volume of surgery performed by institute doctors is important, not only for the dollars it generates, but also because it indicates a level of expertise. Generally speaking, the more a doctor performs a particular procedure, the more likely his patient will get well. The doctors at Minneapolis Heart Institute like to point out that their volume of heart surgery is double that of their closest competitor, namely, the University of Minnesota Hospital.

There's a reason for that disparity. In a world of specialized medicine, the primary customer is the referring doctor, and the fellows at the Minneapolis Heart Institute have gone after referring doctors with top-notch marketing acumen. They're constantly out beating the bushes for business with seminars and confer-



ences all over the state. When Nicoloff, Van Tassel, Gobel, or one of their colleagues sends a patient home, he immediately writes a letter to the referring doctor outlining just what he did for the patient and includes a recommendation for follow-up care. Sometimes he'll include fancy, color diagrams of the procedure, too.

Much of the Minneapolis Heart Institute's diagnostic procedures, and some therapeutic procedures, especially the angioplasty, are performed in what Gobel touts as the "best in the world" heart catheterization lab in Abbott Northwestern Hospital. The procedures are done in any one of five rooms decked out at a cost of \$1.5 million each. When a group from Japan visited the lab last fall they sat on cushy, high-backed leather chairs in the viewing room for which an interior decorator had chosen chocolate walls. The viewing room afforded the Japanese guests two views of the procedure. For close-up observation, they watched the television monitor, which

recorded every detail of the procedure on video equipment as sophisticated as that at WCCO-TV. For the broader picture, they watched all the goings-on through the glass wall before them.

"They're a very classy act," says one Twin Cities cardiologist of the doctors at Minneapolis Heart Institute. "The physicians walk around in good suits and put on a very successful image. They're so slick that anyone who wants to compete has to be just as slick."

"UNIVERSITY OF MINNESOTA Heart and Lung Institute" proclaims the sign affixed to the building at 425 East River Road, which a year ago housed the University of Minnesota Hospital. The sign is important to Dr. Stuart Jamieson, world-class surgeon and head of the Heart and Lung Institute. In fact, before he agreed to come to the University of Minnesota to succeed Dr. Robert Anderson as head of cardiac surgery, Jamieson exacted an assurance that the institute would have a physical, geographic, clear-

## Restoring the Glory

"HELLO, SWEETHEART, you look like a million dollars," Dr. Stuart Jamieson says with his clipped British accent as he runs his fingers through the blue-gray hair of the elderly woman looking up at him with adoring eyes from her bed at the University of Minnesota Hospitals. "You're my girlfriend, aren't you?"

Jamieson likes to see his patients twice a day, checking on them about 7 a.m., and then again about 7 p.m., the end of their day, but not his. With each patient, indeed with everyone, Jamieson's manner is relaxed and cordial, his handshake warm and firm. He's the witty, articulate, and thoroughly engaging new guy in town.

Jamieson is tall, thin, square-shouldered, and most comfortable wearing a scrub shirt, pants, and cowboy boots. He grew up the son of an Australian eye-surgeon father and British mother in a mansion in Rhodesia after World War II. In 1965 he left Rhodesia for the University of London to train for a career as a surgeon. The same year political unrest in Rhodesia resulted in an embargo on money leaving the country. Jamieson was left penniless in London. He could have returned to a comfortable life in Rhodesia, but instead he decided to work his way through medical school as a waiter and a tutor of "rich and lazy spoiled brats."

Following his training at the University of London, Jamieson went on to the St. Mary's Hospital and Brompton Chest Hospital, where he worked with some of the pioneers in kidney transplantation in Europe. Then, in 1978, he accepted a fellowship at Stanford University, where he worked on heart transplantation with Dr. Norman Shumway.

Jamieson was in a position to succeed Shumway when University of Minnesota Chief of Surgery John Najarian invited him to Minnesota. After studying Najarian's offer for 18 months, Jamieson accepted. He says he had accomplished all he cared to at Stanford. At 38 he was ready for a new challenge.

Jamieson's job is to restore the University of Minnesota's heart program to its once illustrious state. He brings to the job a stature of worldwide prominence in the area of transplant.

His overriding philosophy is that in all decisions the patient, as a person, comes first. "When I was at Stan-



Dr. Stuart Jamieson's arrival means that patients now offer heart and lung transplants. He has also joined a full free member.

ford there was a tone that the patients owed the doctors a living," he says. "I hated that terribly. I can't stand it when I hear a patient referred to as a medical valve."

As Jamieson makes his way through evening rounds, it's apparent that he genuinely enjoys the interaction with his patients. "I spoke to your doctor after the operation," he tells one man. "He wanted me to give you his best."

Jamieson has many challenges before him. Historically, the university has placed far greater value on the academic skills of its surgeons, than on their clinical skills, a state of affairs which ultimately caused the university's surgery schedule to dry up. Jamieson intends to bring those two disciplines back into balance. "In addition, the health maintenance organizations have steered patients elsewhere because the health care at the university costs more than elsewhere. We've always have more complicated cases," he says. "But we can make up for that by being better surgeons. Since I've been here we've been more competitive. I think the HMOs will quickly realize the place is under new management."

Judith Yates Borger

ly defined location.

His reason is based on a story he tells with a certain wry amusement about Dr. Denton Cooley, a pioneer in the world of heart surgery: While Cooley was studying in London during the 1920s, he was invited to speak at the National Heart Hospital in London. He was terribly intimidated by the prospect of speaking at something called the National Heart Hospital — until he arrived to give his talk and found a 10-bed hospital with a fancy name. But he was so impressed

with the prestige a name can impart that when he returned to America to set up his own practice, he called it the Texas Heart Institute.

Other doctors who later came to Cooley's Texas Heart Institute to study the latest advances in heart surgery took the cue. As they left Texas and fanned out all over the country, they set up their own heart institutes. Soon heart institutes were springing up anywhere a doctor was interested in treating diseases of the heart.

Minnesota is no exception. In the Twin

Cities alone, there are the North Heart Institute, the Midwest Heart Institute, the St. Paul Heart and Lung Clinic, the Minneapolis Heart Institute, and the University of Minnesota Heart and Lung Institute.

Jamieson, who finds the proliferation of heart institutes "a bit creepy," plans to make sure that his institute is more than just a sign stuck in the snow.

Jamieson arrived at the University of Minnesota in early 1986. By the fall of the year, the paintings for his office still sat on

the floor. He was hired to restore the prestige, and the volume, of heart surgery at the University of Minnesota. He hasn't had much time for decorating.

It took some coaxing to lure Jamieson away from Stanford University, where, at the age of 38, he is considered one of the founding fathers of heart and lung transplants. Since he arrived in Minneapolis, the volume and complexity of surgery at the University of Minnesota has increased dramatically.

Between 1983 and Jamieson's arrival last year, 36 heart transplants had been performed at the university. By the end of 1986, university doctors were transplanting hearts about once a week, bringing the total number of heart transplants performed at the university to more than 100. That makes the university one of the busiest heart transplant centers in the world, giving it a transplant volume more than eight times that of the Minneapolis Heart Institute, which as of the end of 1986 had transplanted 12 hearts.

Furthermore, with a 94 percent survival rate for the recipients after one year, the university's heart transplant record surpasses in another way the record of the Minneapolis Heart Institute, whose transplant survival rate is currently 60 percent. (Nicoloff, of the Minneapolis Heart Institute, notes that two of their transplant patients who have died were on artificial pumping devices before their transplants, a condition that complicates a subsequent heart transplant.)

With Jamieson on staff, the university has tripled the number of open-heart surgeries it has performed since April, bringing the number to about 800 a year. Other heart-related activity has increased, too. In 1985 doctors at the university performed seven angioplasty procedures; in 1986 they performed more than 40. Also, by last fall the use of the university's catheterization lab was up about 80 percent compared to 1985.

The increase in business has not come without some heavy marketing. When Jamieson arrived, his department ran a survey to find out how most of its patients came to the university. It showed that 80 percent are referred by other doctors. But referring doctors complained that once they sent a patient to the university they often heard no more about him, as though the patient had been sucked into a giant abyss. So Jamieson took to rectifying that problem. He began calling referring physicians with reports on their patients. He knew that he had struck a chord when the physician on the other end of the line was surprised to hear from him.

And, to make it even easier for referring doctors and potential patients to reach the institute, there is now a toll-free number — 1 (800) US HEART.

Jamieson has been so busy bumping up



*Dr. Lyle Joyce is working with two local companies to develop a new artificial heart. He'd like to involve the university in the project, too.*

*"Don't get me wrong," says Najarian. "They are good people. Lyle Joyce is excellent. They are all good yeoman cardiac surgeons. We trained them all."*

the university's numbers that he's essentially oblivious to the volume being done across town at the Minneapolis Heart Institute. In fact, he dismisses all other heart institutes as just so many signs in the snow. "There is only one U," says the university's advertisement, and Jamieson takes the slogan seriously.

By Jamieson's sights, the University of Minnesota Heart and Lung Institute will once again become a "center of excellence, staffed by people of reputation. It will be more than a front, but a group providing the best care available in heart

and lung medicine and surgery in the world.

"It may seem a lofty, if arrogant goal," he says, but it is attainable. "There exists here tremendous expertise, and all that is required is to put everything together and just enough leadership to stay on track."

In the meantime, Jamieson's arrival in Minnesota has meant that the University of Minnesota can now offer heart and lung transplants, a procedure far trickier than a heart transplant, but crucial for patients with damage in both organs. As of last fall, Jamieson had performed the operation on a man and a woman, both of whom have gone home to new lives.

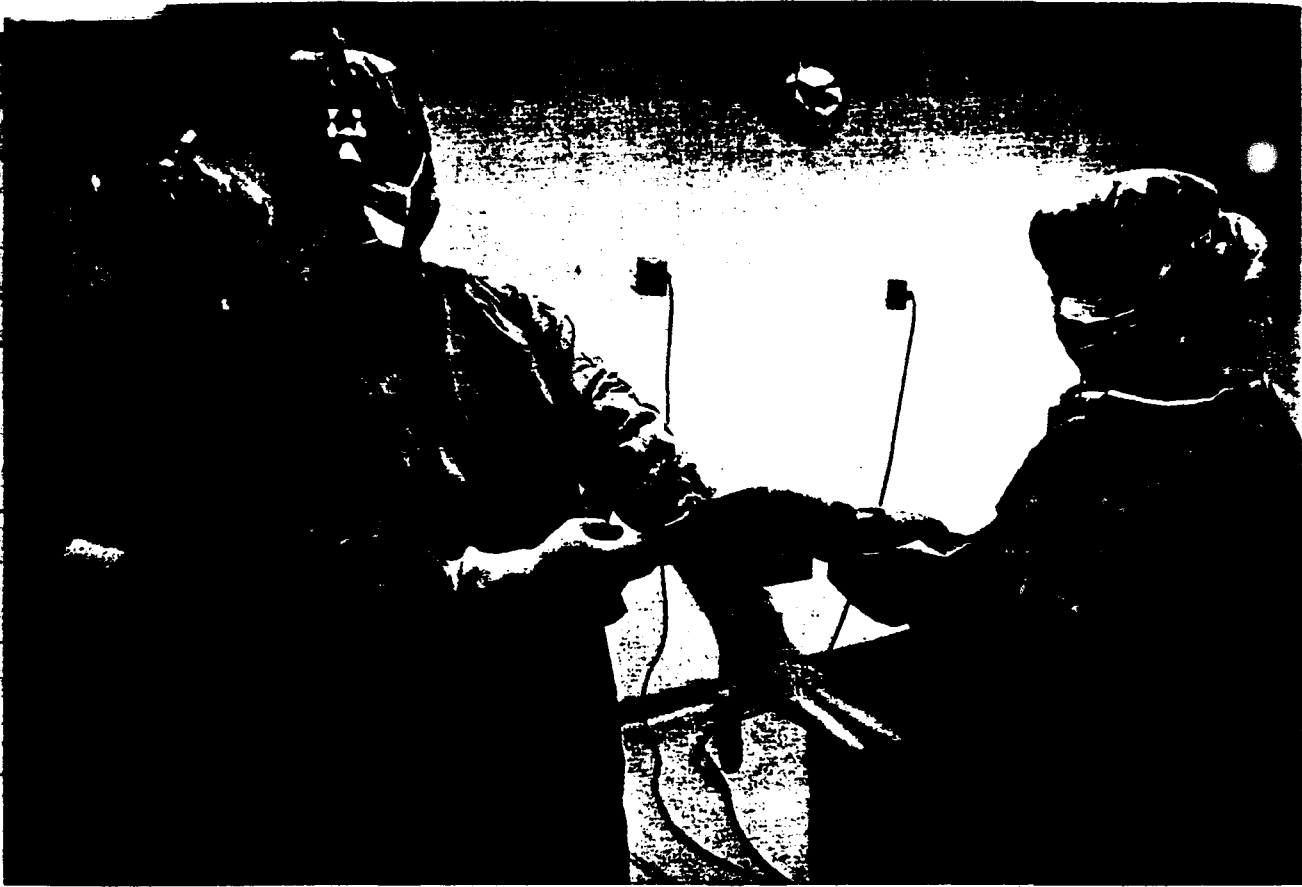
ASK ANY SURGEON to name the three greatest surgeons of our time, and that surgeon's going to have trouble coming up with the other two. Surgeons by nature are very self-assured, strong-willed, and highly competitive individuals. Nothing gets the competitive juices flowing between the doctors at Abbott Northwestern and the University of Minnesota like a discussion about the relative merits of artificial hearts and heart transplants — and which institution ought to be doing which.

In the thick of the discussion is Dr. Lyle Joyce. Joyce is a youthful, self-described Nebraska farm boy, who earned a Ph.D. in surgery with a minor in physiology while working at the University of Minnesota under Dr. Richard Lillehei, shortly before Lillehei's death in 1981. Just as Joyce was finishing his studies, the University of Minnesota's volume of heart surgery headed into a decline, so Joyce went to the University of Utah, where residents were doing an enormous amount of surgery. Among them was Dr. William DeVries, who was working on an artificial heart.

Every Wednesday morning, DeVries and Joyce would implant an artificial heart in a different test animal. One Wednesday, just as DeVries and Joyce had finished putting an artificial heart into a Holstein calf, a man named Barney Clark and his wife, Ione, came by the lab. Clark had been referred to the University of Utah for experimental drug treatment for his quickly failing heart. "The calf had been taken off the operating table and was lying on all fours," recalls Joyce. "Barney saw it raise its head two hours after the surgery. He had a better opportunity to know what was involved than anybody. He was excited and encouraged us to go on."

Weeks later, Clark signed the 11-page consent form that listed everything that had ever gone wrong in any experiment in artificial hearts. It was a form that only a dying man would sign.

When DeVries implanted the world's first artificial heart in a man — Barney Clark — Joyce was his first assistant. "It



## Team Performance

OPEN-HEART surgery is a well-choreographed, awesome ballet, and Dr. Demetre Nicoloff, of the Minneapolis Heart Institute, and the doctors and nurses who assist him, perform about twice a day. Nicoloff is a quiet man who creates an operating room atmosphere that is so friendly and relaxed that his scrub nurse fondly calls him "Nick." Yet each member of the team knows his or her part well and works with an intensity borne of meticulous attention to every detail.

The performance begins as Nicoloff, his freshly scrubbed hands pointing toward heaven, uses his elbows to push open the white double doors to Operating Room 4 in the basement of Abbott Northwestern Hospital. He's wearing a powder blue scrub shirt and pants and a blue and white paper hat that comes down over his ears and ties under his chin. Atop his head is a cap that secures a light in the middle of his forehead, much like a coal miner would wear. This light, to help Nicoloff see in the inner chambers of his patient's heart, is fiber optic, so it throws off no heat as Nicoloff bends close into the patient's chest.

Completely draped in sterile blue sheets, Nicoloff's patient, a 220-pound man, lies unconscious on the table. Two disks hover above him, lights beaming down like the landing gear on a spaceship. They illuminate his bared chest.

The patient has a genetic defect in the mitral valve of his heart. For five years his cardiologist has monitored it. Although it has given him no trouble in his 34 years, his heart has begun to enlarge. It's time to replace the valve while his heart is still in good shape.

*Nicoloff prepares for surgery. There's no reason, he says, why there shouldn't be two heart transplant centers in the same location: "The patient should have a choice. That's competition."*

Because he is young and otherwise healthy, his risk of death in this particular operation is very low, about 2 percent.

Nicoloff steps up to his patient. Picking up the blue scalpel, he makes an incision about a foot long in the man's chest. As he cuts, he works a pedal with his foot that delivers electric charges to the tip of the knife, which cauterizes the man's blood vessels. Cut and zap, cut and zap, the smell of burning flesh rises from his wound.

That done, Nicoloff uses a drill to cut through the man's chest, then a big protractor to separate the two halves of bone. Soon his heart is exposed.

With nimble fingers, Nicoloff inserts yellow and pink tubes into each chamber of the man's heart. As the man's blood courses through those tubes to a pump a few feet away, his heart deflates, a clump of muscle temporarily at complete rest.

Then Nicoloff cuts into the man's aorta so he can get at the defective valve, a piece of white tissue no bigger than a thumbnail. After a couple quick slashes with the knife the valve is gone, and Nicoloff is ready to replace it with a St. Jude Medical valve.

Slightly more than two hours after he made the first incision, Nicoloff has replaced the valve, sewn up the incisions in the heart and allowed the blood to return to the man's own system. With 20-gauge wire he sews the two halves of the man's chest back together. If all goes well, the man will go home in a week to 10 days. In six weeks his wounds will heal, and in eight weeks he'll be back at his job.

—Judith Yates Berger

*“Competition  
itself doesn’t  
necessarily mean  
you have better  
medical care,  
but it points  
in that  
direction,”  
says Nicoloff.*

was an exciting experience,” recalls Joyce. “But you don’t really feel it until its over. It was also high risk. We knew everybody was going to be down on us if it didn’t work.”

The young surgeons got very little support from the medical community for their efforts. In fact, a friend of Joyce’s had gotten a call from the president of the Society of Thoracic Surgeons who pointed out that neither DeVries nor Joyce was board-certified and wanted to know who these young punks were.

Following Barney Clark’s death 112 days after surgery, DeVries and Joyce became frustrated with the lack of advancement with the program. Six months later the doctors at the Minneapolis Heart Institute asked Joyce to join them.

“I had planned to join Rich Lillehei at the university,” says Joyce. “I certainly didn’t have any dreams of going into private practice, and I knew the Twin Cities did not need another cardiac surgeon.” But he also figured he had a future in the Twin Cities outside of academe, for several corporate leaders in the medical field had encouraged him to return to Minnesota.

“If there’s any place in the world that a total artificial heart could be built it would be the Twin Cities,” says Joyce. So Joyce moved to Minneapolis and applied

to the U.S. Food and Drug Administration for permission to implant 10 artificial hearts as temporary help for patients who need heart transplants.

Two years later, Mary Lund arrived at Abbott Northwestern. Although Joyce had FDA approval to implant the Jarvik-7 artificial heart, the same device which had been implanted in Barney Clark, he did not have approval to implant the mini-Jarvik-7, a smaller version intended for someone with a smaller chest. The mini-Jarvik-7 had been rejected by the FDA because it had not been tested in enough animals. In fact, the FDA had told Joyce to remove the mini-Jarvik-7 from Abbott Northwestern’s premises. As Joyce spoke with an FDA official on the day of Mary Lund’s operation, the sterilized mini-Jarvik-7 was sitting in the Twin Cities home of a former Medtronic vice president who had left the area for a job at Symbion, maker of the mini-Jarvik-7. The executive’s wife and children were waiting to move to Salt Lake City. Later that day the artificial heart was transferred to Abbott Northwestern.

“You know what I’ve got to tell you,” the FDA official told Joyce. “You are fully liable for this.”

“I understand,” said Joyce.

“Now I guess you better go get to work,” he told Joyce.

At 7 p.m. on December 18, 1985, Lyle Joyce headed a team of Minneapolis Heart Institute doctors who replaced Mary Lund’s heart with a mini-Jarvik-7.

Six weeks later, on January 31, a 14-year-old Montana girl suffered a seizure while taking a bath and drowned. Her heart was flown to Minneapolis and implanted in Mary Lund’s chest. That heart kept Lund alive another eight-and-a-half months, until 6:20 p.m. on October 14, when she died of multiple organ failure.

JOHN NAJARIAN is deeply troubled by the artificial heart. Furthermore, he’s convinced that doctors at the Minneapolis Heart Institute are quick to put in an artificial heart, largely because they now have the FDA approval to do it. “If you’re the only person with a hammer then all the world’s a nail,” he says.

Najarian says he doesn’t know whether Mary Lund needed an artificial heart, “But I wonder. Ask them whether they ever grew a virus from the tissue of her heart and what was it. That would be information that has never been published.”

Nicoloff readily concedes that the laboratory was never able to grow a virus from the tissue of Lund’s own heart. “The fact that it didn’t grow doesn’t mean [that a virus] wasn’t the agent,” Nicoloff says. “It’s difficult to grow a virus outside the body. The virus may have done the damage and then died out. But

we’re not 100 percent sure it was viral myocarditis.”

In November, a month after Mary Lund died, Joyce implanted a mini-Jarvik-7 in the chest of 28-year-old Nicole Christoffersen, who had come to Abbott Northwestern from Minot, North Dakota, with severe inflammation of the heart. Once again Najarian was skeptical.

“I’m more concerned about the one they’ve got now [than about Lund],” says Najarian, referring to Christoffersen. “Here’s a person who comes in, and two days later she has an artificial heart,” he says. “Why didn’t they just place her high on the list for transplant?”

“We see patients with acute myocarditis all the time,” Najarian continues. “We use a left ventricular assist device.”

Two weeks after Christoffersen received an artificial heart, it was replaced with a human heart. The operation was a success, and Christoffersen left the hospital just before Christmas.

“Don’t get me wrong,” says Najarian. “They [the heart doctors at Abbott Northwestern] are good people. Lyle Joyce is excellent. They are all good yeoman cardiac surgeons. We trained them all. I wouldn’t hesitate to have any of them operate on me.”

Najarian won’t make the charge himself, but he doesn’t mind pointing out what *someone else* has suggested: that the doctors at Abbott Northwestern have taken on artificial hearts and heart transplantation for their public relations value.

“It’s unfortunate today that we see ads for hospitals and groups of doctors,” he says. “There are a variety of ways to do this. You can take out ads on television, or you can do something sensational and get a free advertisement. But it turned out that it’s not so free if you look at Mary Lund’s case. The price tag was tremendous.”

THIS PAST FALL Jamieson, who is president of the International Society for Heart Transplantation, gave a talk at a meeting of the American College of Surgeons outlining why he is opposed to the artificial heart. The numbers, he says, make the artificial heart impractical.

As of November 1986, there had been 25 artificial hearts implanted as a bridge to transplantation. Fourteen of the patients died before a transplant could be performed. Jamieson says that about half the remaining patients were alive a year after receiving human heart transplants.

“If you’re going to implant an artificial heart as a bridge to transplantation, you’re no longer talking about a 94 percent survival rate,” he says.

The only thing now limiting the number of successful heart transplants is the number of donors. For every 200 or 300 people referred to the University of Min-



*“He’s not very careful about what he says,” says Jamieson of Najarian. “He’s perspicacious and remarkably honest, . . . But some people don’t like that because it steps on toes.”*

*Dr. John Najarian: He doesn’t know, says whether Mary Lund needed an artificial heart. “But I wonder.”*

fection of the heart, or they’ve just had a heart operation and they’re not going to make it off the bypass machine, and you put in the artificial heart, you cut the old heart out and drop it in the bucket,” he says. “From that moment, your options are limited to either leaving the thing in or taking it out and replacing it with a human heart.

“I prefer the option of left heart bypass, which we use here in the university,” he says. The left ventricular bypass is a sort of booster heart which can be implanted or left outside. It diverts blood from the ailing heart to an assist device. “You leave your options open for the heart to recover,” he says, “and it truly often does.

“If you haven’t thought about it, and somebody is dying, to whom in an artificial heart sounds conceptually awfully good,” says Jamieson. “But there are pitfalls to thinking this is the answer to mankind. It just isn’t.”

Because of the poor long-term results of the artificial heart, the FDA has granted approval to implant the artificial heart only as a way to buy time until a human heart can be transplanted. So, if Joyce the other doctors at the Minneapolis Heart Institute are going to implant artificial hearts, they will also transplant human hearts, putting them in direct competition with their alma mater, and

nesota for heart transplant, the doctors there are able to transplant only 80.

“Say you have 50 people referred to you a year, yet you have 20 available heart donors a year,” says Jamieson. “If you’re a genius or God, at the end of that year you’ll have 20 surviving heart transplant recipients. That’s the best you can hope for.

“Now, because you have more patients than you have human hearts, you have patients on the waiting list who start to die. You put in the artificial heart. So the first donor you have available goes to the patient with the artificial heart because you want to get that artificial heart out as soon as you can. Eventually nobody is going to get a heart transplant until they

have had an artificial heart in first.

“Now are you still talking about 20 surviving at the end of the year?” he asks.

“The experience is that you’re talking about a survival of half of that because you’re doing sicker patients, and because of the added risk of the artificial heart you can’t hope to achieve all that you could if you went straight to a heart transplant.

“When putting the artificial heart in, you should be very clear that you are not doing the most good for the most people,” he says.

In fact, Jamieson even argues that the artificial heart is not even the best course for the individual patient.

“If somebody comes to you in desperate straits, say they’re dying of a viral in-



iling their old boss, Najarian.

There is no reason, Najarian says, why another group of doctors, "in the shadow of the world's leading heart transplant center" should be doing transplants.

But Nicoloff turns that around. He says there is no reason why there *shouldn't* be two heart transplant centers. "There's no point in having two in one location if one's doing an inferior job," Nicoloff says. "But if we're doing the same thing, why not? The patient should have a choice. That's competition."

Nicoloff and Joyce argue that because the Minneapolis Heart Institute has such a large volume of surgery and sees so many patients in need of transplantation, it ought to be able to offer that option. To not do so would be to offer substandard care, they say. "Given the state of the art of heart transplantation, any hospital that's doing 1,500 hearts a year must be able to offer it," says Joyce. "If you're a conscientious physician you want what's best for your patient."

In the end, the government may well decide which institutions will offer transplantation. Currently there are 90 hospitals across the country reporting heart transplants to a registry kept for the International Heart Transplant Association at the university. Another 100 hospitals have expressed an intention to do heart transplants. Medicare would like to see the number of hospitals cut to 10. A proposal currently under consideration would reimburse only those centers that do more than 12 heart transplants a year and have 73 percent of their patients still alive one year after transplants.

Jamieson points out that very few of the heart transplants done at the university are reimbursed by Medicare. But he expects that the private insurers would follow Medicare's path and that ultimately there will be 20 or 25 heart transplant centers in the United States.

BECAUSE IT is a given that the professionals at both the Minneapolis Heart Institute and the University of Minnesota Heart and Lung Institute care very deeply about the physical and mental health of their patients, there's little need for a discussion about the relationship of doctor and patient. All of these doctors give their patients the very best care they can. And yet, the scenario that has been played out begs a larger question. When you're talking health care, just how much competition is good for us?

"I always think the competition is good," says Nicoloff. "It keeps everybody on their toes. Competition itself doesn't necessarily mean you have better medical care, but it points in that direction."

The doctors at the Minneapolis Heart Institute admit openly that they are in friendly, direct competition with the

*All the parts  
to an artificial  
heart are already  
in the Twin  
Cities. It's just  
a matter of  
putting them  
together.*

University of Minnesota. But it's tough to get a discussion going on the merits of competition in health care when one of the players doesn't acknowledge the game. According to Najarian, there is no competition. "You can only have competition between peers," he says, "and we're not dealing with peers here."

The issue here, says Najarian, is that the University of Minnesota is an academic institution that does research and teaches, and the Minneapolis Heart Institute does not.

But the Minneapolis Heart Institute is making moves in that direction, as well. The doctors pooled more than \$1 million of their money to cover start-up costs for the Minneapolis Heart Institute Foundation, a nonprofit center for clinical research in the prevention and early detection of heart disease. The foundation's goal is to enroll 100 individuals, corporations, and foundations at \$25,000 each, payable over five years, to create a \$2.5 million endowment whose earnings will support a research chair in the foundation. So far, a quarter of that money has been raised. Part of the foundation money will cover the costs of the 10 artificial heart implants the FDA has approved for the Minneapolis Heart Institute. The first two have cost about \$300,000, but offi-

cially there expect the cost will decline in succeeding implants.

Well, then, what about the possibility of collaboration?

Last July the Minneapolis Heart Institute hired Dr. Irvine Goldenberg as full-time director of research to coordinate studies done in conjunction with the University of Minnesota. Since then, Goldenberg says he has worked closely — and quite amicably — with university doctors on tests for drugs and cardiac procedures. In addition, Dr. Frank Cerra, the university's director of surgical critical care, was in constant communication with Lyle Joyce throughout Mary Lund's ordeal, trying to figure out how to pull her through. And Najarian and Dr. Jay Cohen, head of cardiology at the university, visited Lund twice — at the request of Lund's doctors, Najarian notes.

But the best opportunity for significant collaboration lies in the area of the artificial heart. The university currently has its own research going on the artificial heart, and Lyle Joyce is working with two local companies, which he declines to name, on a new artificial heart. He notes that all the parts to an artificial heart are already in the Twin Cities. It's just a matter of pulling them all together. "But it's a very expensive proposition, and a gamble of \$5 million to \$10 million," he says. Right now, the Minneapolis Heart Institute does not have the wherewithal to develop the artificial heart. "The way to go," he says, "is to do it cooperatively with the university."

Although Joyce says he has tried unsuccessfully to get the university to collaborate on the project, Najarian has left open the option. "I suppose there's always the possibility that we'd collaborate," he says. "If we thought there was some expertise available in the Twin Cities, we'd be the first to seek it. That expertise exists, at least in the area of the artificial heart, with Lyle Joyce."

The competition between the University of Minnesota's hospitals and the Minneapolis Heart Institute sometimes strikes very deep chords of emotion, particularly when Najarian addresses the issue in his typically forthright manner.

"He's not very careful about what he says," Jamieson notes. "He's perspicacious and remarkably honest, which is quite refreshing. But some people don't like that because it steps on toes."

Indeed, Joyce and Nicoloff say Najarian's comments hurt a bit because they and the others have a deep affection for their alma mater. But Jamieson may prove to be the balm for those wounds.

"I was aware that there had been some bad blood," says Jamieson. "I've been working pretty hard to heal those rifts. It's important to the people of Minnesota, and that should always be our guiding principle."

**Costs of selected outpatient surgical procedures  
 in hospitals and free-standing surgical centers**

	Uncer- tified vasec- tomy (local)	Laparo- scopy with total ligation (general)	Utero- plasty (local)	
Abbott Northwestern Hospital	\$295	\$418	\$492	\$437
Bethesda Lutheran Hospital	398	573	610	734
Mercy Medical Center	338	337	—	501
Methodist Hospital	509	435	415	564
Metropolitan Medical Center	340	355	360	603
Midway Hospital	—	435	333	600
Minneapolis Children's Medical Center	—	—	—	—
North Memorial Medical Center	364	386	418	587
St. Joseph's Hospital	233	—	386	663
St. Paul Children's Hospital	—	—	—	—
St. Paul Ramsey Medical Center	—	741	805	—
United Hospital	—	563	—	—
Unity Medical Center	310	374	283	489
University of Minnesota Hospital	—	648	624	711
Waconia Ridgeview Hospital	—	496	—	—
Maplewood Surgery Center	\$325	\$395	\$335	\$690
Midwest Surgicenter	—	—	450	—
Minneapolis Single Day Surgery Center	—	463	—	—
Minnesota Surgery Center	375	—	450	650
Ridgedale Surgery Center	375	375	245	400
St. Paul Surgery Center	418	463	—	—
Surgicare of Minneapolis	434	466	476	738
Median price	\$364	\$435	\$418	\$602
Price range	\$233	\$337	\$245	\$400
	to	to	to	to
	\$509	\$741	\$805	\$738

Source / Minnesota Coalition on Health report: "Prices for Common Outpatient Surgical Procedures in the Twin Cities, 1986."

## 1-day surgery may cost more in doctor's office

The cost of some one-day surgical procedures may be higher in a doctor's office than in a hospital outpatient department, according to a report by the Minnesota Coalition on Health.

The coalition said that some doctors, for example, charge as much as \$364 for a vasectomy in their offices, while the same procedure can be done at St. Paul-Ramsey Medical Center for \$69 plus a doctor's fee, which, in the metropolitan area, runs about \$243.

The coalition report is condensed into a 32-page "price guide" on 17 outpatient or one-day surgical procedures at 15 Twin Cities hospitals and all seven Twin Cities free-standing surgical centers. Coalition officials said at a press conference Thursday that the report demonstrates that

consumers ought to check in advance with hospitals, surgical centers and doctors about what something will cost.

They said they hope the price list will encourage competition in outpatient surgery.

Foss Boyle, a vice president of Honeywell Inc. and chairman of the coalition's Employer Corporate Council, said companies in the Twin Cities area will distribute thousands of the price guides to their employees.

The hospitals, surgical centers and doctors provided information on their average fees voluntarily. Fourteen hospitals, including those in the Fairview organization, Mount Sinai, St. Mary's and Hennepin County Medical Center, did not participate.

## 'Discount surgery' just myth, group says

By Delores Lutz  
Staff Writer

One-day surgery at a free-standing surgical center can cost just as much as surgery at a hospital, according to a report released Thursday by the Minnesota Coalition on Health, a community group.

The coalition's June survey of 22 Twin Cities facilities found wide variation in prices for 17 operations commonly performed without an overnight stay in the hospital. The prices quoted do not include doctors' fees.

The price for uncomplicated hemorrhoid removal, for example, ranged from a low of \$90 at University Hospital to a high of \$466 at North Memorial Medical Center, Robbinsdale. Among the seven surgery centers located outside a hospital, the price ranged from \$241 at Ridgedale Surgery Center, Inc., to \$439 at Surgicare of Minneapolis.

"It's a myth that free-standing surgery centers are always cheaper than hospitals. That's not true," said Tim Temple, chairman of the coalition's interventions strategies committee. The coalition — which represents employers, consumers and insurers — promotes cost-containment and competition in the health care industry.

University Hospital's prices for 11 of the 17 operations are higher than the average for Twin Cities hospitals and free-standing surgical centers, according to the price report. A diagnostic dilation and curettage of the uterus, for example, was listed at \$648 at University Hospital, while the average was \$378. The price was \$265 at Ridgedale Surgery Center, Inc., and \$885 at St. Paul Ramsey Medical Center.

The University, however, does offer some relative bargains. The price for a vasectomy, for example, was \$150 at University Hospital, while the average was \$183.

University Hospital officials declined to comment on the survey until they have seen the coalition's report.

The price survey should help consumers and employers shop for health care, according to Temple, who is also vice president of Risk Management Inc., an Edina consulting firm.

But it usually is the physician, not the patient, who decides where surgery will be performed, so patients must ask their doctors to explain why a more expensive facility is chosen, he said.

The survey was mailed last May to all hospitals and free-standing surgery centers in the seven-county metropolitan area, as well as 75 physicians who perform at least one of the operations in their offices. Fourteen of the hospitals declined to participate.

Each facility was asked for its current price for each of 17 common procedures, assuming that the patient was healthy.

## U news

### Duluth doctor recommended for hospital VP position

Dr. William Jacott, a Duluth family physician, has been recommended to become University assistant vice president for health sciences.

A former associate professor at the University's Duluth campus medical school, Jacott is chairman of the American Medical Association's Council on Medical Education and president of the Federation of State Medical Boards of the United States, Inc.

Dr. Neal Vanselow, vice president for health sciences, will recommend Jacott's appointment at the Board of Regents' Feb. 10 meeting. If Jacott's appointment is approved, he would assume the job March 30. He would work with professional organizations, affiliated hospitals, practicing health professionals and the U.S. government.

Jacott would succeed John LaBree, who will continue as director of outreach services for the University Hospital and Clinic.

Jacott graduated from the University's Duluth campus and received his M.D. from the University Medical School in Minneapolis in 1964. He was chief of staff at Duluth's Miller-Dwan Hospital and Medical Center in 1970.

He was an associate professor of family medicine at the Duluth campus medical school from 1974 to 1978, when he also directed the Duluth family practice residency. In 1976, the Minnesota chapter of the American Academy of Family Physicians named Jacott teacher of the year. He returned to private practice in 1978 but continued as a clinical professor.

## U Hospital's financial projection improves

University Hospital officials expected to have 380 patients daily when the fiscal year began. Now they expect to have a daily average of 423 patients, the administrators told a regents' committee Thursday.

The patient increase will give the hospital an extra \$1 million, part of which will pay off some hospital debts, Clifford Fearing, a hospital senior associate director, told the Regents' Finance and Legislative Committee's monthly meeting.

Officials project 1,500 more hospital admissions and 22,400 more University Clinic visits than they had budgeted for when the fiscal year began July 1.

In the 1985-86 fiscal year, the hospital averaged 399 patients daily. Now, when the in-patient census peaks on Wednesday, Thursday and Friday of each week, the hospital has 470 to 480 patients, Fearing said.

Hospital officials normally do not give the regents a mid-year financial report, but the regents asked for one last summer when officials discovered that the new hospital was attracting more patients than expected. Hospital admissions had declined steadily in the months before the new hospital opened in late April.

Gregory Hart, a hospital senior associate director, told the regents that the change in the hospital's fortunes is due to five factors — new people, new technology, new HMO contracts, the new building itself and new marketing efforts.

# U may invest more in HMO management company

By Delores Lutz  
Staff Writer

University officials are considering one more investment in a for-profit management company that has yet to make a profit running the University's health maintenance organization.

The University Hospital has invested almost \$1 million in the venture during the past 18 months, and hospital officials now are considering an additional \$520,000 investment, Dr. Neal Vanselow, University vice president for health sciences, told the University Board of Regents Friday.

## Plan proposes additional \$520,000 to stimulate profits

The University is the minority stockholder in Primary Care Network Management Co. Whitehead and Associates, a venture capital firm founded by medical equipment developer Jack Whitehead, owns 60 percent of the management company.

"It's now obvious that to bring Primary Care Network Management to the break-even point, we need to make an additional investment, but this should be the last on the part of the University," Vanselow said.

The hospital board of governors will consider the proposal next week, and the regents will act on that recommendation in March.

The management company was organized in August of 1985 to operate the non-profit HMO, originally called Primary Care Network, which was designed to link rural Minnesota physicians with medical specialists at the University. The HMO now is called Health Partners.

From the outset, University officials

acknowledged that the venture was risky, but they said it was necessary at a time when University Hospital and Clinic was losing patients to its competitors.

"Participation in this HMO has signaled to the rest of the community that the University is a serious player in this marketplace," Vanselow told the regents Friday.

The University invested \$944,000 in August of 1985. Two-thirds of the money was provided by University Hospital, and one-third was

provided by the University of Minnesota Clinical Associates, an umbrella corporation that represents the University's physicians in HMO negotiations.

Last August, the University invested another \$410,000 — two-thirds from the hospital and one-third from UMCA. This time, however, the physicians feel unable to contribute to the investment, Vanselow said.

If the current proposal is approved, it would bring the total University Hospital investment to \$1,416,000. UMCA has invested \$448,000 in the venture.

# Medicine's New Vision

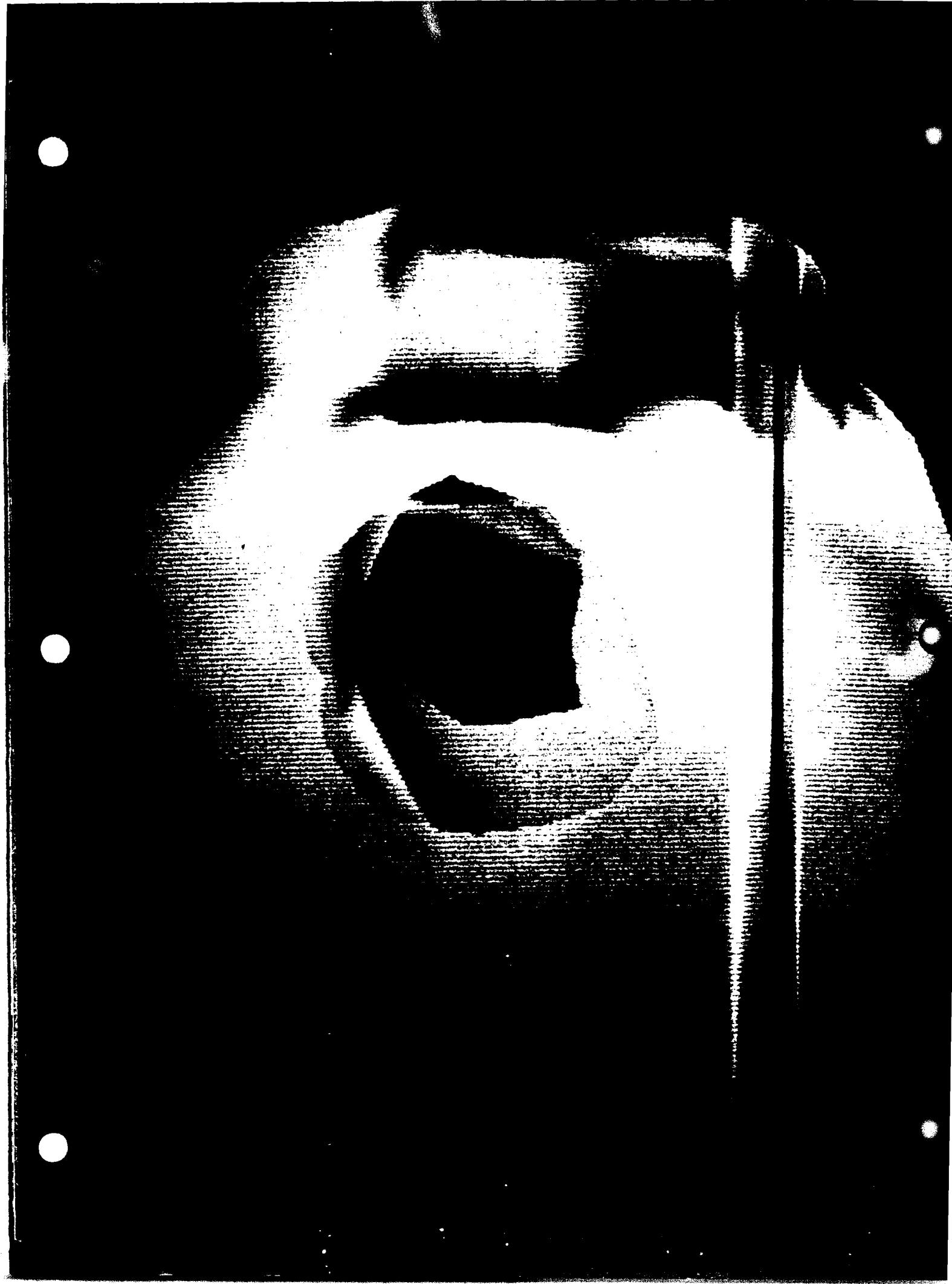
Looking deep within the brain, a tumor glares red in a computer-generated picture of a man who collapsed at a Las Vegas gambling table. This three-dimensional view, looking through the forehead, shows the skull's surface as white and the brain's surface as yellow, based on data collected by a computed tomography scanner. Changing the face of medicine, a new breed of imaging devices enables doctors to watch vital organs at work, identify blockages and growths, and even detect warning signs of diseases not yet present — all without exploratory surgery. The tumor was removed, and the patient recovered.

UNIVERSITY OF KANSAS MEDICAL CENTER, KANSAS CITY, KANSAS

Article and photographs by  
**HOWARD SOCHUREK**

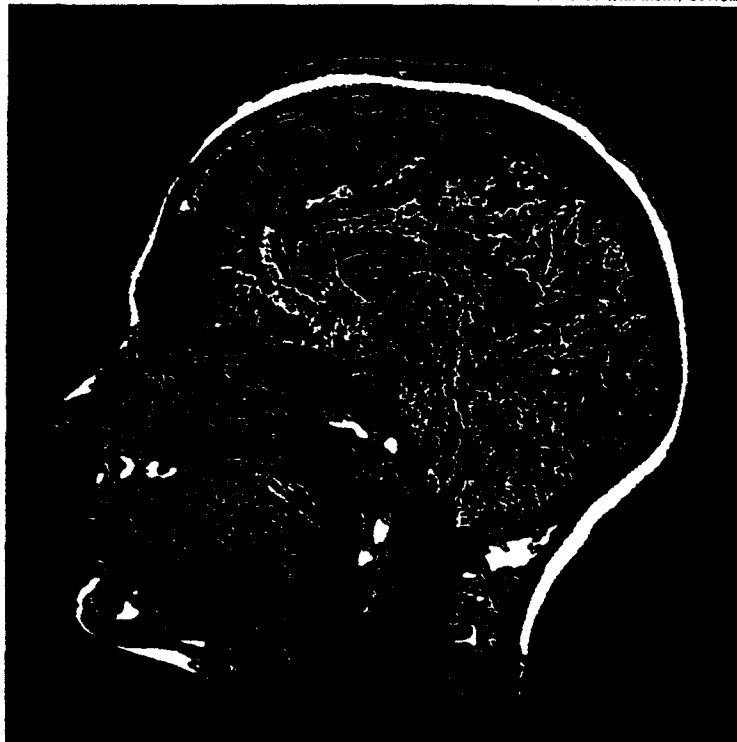
Illustrations text by **PETER SCHLESER**

NATIONAL GEOGRAPHIC MAGAZINE

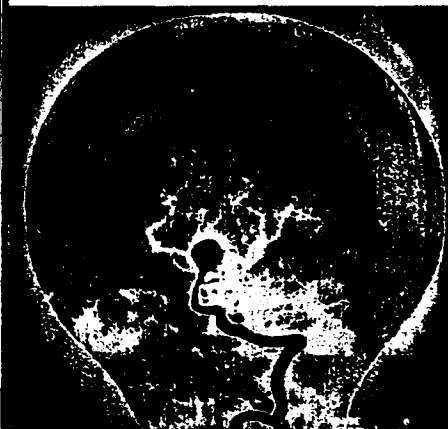




MALLINCKRODT INSTITUTE OF RADIOLOGY, ST. LOUIS (BELOW); UNIVERSITY OF KANSAS MEDICAL CENTER (BOTTOM LEFT); MALLINCKRODT INSTITUTE OF RADIOLOGY (BOTTOM RIGHT); MEMORIAL SLOAN-KETTERING CANCER CENTER, NEW YORK (RIGHT); RUSH PRESBYTERIAN ST. LUKE'S MEDICAL CENTER, CHICAGO (FAR RIGHT, BOTTOM)



**Magnetic Resonance Imaging**

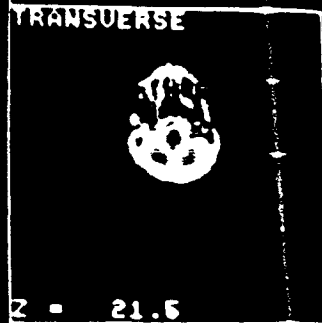


**Digital Subtraction Angiography**



**Radioisotope Imaging**

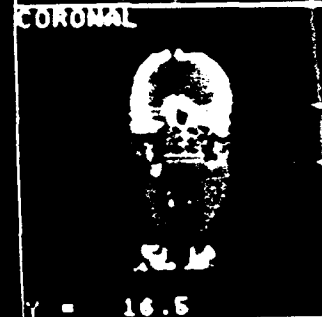
PATIENT DATA FILE: 12  
 PATIENT:  
 PATIENT ID: 00-00-  
 PHYSICIAN:  
 PHYSICIST:



Z = 21.5  
 SAGITTAL



X = 24.0  
 CORONAL



Y = 18.5

**Computed Tomography**

Five views of the head show the magic of five computerized body-scanning systems.

A color-enhanced profile (top) made by magnetic resonance imaging (MRI) shows a herniating finger of tissue from a brain slumping into the base of the skull. Frequently used to view soft tissue such as the brain's, MRI machines do not use X rays to penetrate the body but instead employ a

combination of radio waves and a strong magnetic field.

An artery at the base of the brain balloons with a dangerous aneurysm (above left) in an X-ray view enhanced by digital subtraction angiography (DSA). The keyhole shape of the picture was imposed by a shield on the X-ray machine.

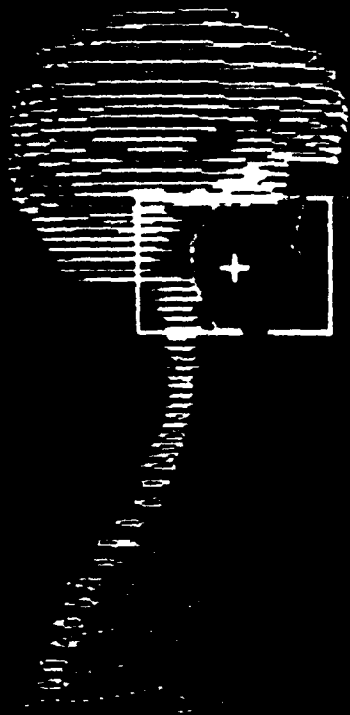
A darkened area on the left side of a brain (above) depicted in cross section by positron

emission tomography (PET), a form of radioisotope imaging, indicates damage from a stroke. Bright colors in the rest of the brain show normal blood flow.

Because computed tomography (CT) scanners can locate tumors with great precision, machines are being developed to use CT data in aiming beams of radiation during treatment. In a three-dimensional display (above)

National Geographic, January 1987

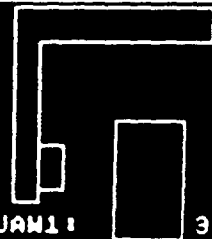
# BEAM'S EYE VIEW



GANTRY : 270°  
 COLLIMATOR : 80°  
 COUCH : 80°



COUCH  
 VERTICAL : -2.2 cm  
 LATITUDE : -0.1 cm  
 LONGITUDE : -5.2 cm



JAN1 : 3.4 cm  
 JAN2 : -3.4 cm  
 JAN3 : -4.6 cm  
 JAN4 : 4.6 cm

CORD

BRAIN

created from dozens of CT scans, a cross marks a tumor. Pictures to the left show different angles from which to target the tumor, while diagrams at right depict the configuration of the radiation machine as seen from the front, side, and above. As the machine settings are adjusted, the diagrams change automatically. Organs sensitive to radiation, such as the lungs,

spinal cord, and eyes, are color-coded to help avoid unnecessary exposure.

Considered safer than X rays for use on pregnant women, sonography works like sonar to create pictures such as this view of the head of a normal 18-week-old fetus (right). Usually viewed in black and white by a doctor, this image, like most in this article, has had color added.



Sonography

Medicine's New Vision

## CT

### Computed Tomography

Fractured in a motorcycle accident, a young man's vertebrae seem to rise off the page in a three-dimensional image based on 63 CT scans. The force of the impact compressed and fragmented the vertebra at center, twisting the spine above and below it.

Developed in Great Britain in 1972, CT scanners convert X-ray pictures into digital computer code to make high-resolution video images. The computer graphics employed are similar to those used to reassemble pictures beamed back from distant space probes. Depicting bone structures in fine detail, CT scans can also show small differences between normal and abnormal tissues in the brain, lungs, and other organs. Still in the early stages of development, three-dimensional CT images are beginning to play an important role in reconstructive surgery.

DIMENSIONAL MEDICINE, INC., MINNETONKA, MINNESOTA

**"H**oward, there may be something wrong with your heart."

I was laid out on a table, patient number 344 in what was to be only a test series. Addressing me was Dr. K. Lance Gould, a six-foot-six Texan who heads the Positron Diagnostic and Research Center at the University of Texas Medical School in Houston.

"I reviewed your medical records last night. Your EKG [electrocardiogram] shows a potential problem. We now have a doctor-patient relationship, meaning these results will be confidential. You may not be able to write this story."

This story was documenting amazing new technologies that provide detailed views of the body, fulfilling a dream as old as medicine. Recent rapid advances in imaging technology, or "machine vision," enable doctors to see inside a body without the trauma of exploratory surgery. As a result, more progress has been made in diagnostic medicine in the past 15 years than in the entire previous history of medicine.

To report on these uncanny new eyes, I had taken my cameras into innovative hospitals where I saw my blood pulsing through my arteries; I watched the muscled wall of my heart absorb a radioactive tracer; I saw the blocked arteries of another human heart starving for blood—a heart under attack; and I saw the huge yawn of a fetus snuggled in its mother's womb six weeks before it was born.

And now I was subjecting my beyond-middle-age body to the scrutiny of one of the marvelous machines—never dreaming my reporting would suddenly become deadly serious.

Dr. Gould was right, I admitted bleakly. He had agreed to give me a nuclear heart scan using his PET (positron emission tomography) scanner, one of the miraculous new seeing machines. The ground rules were that I would write about the test only if the results were normal. Otherwise my own health might be compromised by the rigors of pursuing the story. I had taken that gamble and, apparently, had lost.

Minutes earlier head research nurse Mary Haynie had used a fluoroscope to take a picture of my heart and made an outline of its position on my chest with a magic marker. I lay down on a table and was slowly moved into a huge two-ton metallic doughnut with a center hole just large enough for me to squeeze through—the 1.6-million-dollar PET scanner.

As a young cardiologist Dr. Gould had questioned the conventional medical practice of dealing with coronary disease only after complications had occurred. His early laboratory work had indicated that coronary disease could be detected much sooner. "If you could screen for coronary disease and find it five or ten years in advance of trouble—if that could be done—you could save countless lives."

Today, running a center with a staff of 75 and an annual budget of four million dollars, he uses nuclear medicine as a

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Veteran photojournalist Howard Sochurek lives in Bronxville, New York. This is his tenth article for NATIONAL GEOGRAPHIC.

*National Geographic, January 1987*



## CT

*Magical but murky, the first X-ray photograph, made by German physicist Wilhelm Konrad Röntgen in 1895, shows a ring on his wife's hand (bottom left). Within months of his discovery, doctors began using X rays (so named by Röntgen because of their unknown nature) to diagnose fractures. They learned that the mysterious rays—now known to be an extremely shortwave form of electromagnetic radiation—are absorbed by the dense structure of bones, leaving shadows on the film. But softer tissues, which are more easily penetrated, do not appear distinctly in pictures.*

*Since then, many techniques have been developed to intensify the X ray's image and improve its clarity, resulting in detailed views such as this one of a hand (bottom right). Some advanced X-ray machines digitize their data, allowing image contrasts to be mathematically enhanced to show subtle differences between tissues.*

screening technique to identify coronary disease even in patients without symptoms. And for this I was a prime candidate: tense, overweight, a hard-driven type-A personality pushing past 60.

From Mary Haynie's fluoroscopy it was clear that my heart, unlike most others, did not hang vertically in the chest cavity but was tipped sideways. Since the scanner covers only 11 centimeters (about four and a half inches), positioning of the body in the doughnut was critical. I remained still for 20 minutes while the scanner collected data.

Mary and a technician injected a low-level radioactive tracer (in this case N-13 ammonia) through the intravenous catheter in my right arm. Freshly brewed by Dr. Gould's cyclotron, the tracer had a ten-minute half-life, the time it takes to lose half its radioactivity. So it had to be administered quickly and with precision.

Fifteen minutes of scan time took place while the heart was beating normally. I heard cooling fans humming in the scanner and the *beep beep beep* of the EKG machine, which monitored me continuously. My head throbbed with anxiety, although Mary and Dr. Gould hovered around me.

Soon it was time to test my heart's response to stress. Dipyridamole, a drug that simulates stress to the heart, was injected through the intravenous catheter. Mary then gave me a hand grip to flex the finger, wrist, and forearm muscles; I clenched it tightly until the gauge recorded a pressure of 20 pounds. This, Mary explained, would increase blood flow to the heart more than in a conventional treadmill test.

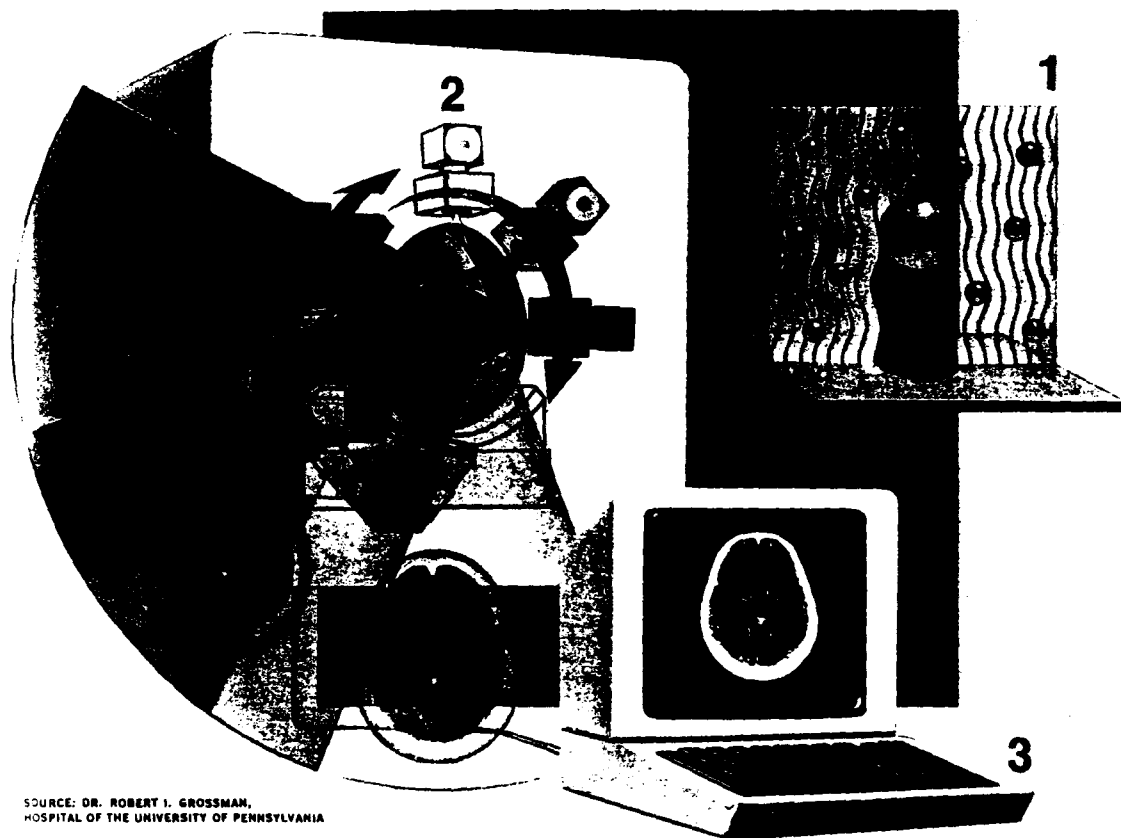
A second injection of the nuclear tracer entered my arm, and the scanner hummed while it studied my heart for an additional 15 minutes.

The "dipy," as the team called it, taxed my stamina, and my face took on a red flush. My left arm shivered as I maintained 20 pounds of pressure on the hand grip. The EKG sounded its *beep, beep, beep*.



DEUTSCHES MUSEUM, MUNICH, WEST GERMANY (LEFT); UNIVERSITY OF KANSAS MEDICAL CENTER, IMAGED AT MESAVISION, SANTA BARBARA, CALIFORNIA

*National Geographic, January 1987*



SOURCE: DR. ROBERT I. GROSSMAN,  
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

To break the monotony, I talked to Mary about her family and mine. Her father had died of a heart attack at age 47, and her mother was left alone to raise her and seven brothers and sisters. Perhaps the test I was undergoing could have warned her father of his peril.

The exhausting 15 minutes finally passed, the humming of the scanner stopped, Mary removed the intravenous catheter from my right arm, and I released the grip in my left hand. After one hour and 30 minutes of lying still, it was over.

"Will I glow in the dark?" I asked Mary as I got up off the table.

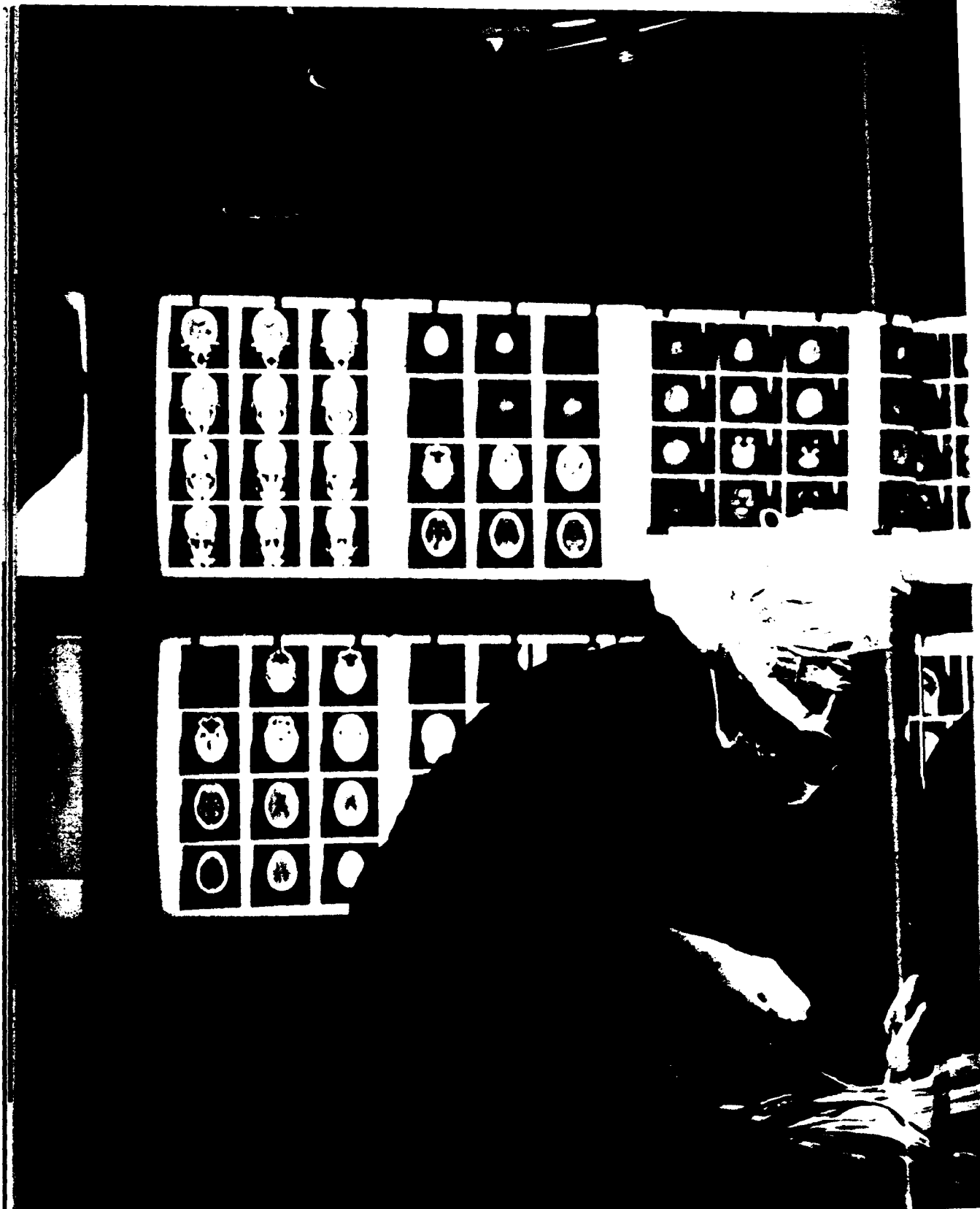
In a back room a computer completed processing a staggering amount of digital data. It had digested more than five million bits a second during the entire time of the test.

Now came the moment of truth. Slowly the data assumed picture form in color on a cathode-ray tube (CRT). First the screen showed us the heart beating normally, with the blood supply circulating through the heart muscle. The screen flashed again, and alongside appeared a picture of the heart under stress. We studied the two images transfixed: If they should differ, it would indicate a blood-supply problem to the heart—and confirm the death of my story.

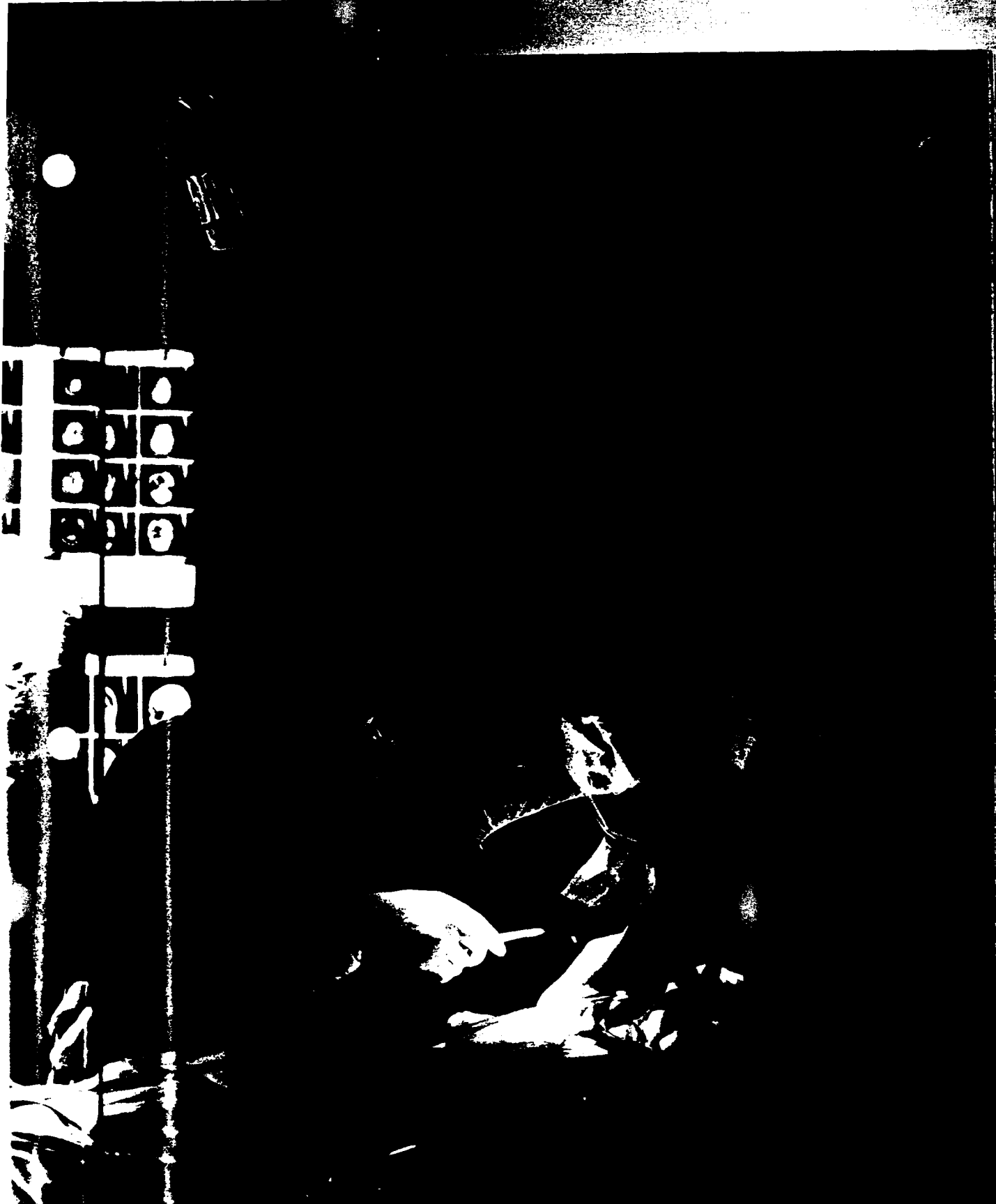
The images matched perfectly. Dr. Gould smiled, Mary smiled, I smiled.

What had caused Dr. Gould's original concern? "Because your heart lies on its side instead of hanging normally," he explained, "the EKGs in your medical records were misleading. Not until we obtained the PET picture to confirm the heart's

*Penetrating the body with a thin, fan-shaped X-ray beam, a CT scanner produces a cross-sectional view of tissues within. Conventional X-ray radiographs, which view the body from only one angle, can be difficult to interpret when the shadows of bones, muscles, and organs are superimposed on one another. Large molecules such as calcium absorb X rays as they pass through the body 1, partially masking whatever lies behind them. But CT machines view a "slice" of the body from many angles by revolving an X-ray tube around the patient 2. Sensitive detectors on the opposite side record what the scanner sees, and a computer 3 compares the many views to make a single video image.*



*Guided by pictures of the brain unimaginable 20 years ago, Dr. Paul O'Boynick (second from right) at the University of Kansas Medical Center delicately implants a tube in a patient's skull to drain excess fluid. Dr. Dwane Beckenhauer (left) prepares an incision where the tube, after being threaded beneath the skin,*



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will be inserted into the abdominal cavity for the fluid to be continuously absorbed. Behind them are images of another patient, made by CT, MRI, and conventional angiography, illustrating the variety of information available to neurosurgeons in modern operating rooms.



position and flow capacity did I find all was OK. You have a healthy heart. You can write your story. Come back again in two years."

I had no aftereffects from my PET scan but developed a nasty headache after leaving the center. It may have been because, as directed, I had missed my usual hearty breakfast.



CEMAX, INC., SANTA CLARA, CALIFORNIA

## CT

All smiles, My Tien Tran of Sunnyvale, California, stands with Dr. Steven Woolson (top) before an X ray showing her new right hip. A 3-D image of her pelvis before surgery (above) depicts the dislocated hip with which My Tien was born. Based on CT scans, the image was created by CEMAX, Inc., of Santa Clara, which fashioned from it a plastic model of My Tien's hip used by Dr. Woolson to plan the surgery. "I wanted to be certain that the implant

Another revolutionary technique is MRI—magnetic resonance imaging. It is an area of excitement and explosive growth. This seeing machine may prove to be as great a tool to modern medicine as the X ray, discovered by Wilhelm Konrad Röntgen in 1895.

Magnetic resonance imaging relies on the principle that hydrogen atoms, when subjected to a magnetic field, line up like so many soldiers. If a radio frequency is aimed at these atoms, it changes the alignment of their nuclei. When the radio waves are turned off, the nuclei realign themselves, transmitting a small electric signal. And since the body is primarily composed of hydrogen atoms, an image can be generated from the returning pulses, showing tissue and bone marrow as never seen before.

MRI is expensive. The equipment, which consists of a huge electromagnet, a radio-frequency generator, and a computer for

would fit precisely," Dr. Woolson said.

Seated at a computer console in the CEMAX laboratory, Dr. Art Vassiliadis (right) calls up an image from another case. The plastic skull beside him, like the model of My Tien's hip, was cast from a mold made on the milling machine in the background. Holding a block of machinable wax, engineer Charles Lau helps set up the machine, whose every move is controlled by the computer.

National Geographic, January 1987

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## MRI

### Magnetic Resonance Imaging

Ghostly in the dark, a normal face seems otherworldly when viewed by an MRI scanner. The eerie forehead, eyebrows, cheeks, nose, and lips appear brightest because water density is higher than in other tissues. MRI reflects water because it focuses on the behavior of hydrogen atoms in water molecules. This allows MRI to do certain things better than CT scanners, such as distinguishing between the brain's white matter and water-rich gray matter. Teeth and bones, which contain little water, do not appear at all in MRI, enabling doctors to see tissue surrounded by bone, such as the spinal cord. MRI has also been used to spot the tiny lesions of multiple sclerosis on brain and spinal tissue.

UNIVERSITY OF KANSAS MEDICAL CENTER

evaluation, costs about two million dollars. It must be in a room completely insulated from external radio frequencies, adding another three-quarters of a million dollars to the cost. To illustrate the importance of shielding, Dr. Pat Cahill of New York Hospital told me that for a time their new MRI machine received shortwave Vatican Radio.

A few patients cannot be placed in the magnet. Anyone wearing a pacemaker, for example. Or veterans with embedded shrapnel: The metal could actually be pulled from their bodies. And there was the case I heard about on Long Island, where a Mafia capo refused to be scanned when he learned he had to part with his gun. It too would have been sucked into the magnet.

**S**ome of the pioneer work in magnetic resonance imaging was done at University Hospital in Nottingham, England. Professor Brian S. Worthington told me about the first images made there, in 1974.

"We had a tiny magnet. The first thing we looked at was an onion, and we saw its inner rings. We had great concerns about what the magnet might do to human beings. I remember questioning whether too strong a field might even have an effect on the human memory."

In 1977 they tried one of the first MRI scans of living human tissue—a wrist. Two years later a bold scientist volunteer thrust his head into the magnetic field for a brain scan.

It is only since 1980 that the potential of magnetic resonance imaging has become generally recognized, and today some 400 machines are installed and operating in the United States—more than in any other country in the world. This explosive growth reflects MRI's wonderful diagnostic results.

I heard about one such result in Phoenix, Arizona.

Nathan Tower is a bright, handsome boy who was born in the small town of Langley in British Columbia, 25 miles east of Vancouver. Unlike his older sister, now 12 and always healthy, Nathan at age two developed severe aches in his left ear and often vomited. Near his fifth birthday, in June 1985, the earaches were joined by terrible headaches. On bad nights Nathan was in constant pain; aspirin brought no relief. Trying to trace the cause, his frantic mother eventually consulted 11 different doctors. Some of them viewed her as psychotic.

Nathan's health deteriorated quickly. He lost the use of his left hand and arm and began losing the use of his left leg. In July his distraught parents took him to Reno, Nevada, for tests. Doctors saw evidence of a tumor on the brain stem and called it inoperable.

In desperation Mrs. Tower called her husband's sister, Barbara Barnhart, in Phoenix. Mrs. Barnhart called a neighbor, Dr. Donald A. Davis, who strongly suggested that the Towers bring Nathan to Phoenix's Barrow Neurological Institute at St. Joseph's Hospital and Medical Center.

The day after his arrival in *(Continued on page 19)*

*National Geographic, January 1987*



All paintings by  
DAVIS MELTZER

## MRI

*Like the director of a chorus, an MRI scanner conducts the "singing" of hydrogen atoms within the human body.*

*The scanner surrounds the body with powerful electromagnets. Supercooled by liquid helium, they create a magnetic field as much as 60,000 times as strong as that of the earth.*

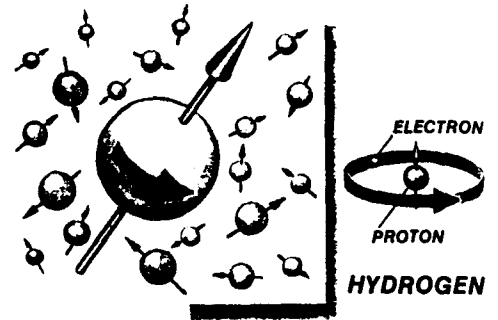
*This field has a profound effect on protons, the nuclei of hydrogen atoms. Spinning like tops, the protons normally point in random directions **A**. But inside the scanner's magnetic field **B** they align themselves in the direction of the field's poles. Even in alignment, however, they wobble, or precess, at a specific rate, or frequency. The stronger the magnetic field, the greater the frequency ( $f+$ ).*

*When the scanner excites these protons with a radio pulse timed to the same frequency as their wobbling, it knocks them out of alignment **C**. Within milliseconds they spiral back into place **D**, singing out with a faint radio signal of their own.*

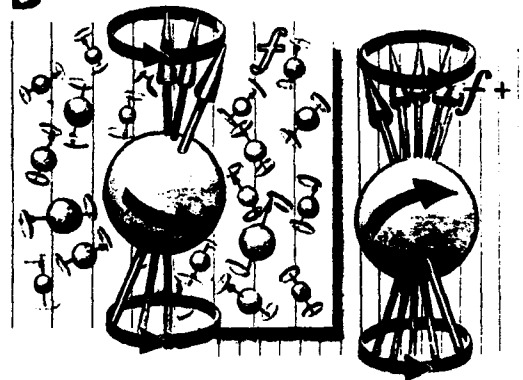
*A computer translates these faint signals into an image of the area scanned (diagrams on facing page). The image reveals varying densities of hydrogen atoms and their interaction with surrounding tissues in a cross section of the body. Since hydrogen reflects water content, doctors can use the image to make distinctions between tissues.*

*Scientists picked hydrogen as the basis for MRI scanning because of its abundance in the body and its prominent magnetic qualities. Research is also under way on employing other elements, such as sodium or phosphorus, whose altered properties could provide early warning signs of strokes or heart attacks. It may even become routine to tag cloned antibodies with a detectable element, giving scientists a powerful tool to study such disorders as diabetes, allergies, infertility, and cancer.*

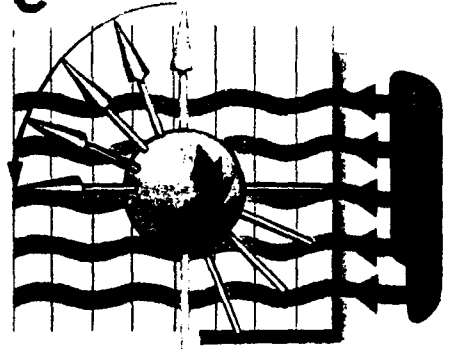
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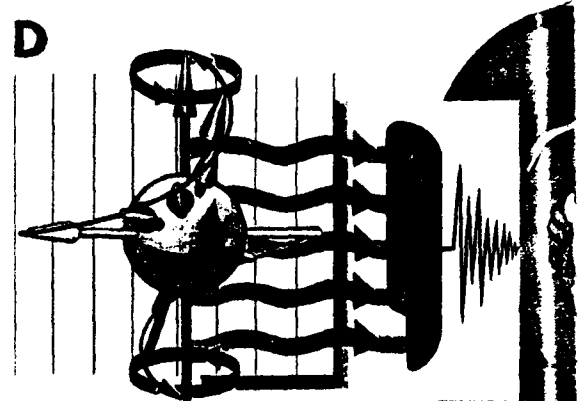
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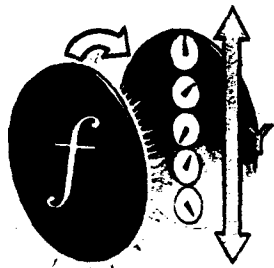


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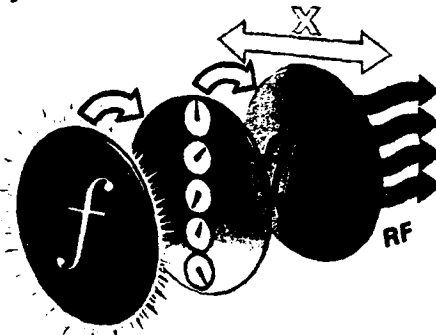
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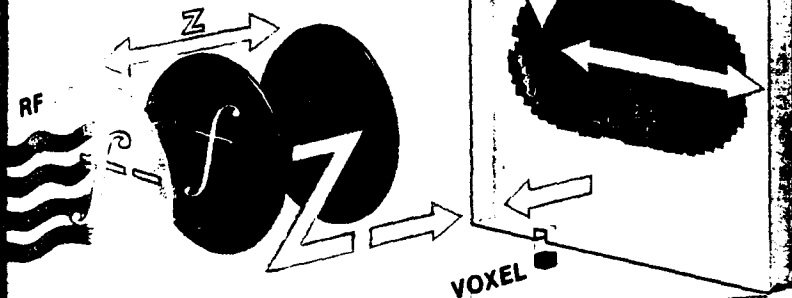


**2** Before the protons can realign themselves, other coils briefly vary the magnetic strength of the plane in the Y direction. This causes protons to wobble at different rates (clock faces) from the top of the plane to the bottom. Detecting these differences over hundreds of pulse-and-response cycles, the computer locates voxels in the Y direction.

To make an image (oval at center of page), the computer establishes a grid of tiny boxes, or voxels, in three dimensions, X, Y, and Z. First the magnetic field is varied in the Z direction, from head to toe, to define a plane of interest (orange disk) where the body will be scanned. Within this plane protons wobble at a given frequency,  $f$ . Radio frequency (RF) coils then emit a pulse at precisely the same frequency to topple these protons.



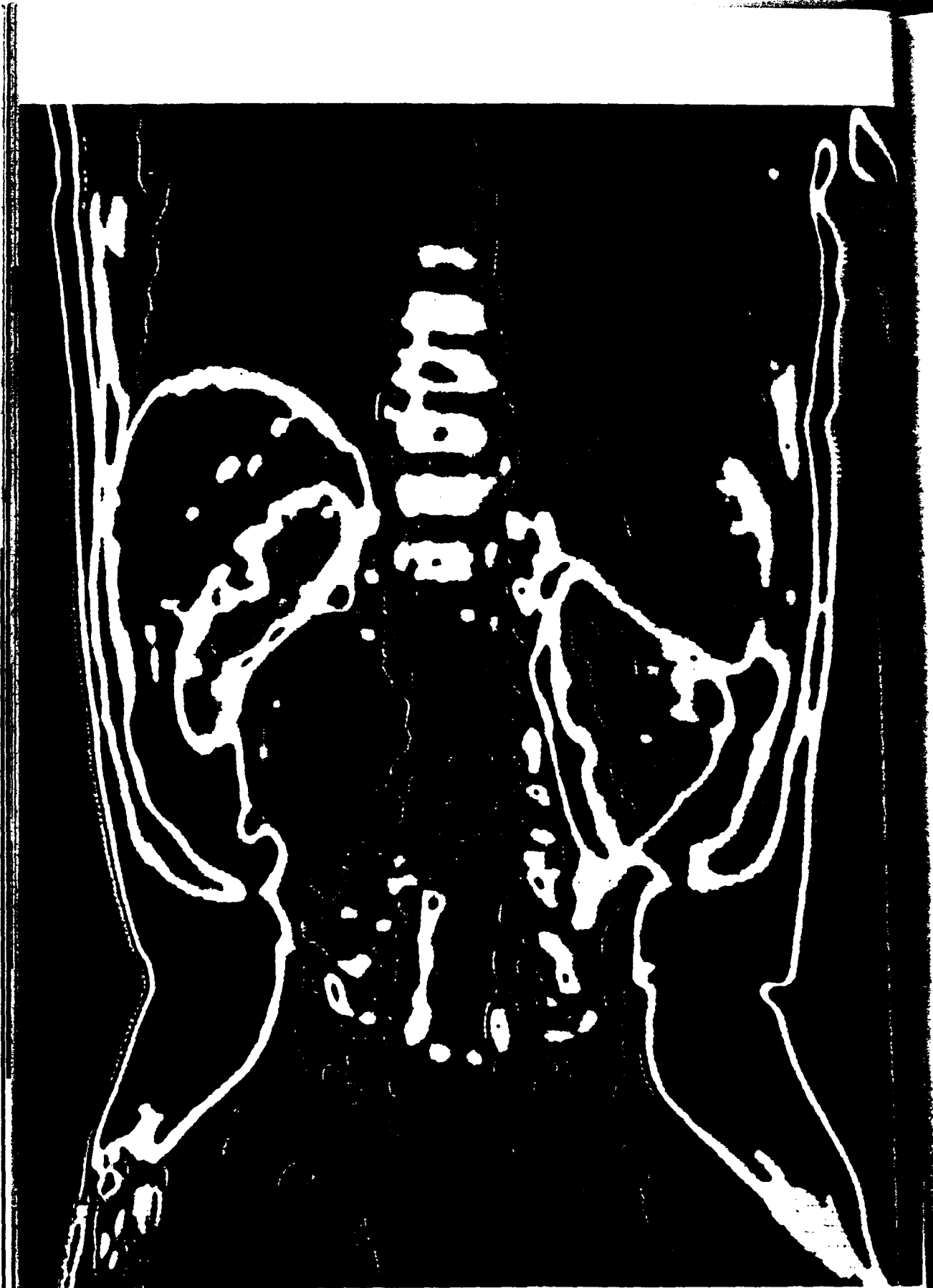
**3** Coils then vary the magnetic field from left to right in the X direction, causing protons to sing at different frequencies as they realign themselves. Having located each voxel in the X, Y, and Z directions, the computer assigns each voxel a spot on the video screen. The spot's brightness is determined by the number of protons within the voxel and the magnetic properties of the tissue. Together the dots form a readable image.



SUPERCOOLED MAGNETS

X-GRADIENT COILS

SOURCE: DR. LEON AXEL,  
AND DR. MARK L. SCHIEBLER,  
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA



UCLA SCHOOL OF MEDICINE (ABOVE AND RIGHT)

*National Geographic, January 1987*

July 1985, Nathan was scheduled for an MRI scan (page 22). The machine had been installed only in May. "Mommy, is this a spaceship?" Nathan asked as he was eased into the magnet's six-foot-long tunnel.

The powerful magnetic field aligned the hydrogen nuclei in Nathan's brain, and a picture was transmitted to the CRT. There emerged a remarkably clear image of the tumor, lying at the base of the brain. The next day Dr. Harold L. Rekate, chief of pediatric neurosurgery, removed a tumor of the medulla in a delicate operation lasting more than eight hours. The tumor was one and a half inches long and half an inch in diameter.

I spoke with Dr. Rekate about the procedure. "With MRI," he said, "we are able to see brain structures we could never see before. Ten years ago this kid would have died."

When I talked to Nathan and his mother on the sunny porch of the Barnharts' home, he was wearing a "halo cast," or head brace, from subsequent surgery to fuse the vertebrae of his neck. But neurologically he was normal; no longer did he have a weak arm and leg. His overjoyed father, grateful for the key role of MRI in saving his son's life, plans to raise money to set up an MRI center in British Columbia.



## MRI

*Caught in time by doctors, a malignant tumor bulges between the kidney and spinal column of seven-month-old Ashleigh Slaughter (left). Appearing dark blue and green, at left, in this enhanced MRI scan, the tumor is entering the spinal canal, compressing the*

*cord. "She was in constant pain," said her mother, Connie. "She was unable to sit and slept with her back arched."*

*Fearing the trauma of spinal surgery on a patient so young, doctors at UCLA used chemotherapy to shrink the tumor before trying to remove*



*it. Ashleigh responded so well to the medicine, however, that no surgery was necessary. The tumor vanished from her body (above left), leaving her a healthy two-year-old, free to pursue yard work (above right) at her home in Bakersfield, California.*



## MRI

*Within a week of the time this side-view MRI scan was made (facing page), the patient, a four-year-old Hmong girl, lost the use of her legs. The scan showed a tumor, shaded red in this enhanced version, growing in her spinal cord. Acting quickly, the girl's surgeon removed the tumor, and now, in a remarkable recovery, she can walk again without braces.*

*Because of MRI's ability to depict soft tissues in high contrast, it has proved to be an effective means of examining the spinal cord. Before MRI, doctors who wanted to look at the spinal cord had to inject it with an X-ray contrast agent during a procedure that could be risky and painful for the patient.*

ABBOTT NORTHWESTERN HOSPITAL, MINNEAPOLIS

**M**any of man's greatest inventions have expanded the capabilities of the human body. The computer has enhanced man's ability to see by making the invisible visible. This new vision lies at the heart of digital subtraction angiography (DSA), an imaging technique that produces clean, clear views of flowing blood or its blockage by narrowed vessels.

DSA depends on the injection into the vessels of a contrast agent containing iodine that is opaque to X rays. The shadow this opacity creates allows doctors to see the flow of blood. Frequently DSA is used to look at blood supply to the heart. Before injection of the contrast substance, an X-ray image is made and stored in a computer. After injection a second image is made highlighting the flowing blood as revealed by the substance. The computer then subtracts image one from image two, leaving a sharp picture of blood vessels such as the coronary arteries, the main suppliers of blood to the heart.

A common surgical procedure in the United States today is heart-bypass surgery. In this procedure blood vessels that are clogged with fatty or calcified material are bypassed using other vessels surgically removed from another part of the body, usually the leg. In recent years more than 200,000 operations of this kind have been performed annually at an average cost of about \$25,000, for a staggering national price tag totaling some five billion dollars.

With the help of DSA and a procedure called angioplasty, many of these operations now can be avoided.

In coronary-artery angioplasty a doctor threads a catheter smaller than the graphite in a lead pencil through a blood vessel in the arm or groin. Seeing through the eyes of the DSA camera as images flicker on a screen, he guides the catheter into a coronary artery. At this time the contrast agent is injected, providing a clear image of the arterial blockage. A second, even smaller catheter inserted through the first carries a tiny balloon to the spot. The balloon is inflated until it compresses the materials clogging the artery and allows the blood again to supply the heart muscle.

A leader in DSA and coronary angioplasty is Dr. P. Jeffrey Bower, who directs the Gulf South Heart Center in New Orleans, Louisiana. An energetic 51, he sometimes does as many as three 90-minute balloon angioplasties in a single day. We met at 7:30 a.m. in his second-floor hospital office.

"The perception by the public is that these procedures are life-threatening, and they are not. They are quick, painless, and there is no prolonged convalescence. With new catheters, new nontoxic agents, and entry through the arm instead of the leg, we will be able to do DSA on an outpatient basis."

Dr. Bower has a 92 percent success rate with angioplasty. About 5 percent of his patients still go on to have bypass surgery, often because the plaque buildup is of hardened, calcified material that cannot be pushed aside without applying so much pressure that it could rupture the vessel.

A staff of five cardiologists at the center performs more than

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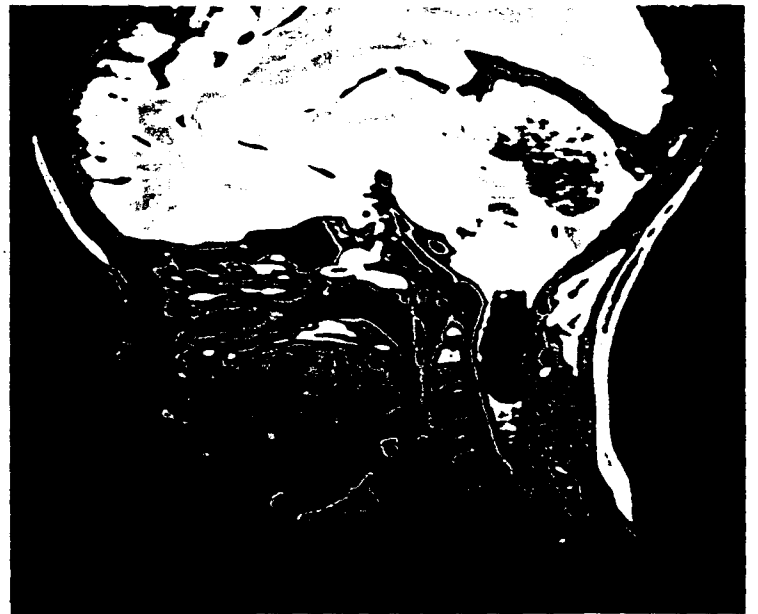
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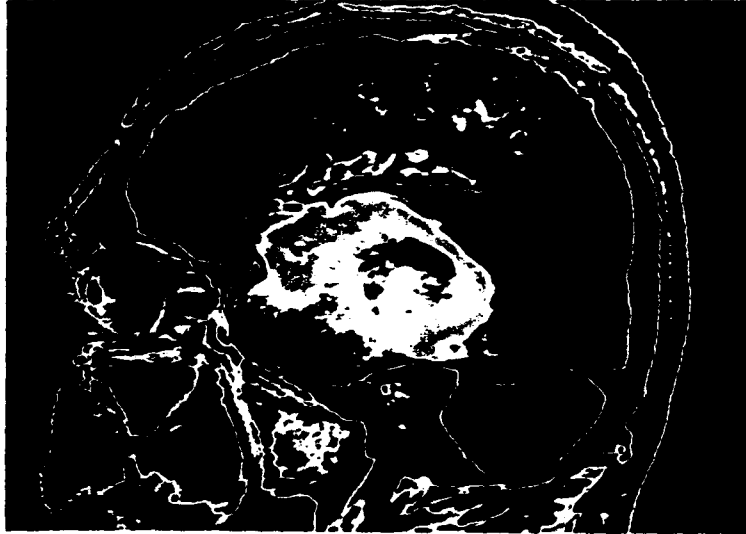


ST. JOSEPH'S HOSPITAL AND MEDICAL CENTER, PHOENIX

## MRI

Without warning one Sunday afternoon, Joe Silvers of Tulsa, Oklahoma, fell into a convulsion at his parents' home. "I don't even remember it happening," said Joe (bottom right), who works in the garage of the Tulsa police department. A CT scan of Joe's brain showed what looked like a stroke. "But that didn't make sense at all," said Dr. David Fell, "especially in a healthy young man like Joe with no other neurological problems." The answer came in an MRI scan (top right) that showed a tumor (tinted yellow) surrounded by fluid-filled ventricles (green). Dr. Fell removed the tumor, and Joe has had no further trouble.

Six-year-old Nathan Tower, wearing a supportive halo cast (above left), is alive today because of MRI scanning. When doctors in Reno, Nevada, diagnosed a brain-stem tumor, "they told us there was little hope," said his mother, Margaret Anne. But an MRI scan (left) convinced Dr. Harold L. Rekate of Phoenix, Arizona, that the tumor (shaded red) could be removed. "The MRI erased the bones around the spinal cord and showed the tumor clearly," said Dr. Rekate, who performed the operation. "Before MRI almost no one would have attempted it."



ST. FRANCIS HOSPITAL, TULSA



## SONO

### Sonography

First snapshot for the family album, a picture made with ultrasound in the sixth month of pregnancy shows the face of a healthy fetus with mouth open in a yawn. "By this point the fetus does just about everything it will do after birth," said Dr. Christopher Merritt of New Orleans, who made the image. "It yawns, blinks, even sucks its thumb." Sonography lets us share these sneak previews by beaming high-frequency sound waves into the womb in short pulses. A computer translates the echoes that bounce back into an image of the fetus. The only body-scanning technique recommended for pregnant women, sonography is also well suited for examination of the breasts, heart, liver, and gall bladder.

OCHSNER CLINIC, NEW ORLEANS

300 angioplasties a year. In the 100,000 performed nationwide in 1985, there was only one percent mortality. This year the number of people helped could surpass 150,000, in some cases their very lives saved by DSA and balloon angioplasty.

Dr. Bower, who has a missionary enthusiasm for the procedures, urged me to talk to his patients.

I contacted James Quinn, age 63, a professor at Louisiana State University School of Dentistry (page 33). Dr. Quinn had seemed to do everything right: ran three miles a day, watched his cholesterol, was a nonsmoker and nondrinker of normal weight. His last treadmill stress test, in 1983, was normal, as was a nuclear heart scan the same year.

At 2 a. m. on January 9, 1986, he awoke to deep chest pains and arm numbness. At 2:30 a. m. his wife Judy called an ambulance that rushed him to the center. Dr. Bower saw him at 7 a. m., and by 9:30 the balloon catheter was inserted and dilated. Immediately it relieved a 100 percent blockage of the blood supply to a branch of the left coronary artery.

A week later Dr. Quinn repeated a treadmill test without chest pain. He has suffered no further heart damage. He has gone skiing, plays tennis regularly, and runs three miles a day again. The quality of his life has been restored.

Just as DSA helps in procedures to open up arteries, there are times when it is used in techniques for closing off blood supply to abnormal tissues or organs.

A leading practitioner of this application is Dr. Alex Berenstein, at New York University Medical Center in New York City. While serving his surgical internship in Israel in 1970, he became fascinated with the practice of drip irrigation used by Israeli farmers to conserve water in the desert. "Why can't this drop-by-drop method be applied in surgery?" he thought.

One day he applied a small amount of Gelfoam—a sealing gelatin sponge—to stop the bleeding in a patient's stomach. Guided by DSA equipment, he now uses catheters, some of his own design, to inject tiny drops of isobutyl-2-cyanoacrylate (a strong adhesive) and seal off the blood supply to growing tumors and to ruptured vessels. He has also used the technique in very delicate cases of brain hemorrhage.

**O**f the five imaging techniques described in this story, none requires surgery. One of the simplest and cheapest uses ultrasound, an outgrowth of sonar development during World War II. The first good medical pictures were produced in the United States in the early 1950s. Today computerized display techniques team up with ultrasound to fill a vital niche in the doctor's black bag of imaging devices.

In this magical technique, known as sonography, a small transducer, or transmitter-receiver, is placed in contact with the area of the body being investigated. High-frequency sound waves penetrate the body, strike the organs within, and reflect back to the surface, where the transducer now functions as a receiver. The time delays of these returning signals sketch the

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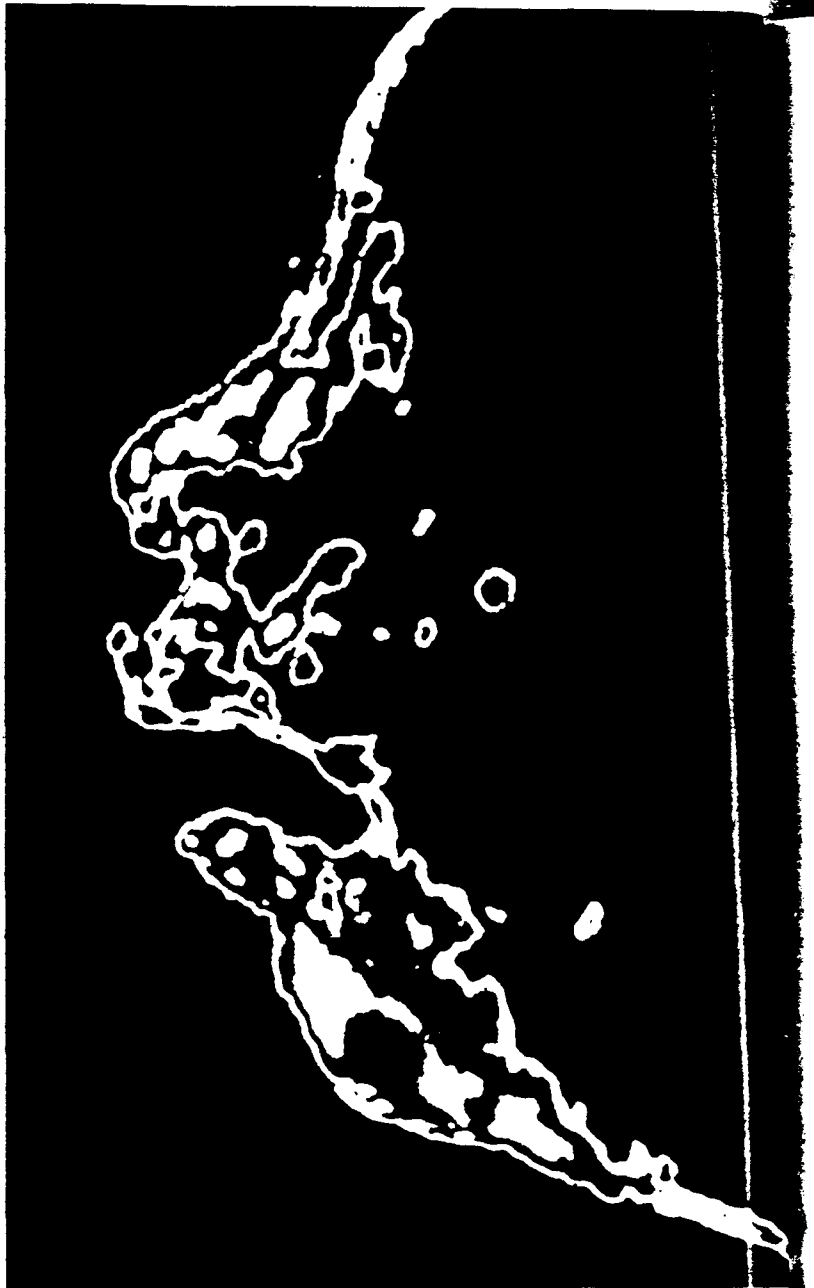
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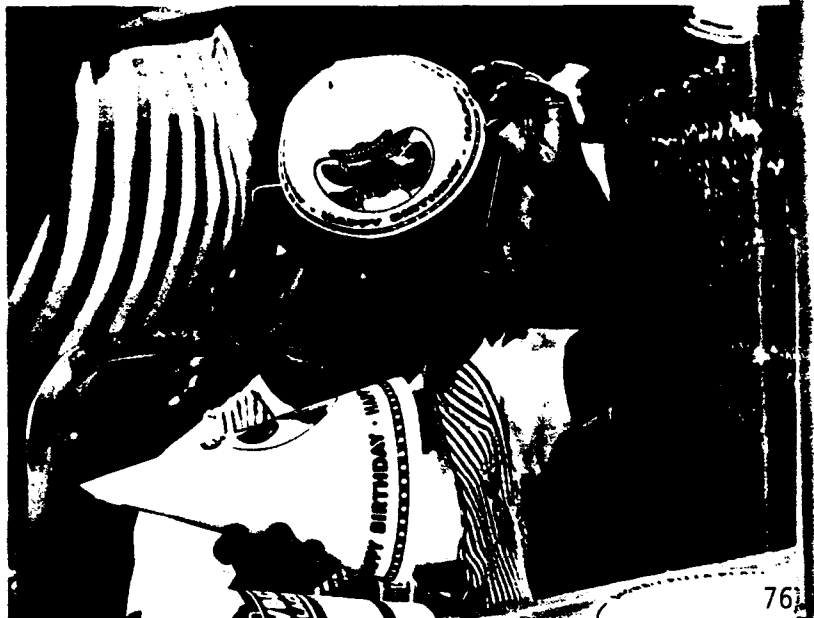
## SONO



*In trouble before birth, Joseph Ward was found to have a tumor growing in his throat that forced him to keep his mouth open inside the womb (right). Another sonogram (above) displays a cross section of cheeks and rounded tongue, as seen from above, with the tumor, at right, pushing the tongue forward. Alarmed by the obstruction, Dr. Jason Birnholz of Rush Presbyterian St. Luke's Medical Center in Chicago asked a surgical team to stand by at Joseph's birth. When the baby failed to breathe, the team opened his breathing passage and saved his life. After diagnosis of the tumor was confirmed, the obstruction was removed, and Joseph, now almost three years old (right), has gone on to bigger things.*



RUSH PRESBYTERIAN ST. LUKE'S MEDICAL CENTER (LEFT AND ABOVE)



target's location, size, shape, even its texture, for display line by line on a screen.

One of the pioneers in sonography, first at Massachusetts General Hospital in Boston and now at Rush Presbyterian St. Luke's Medical Center in Chicago, is Dr. Jason Birnholz. Still bubbling with excitement after nearly two decades of work in the field, he told me of a recent case in which the use of sonography saved a life.

A schoolteacher in her 28th week of pregnancy came for an ultrasound scan. Dr. Birnholz noticed that she was much larger than she should have been, with excessive fluid around the baby. The scan revealed that the baby's mouth was wide open and its tongue stretched far forward (left). On closer investigation he found a large tumor growing in the neck under the jaw. A fetus commences swallowing fluids after 12 to 14 weeks, and the tumor was preventing the normal swallowing and expelling functions.

Armed with this information, Dr. Lauren D. Holinger, a throat specialist, stood by with a surgical team as a cesarean section was performed. At birth the child turned blue, unable to breathe. The team went into action to open up the breathing passage blocked by the tumor. Several days later Dr. Holinger removed the tumor.

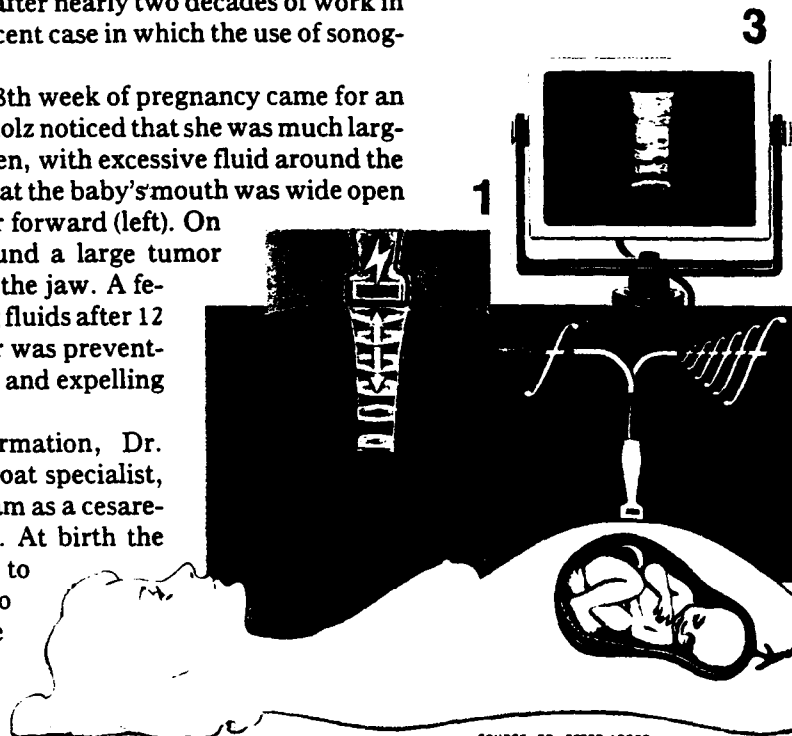
Today Joseph Ward is a happy child who lives in Hazel Crest, Illinois. His life was saved by ultrasound.

The latest acquisition of the sonographer is digital color Doppler. With computer assistance it dramatically shows in picture form the flow and eddying of human blood as it courses through the heart, veins, and arteries. For this it harnesses the Doppler effect—the shift in the frequency of sound waves (or light waves or radio waves) produced by a moving object as it moves toward or away from a given point.

High-frequency sound waves penetrate the target area, a blood vessel, for instance. If the blood is flowing normally, the echoing sound resembles that of a gentle brook, and the image shows smooth flow. But if the blood flows through a narrow, irregular area, it produces a harsh sound, and the image shows uneven flow. This is how Doppler diagnosis detects a faulty valve or artery blockage that could cause a stroke.

After experiencing a nuclear heart scan in Houston, I was anxious for some comparative shopping—a look at my heart in color ultrasound. I visited Dr. Anthony DeMaria, chief of cardiology at the University of Kentucky Hospital in Lexington and a specialist in cardiac ultrasound.

*Medicine's New Vision*



SOURCE: DR. PETER ARGER,  
UNIVERSITY OF PENNSYLVANIA

**Probing painlessly,** sonography uses sound waves to look within. The heart of the system is a piezoelectric crystal 1 that converts electric pulses into vibrations that penetrate the body. These sound waves are reflected back to the crystal, which reconverts them into electric signals.

A doctor places a transducer containing a crystal 2 on the area to be scanned, such as the abdomen of a pregnant woman. Echoes from the fetus are translated into faint signals, which are processed by a computer into a video image 3.



## **DSA**

### **Digital Subtraction Angiography**

Life-giving blood vessels embrace the heart of a middle-aged man in this picture made by digital subtraction angiography (DSA). Filled with a substance opaque to X rays, the left coronary artery — bright red in this color-enhanced view — feeds a network of smaller vessels deep in the walls of the heart muscle. The red pool at left is the aorta root. A constriction in the coronary artery at top, appearing as a break, has choked off 60 percent of the blood supply to the lower part of the heart.

A computer measures the degree of constriction by converting the image into digital code and comparing it to others made from different angles. It also measures the rate at which blood diffuses into the heart muscle, giving doctors a good indication of whether or not a heart attack is likely to occur.

FISCHER IMAGING CORPORATION, DENVER





## DSA

*Two-for-one scanner, the digital biplane angioscope at East Jefferson General Hospital in New Orleans provides views of the heart from two different angles. Laboratory supervisor Rick Becerra takes the role of patient by lying between the two X-ray tubes, while Dr. P. Jeffrey Bower, nurse Londa Hathaway, and technician Eve Rehkopf stand at the console. A screen can present four images: two live views of the heart, one digital recorded picture, and a display—here dark—of physiological data.*

In a small cell-like room I removed my T-shirt and lay back on a semi-reclining bed. First Dr. DeMaria applied a jellylike balm on the skin above my heart. Then, placing the transducer in firm contact with my chest, he moved it in short, circular arcs. My throbbing, pulsing heart appeared in color on a monitor above me. Sound accompanied the sight. Enthralled, I heard and saw the butterfly action of the heart valves, the eddying of oxygen-rich blood upward through the aorta, the paler oxygen-poor blood flowing toward the lungs.

"My eyes are at my fingertips," Dr. DeMaria remarked as he pressed the transducer against my breast.

Sonography also assists in brain surgery. After the skull is opened (ultrasound cannot see through bone), the transducer is placed against the brain to locate soft-tissue tumors. Sometimes hard to see using other means, their distinctive tissue cannot hide from the sound waves, which portray the tumor's exact position and size.

**A**t Mallinckrodt Institute of Radiology in St. Louis, Dr. Klaus Sartor explained the problems of convincing neurosurgeons of the effectiveness of the new technology. Using an MRI scan, Dr. Sartor had detected a brain tumor in a male patient. A famous surgeon, armed with the film, opened the brain of the patient. During the operation, he paused to call Dr. Sartor.

"There is no evidence of a tumor in the area indicated on the scan," he insisted. Usually tumors have a different color or



*National Geographic, January 1987*

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texture from healthy surrounding tissue and are easily distinguished by the brain surgeon. In this case the experienced eye could detect nothing.

Dr. Sartor insisted on the accuracy of his MRI scan and suggested a biopsy, or evaluation, of the area indicated.

The report came back from the lab confirming the presence of a tumor in the exact area the MRI had indicated, and the surgeon immediately excised it. Machine vision had given information that the eye of a highly skilled brain surgeon could not provide.

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The time had come to subject myself to an MRI scan. It was late in the evening after the last patient had left the Long Island Diagnostic Imaging Center. Nancy Ryan, the receptionist, gave me a patient-history form and a list of items forbidden in the test room, including surgical clips as well as dentures and metallic implants.

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The center's magnetic machine, a General Electric Signa unit, weighs 15 tons and is supercooled with liquid helium to minus 452 degrees F. It cost 1.8 million dollars plus installation and incurs an \$18,000 monthly bill for electricity and other costs. An average of ten patients a day undergo scanning, which takes about 45 minutes and costs \$800.

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I left my shirt, tie, and trousers on but removed my watch, belt, and ring. "Why be scanned if there is nothing wrong with you?" asked Bill Seuffert, the technician. "I wouldn't. They might find something."

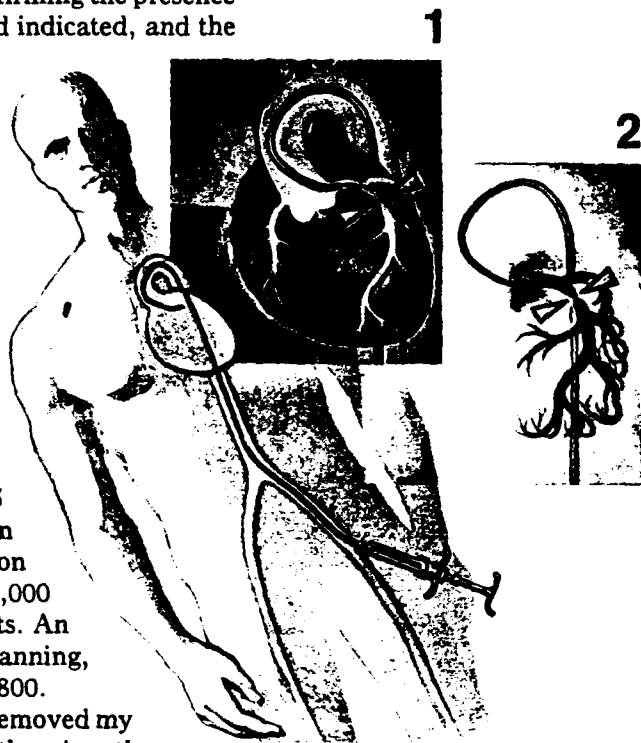
He had a point, of sorts. At the General Electric manufacturing and training center in Waukesha, Wisconsin, a young trainee who volunteered to be scanned was amazed to find he had a huge brain tumor. His only symptom had been occasional headaches. He is now debating what should be done. On checking, I found that it is not uncommon for people to live with brain tumors that have little, if any, effect.

I lay down on a table, head slightly raised, and was rolled into the tunnel-like magnet, about 36 inches in diameter. A laser beam located the midline of my brain. Bill Seuffert, in the control center, said over the intercom that he would do a cross-sectional scan of my midbrain.

For a minute I heard what seemed to be the tapping of a hundred hammers—the clatter of magnetic coils as Bill set up the correct frequencies for the highest image definition.

A brief lull, and then the tapping of hammers began again—this time in earnest. As time passed within the magnetic field, my skin tightened, and I felt the older fillings in my teeth tingle and grow warm.

In two and a half minutes the scan was done. Had this been a full-scale search instead of a demonstration, there would have



SOURCE: DR. JOHN W. HIRSHFELD, JR. AND DR. GORDON K. MCLEAN, UNIVERSITY OF PENNSYLVANIA

*Less is more with the wizardry of DSA, which removes everything from an image except what a doctor wants to examine. First a picture of the heart is made by a digital X-ray scanner. Next, as a contrast agent is injected through a catheter into the coronary arteries 1, a second X-ray image is made showing the agent flowing through the heart's vessels. A computer subtracts the first image from the second, leaving only what has changed—blood vessels containing the agent 2—and highlighting a blockage (arrows). DSA is only one application of the expanding field of computed angiography.*

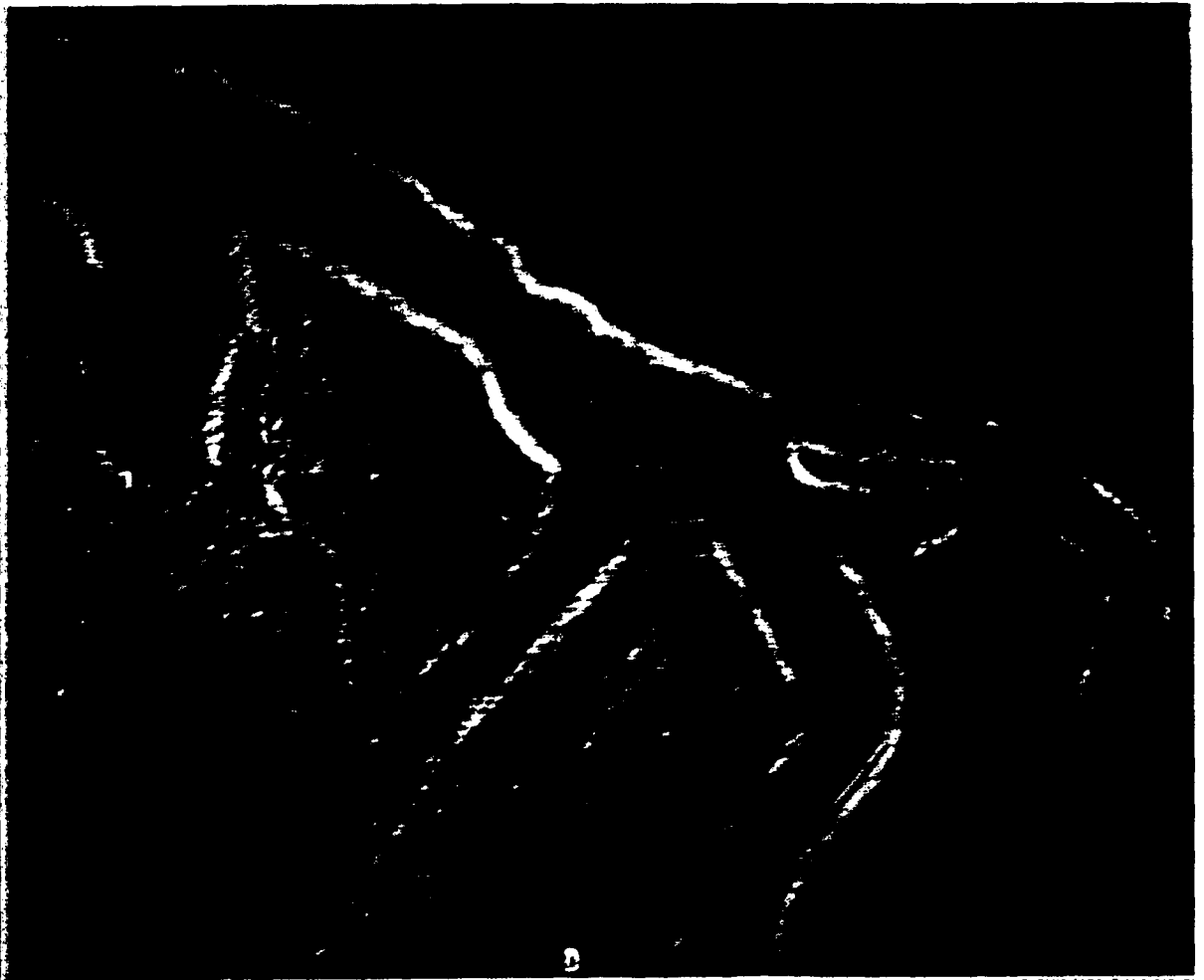
been ten or eleven additional scans, spaced to cover the entire depth of my head.

After the scan I got up from the table and walked to the control room, feeling fine. Already displayed on a monitor was the cross-sectional view of my brain. It showed no tumor or other abnormalities.

The diagnostic success of this tool is revealed by the explosive growth in the number of installations. General Electric, with about 40 percent of the market, shipped 15 MRI units in 1984. By the end of 1986 it had sold 230 worldwide.

**T**he importance of the computer in medical diagnosis becomes evident in the new life it gives to the art of computed tomography, known as CT. Developed about 15 years ago, the technique employs a spinning X-ray tube on a yoke that allows 360-degree rotation. Today's computers, using CT images, produce detailed views of soft tissue—the brain or heart—in three dimensions.

In a typical CT scan, hundreds of crystal-chip detectors coated with cesium iodide move in an arc with the X-ray tube to examine salami-thin slices of body width. The detectors



EAST JEFFERSON GENERAL HOSPITAL, NEW ORLEANS (ABOVE AND RIGHT)

*National Geographic, January 1987*

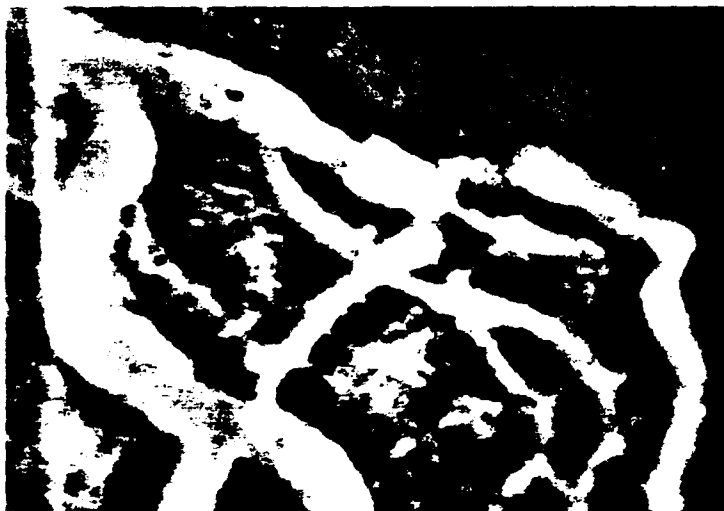
deliver their information to a digital computer for display on a screen. With the computer's capacity to manage information, CT can zoom into and scan the anatomy, yielding vivid and precise 3-D views.

A single scan takes less than two seconds, and radiation dosages for a standard series of 12 images are less than that of some X rays. CT is cheaper than MRI, the average procedure costing about \$500.

One of the most exciting applications of three-dimensional CT imaging is in the field of reconstructive surgery. In Palo Alto, California, I talked to Dr. Steven Woolson, who does orthopedic surgery. He introduced me to his patient, My Tien Tran, a young Vietnamese woman who was evacuated from Saigon the day before it fell to the Communists. For years My Tien had suffered severe pain from a congenital dislocation of her right hip (page 12). She had walked on crutches most of her life, and her right leg was three inches shorter than the left.

A series of CT scans of the hip and pelvis persuaded Dr. Woolson to do a total hip replacement. Aided by a milling machine and using CT data, CEMAX, Inc., in Santa Clara, California, made plastic

*(Continued on page 39)*



## DSA

**"Exercise saved my life,"** says Dr. James Quinn (*above right*) of New Orleans, who for several days in 1986 felt a tightness in his chest during his daily three-mile run. "Then zap, one night I had this pain," he says. It was a major heart attack.

Made by digital subtraction angiography, a color-enhanced close-up picture of his left coronary artery (*left*) shows one

branch, at far left, to be totally blocked. A blood clot stopped the flow of blood when it lodged against a deposit of plaque. Enlarged by exercise, his other arteries enabled him to survive the heart attack.

To remove the clot, Dr. Jeffrey Bower threaded a catheter into the heart through a blood vessel in the groin—watching its progress on a digital

angiography unit—and injected a dissolving agent at the point of blockage. To open the artery further, he inserted a second catheter, fitted with a small balloon, through the first. Gently inflating the balloon, he compressed the plaque against the wall of the artery, slightly stretching its lining. A follow-up image (*above left*) shows the branch completely open again.

*Medicine's New Vision*

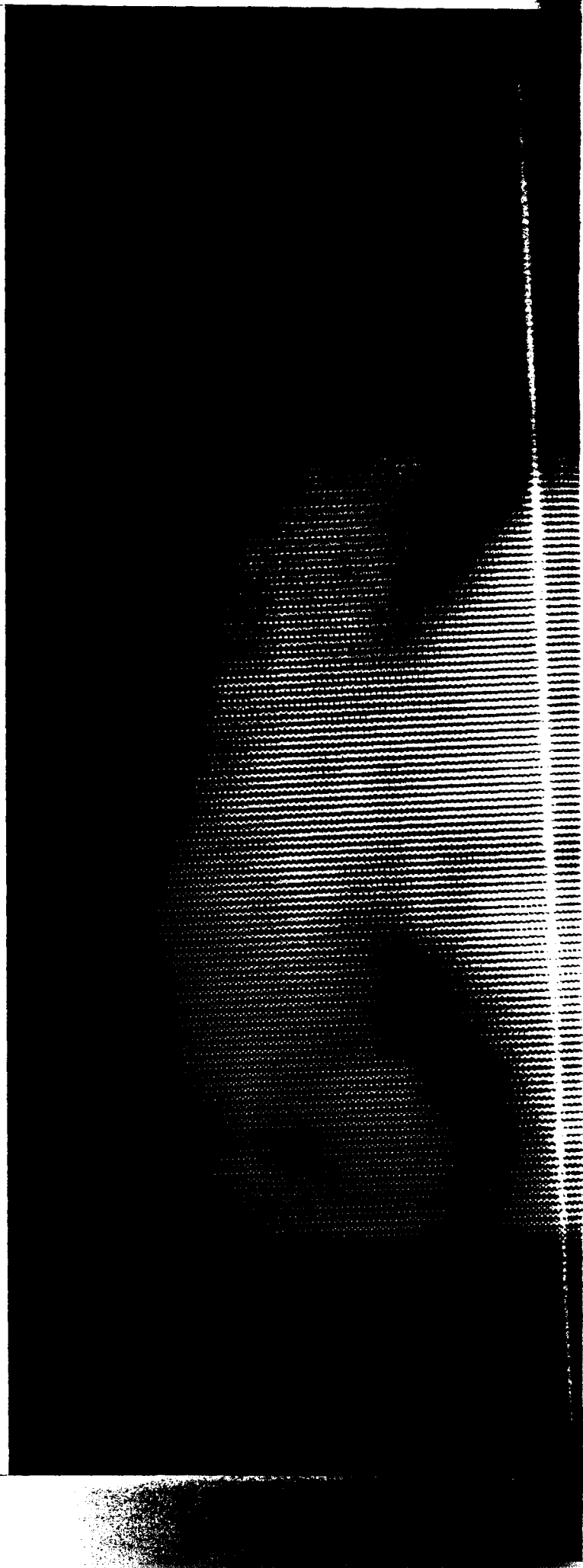
## **PET/SPECT**

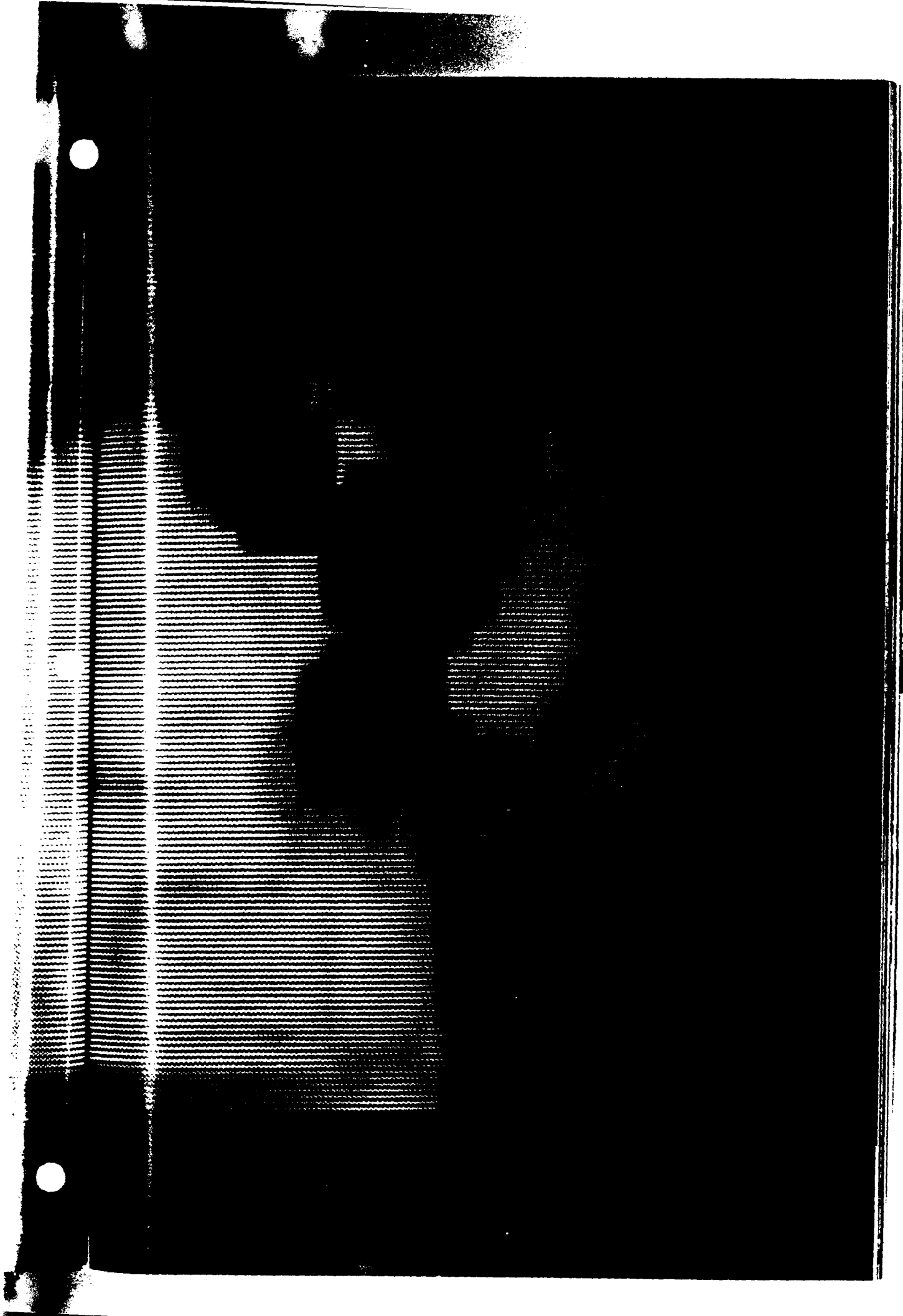
### **Radioisotope Imaging**

Picture of confusion, an image made by single photon emission computed tomography (SPECT) shows a patch of darkness in the brain of a 57-year-old man. Reflecting a decrease in blood flow to the parietal lobes — where sensations from the eyes and ears are associated with memory — the darkness symbolizes the agony of Alzheimer's disease.

SPECT shows blood flow by imaging trace amounts of radioisotopes. A more versatile technique, positron emission tomography (PET), can also measure metabolism, revealing how well the body is working. The use of radioactive tracers is well suited to studies of epilepsy, schizophrenia, Parkinson's disease, and stroke.

BRIGHAM AND WOMEN'S HOSPITAL, BOSTON

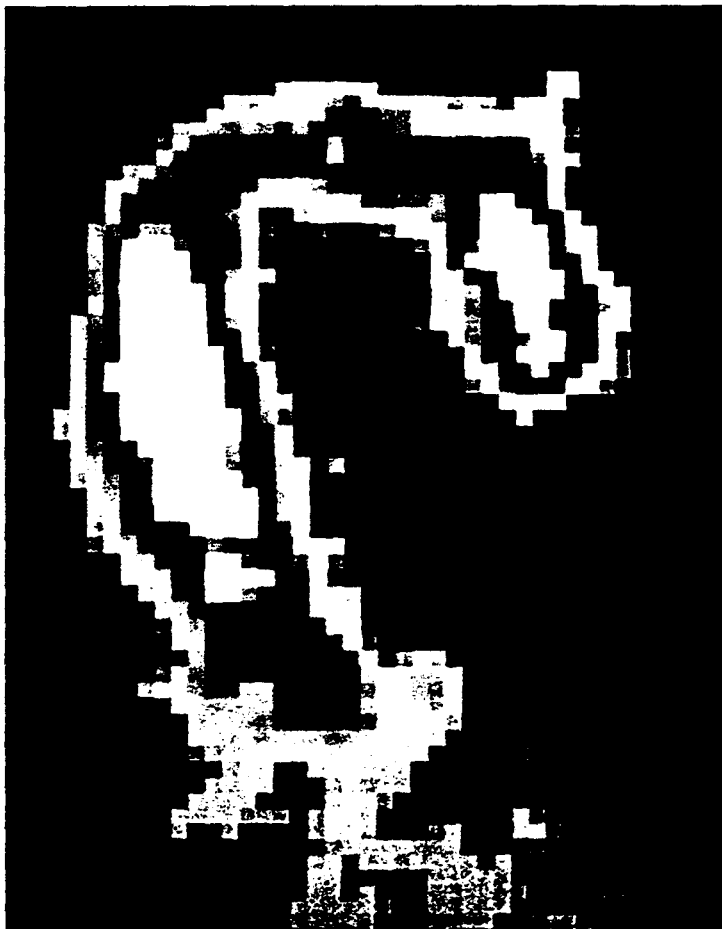






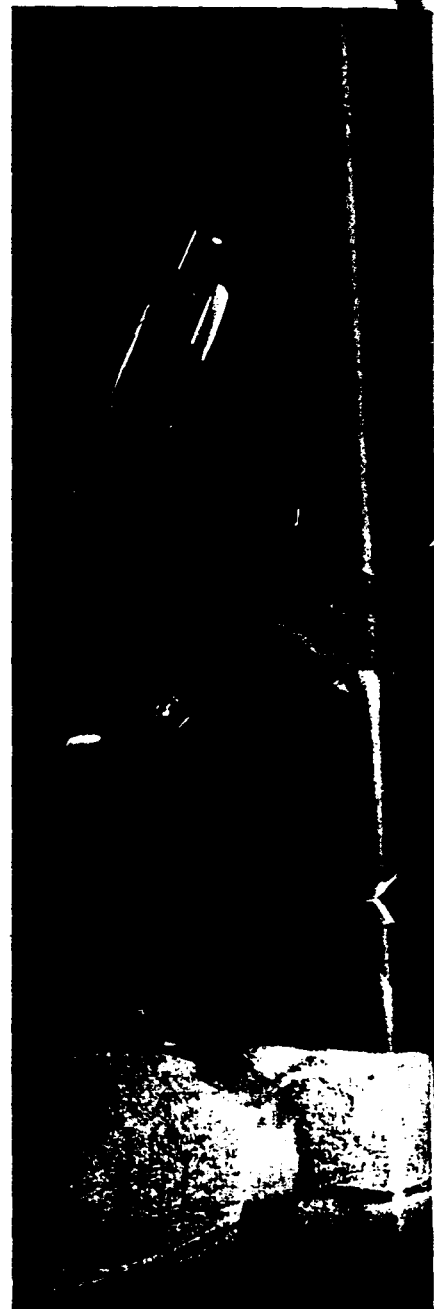


UNIVERSITY OF TEXAS MEDICAL SCHOOL, HOUSTON (ABOVE AND BELOW)



## **PET/SPECT**

*In the doughnut hole of a PET scanner, a patient (below) squeezes a hand grip that helps stimulate the heart during a stress test. The PET scanner, at the University of Texas in Houston, images trace amounts of radioisotopes in the heart to determine whether or not muscle tissues are receiving a normal supply of blood. Electrodes on the*



chest record an electrocardiogram monitored by research nurse Mary Haynie.

Glowing brightly on a video screen, a PET image from another person shows a normal blood supply in a heart without stress (facing page, bottom). White, orange, and yellow areas show the walls of the left ventricle—as seen from above—absorbing a radioisotope, N-13 ammonia, from the blood. Both PET and SPECT depict the

distribution of blood into tissue, but PET does so with greater accuracy.

A second PET image, showing the same heart under stress (facing page, top) reveals a problem in the blood supply to the ventricle's wall in the upper half of the picture. Stress was induced by an injection of dipyridamole, which simulates exercise by boosting blood flow to healthy muscle tissues. The increased flow, however, is

blocked by an artery with a constriction.

In the unstressed heart the scanner shows white and orange where absorption of the radioisotope is greatest. But in the heart under stress there is only yellow in its upper half, indicating a partial blockage in the coronary artery feeding that part of the heart. Left untreated, this defect may eventually cause a heart attack. Detected by the PET scanner, it could be prevented.



## **PET/SPECT**

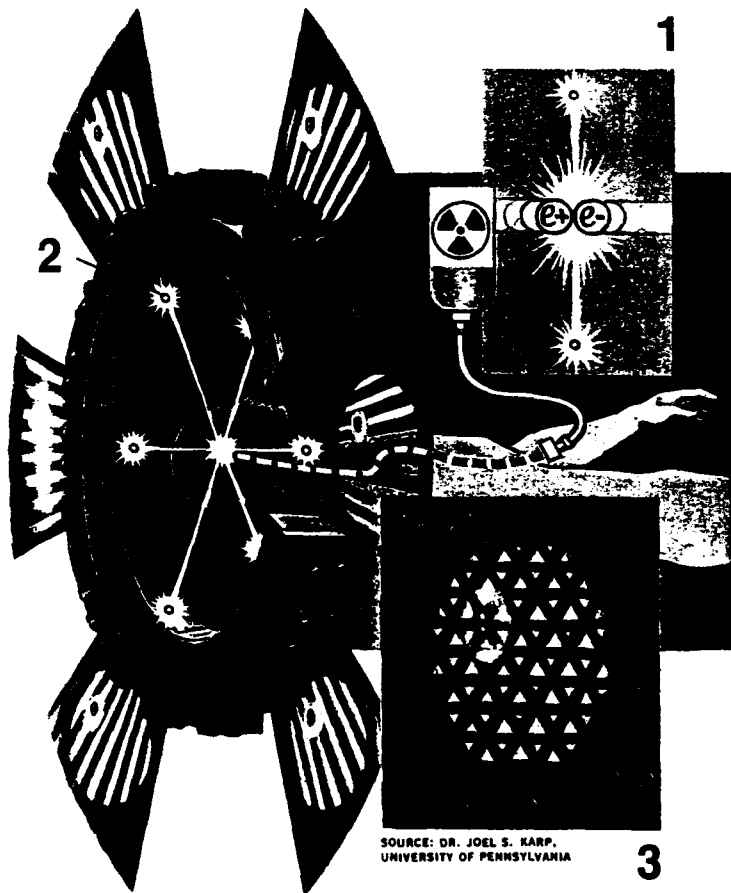


UCLA SCHOOL OF MEDICINE

*Gaining strength every day, two-year-old Ryan Petersen of Great Falls, Virginia, was given little chance of surviving childhood. Unable to find a cause for the seizures he had suffered since birth, his doctors had given Ryan's parents little hope. Then while Ryan was visiting his grandparents in southern California, his seizures worsened. His parents took him to the UCLA Medical Center, where a PET scan (above) showed normal activity in the right hemisphere of his brain (red, yellow, green) but only minimal activity in his left (purple). After surgery that removed most of the left hemisphere, Ryan works with physical therapist Francie Mitchell (right) to improve control of his muscles.*



*National Geographic, January 1987*



(Continued from page 33) models of the hip-joint bones. With these models Dr. Woolson performed a rehearsal surgery to determine the precise size of the replacement parts and necessary bone grafts. Then came the surgery itself, with the use of the model bones as templates. Today My Tien's legs are of nearly equal length; she walks normally and has no hip pain.

A major center for research in three-dimensional CT imaging is at the University of Kansas Medical Center in Kansas City. There Dr. Larry T. Cook along with Dr. Sol Batnitzky and Dr. Kyo Rak Lee have developed computer software and color images that are unique in the field of medicine.

A recent challenge involved Dr. Cook and a most delicate eye operation. Another colleague at the university, Dr. Shankar Giri, had a patient with a tumor that had wrapped itself around the optic nerve of the right eye. Double vision resulted. In the extremely difficult area of the optic nerve, a small tremor of the surgeon's knife could cause irrevocable blindness. Surgery was ruled out. Only radiation therapy could help, but that too was risky.

Dr. Giri, working from 20 CT scans, prepared the delicate treatment plan: cobalt in two carefully controlled beams of two minutes' duration, given for five weeks.

The treatment diminished the tumor, and normal vision was restored. The patient moved to California's Sierra Nevada and has not been heard from since.

To spy on the brain in action, PET scanners watch the way brain cells consume substances such as sugar. The substance is tagged with a radioisotope brewed in a small, low-energy cyclotron. The isotope has a short half-life, meaning that it loses half of its radioactivity within only minutes or hours of being created. Injected into the body, the radioactive solution emits positrons wherever it flows.

The positrons collide with electrons, and the two annihilate one another, releasing a burst of energy in the form of two gamma rays. These rays shoot in opposite directions 1 and strike crystals in a ring of detectors 2 around the patient's head, causing the crystals to light up. A computer records the location of each flash and plots the source of radiation, translating that data into an image 3.

By tracing the radioactive substance, a doctor can pinpoint areas of abnormal brain activity or determine the health of cells.

Unlike PET, which generally requires a cyclotron on site, SPECT uses commercially available radioisotopes, greatly reducing the cost of operation.

*The whole body is captured in a bone scan made with radioisotope tracers (facing page). Created by a gamma camera, the image depicts emissions of gamma rays from a phosphate tagged with technetium-99m, a low-level radioactive material. Injected into the blood stream, the phosphate comes to rest mainly in bones, producing a comprehensive view of the skeletal system. Doctors made the picture to determine whether or not cancer had spread into the bones of a 56-year-old woman from a tumor in her breast. It had not.*

*Bringing together many views of a single patient, Dr. H. K. Huang of UCLA (right) shows Dr. Hooshang Kangarloo six images made by various scanning devices, each retrieved from a central computer bank. Among the first of its kind, the system demonstrates the type of ongoing innovation giving new eyes to medicine.*

**T**he marriage of the computer and medical imaging devices is already bearing fruit. It holds tremendous promise for the future. "In medicine, as in our society, we have embarked on a scientific revolution unlike any other in man's history," said Dr. Steven Nissen, a cardiologist at the University of Kentucky Medical School.

A growing number of young, dynamic doctors hold Ph.D.'s in physics or computer science along with their M.D.'s. And the burgeoning technology of computer graphics is being harnessed to transform the torrents of machine-vision data into meaningful diagnostic displays.

What directions will discoveries in diagnostic imaging take? During the nine months of my investigation, I asked this question of scores of physicists, physicians, and surgeons. Their answers confirmed that in the past they often had to wait for a disease to manifest itself, as a tumor, say, or a heart defect.

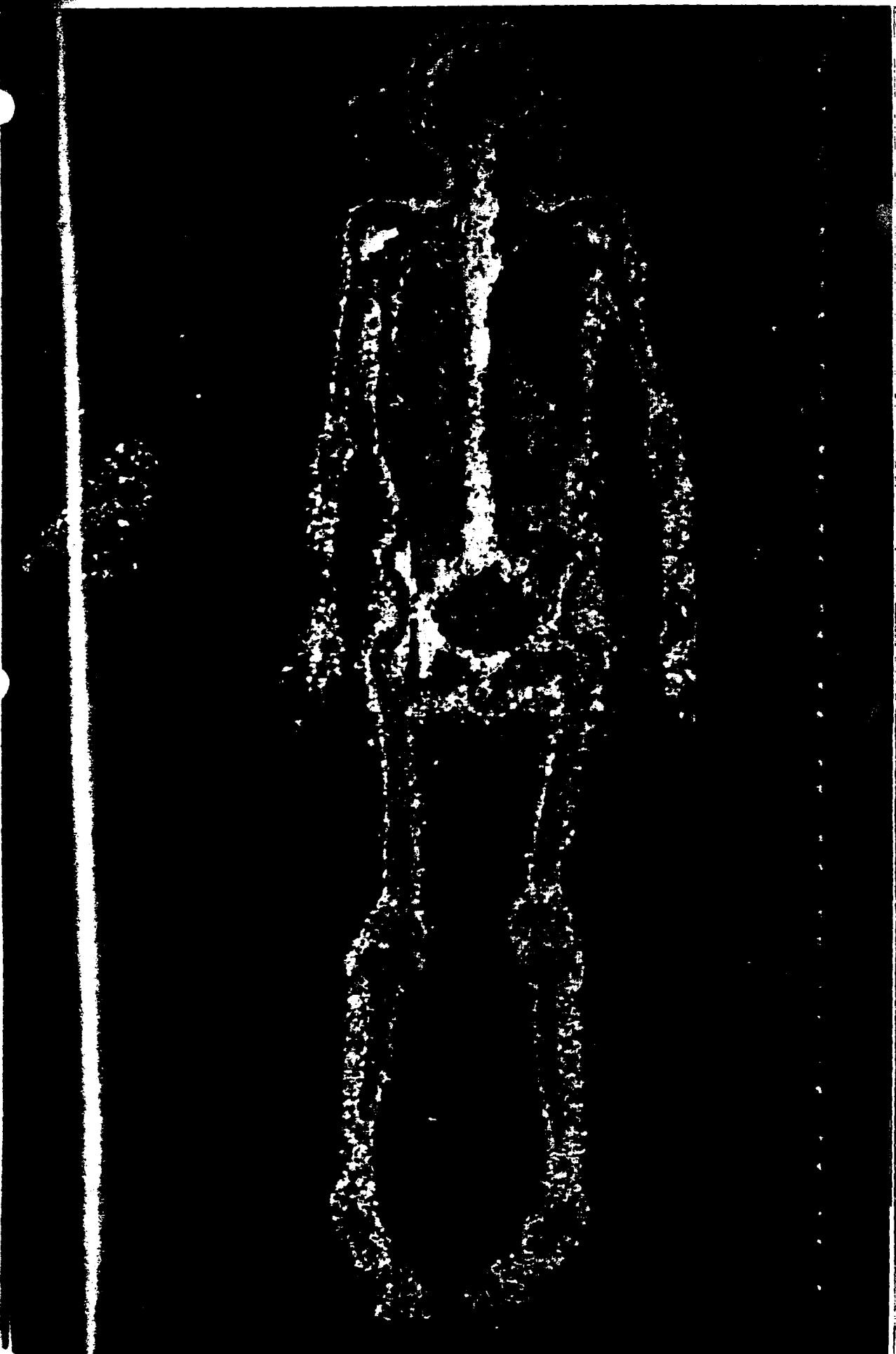
But diseases usually manifest themselves chemically before there is an anatomical change. In the future, MRI may be able to reveal such chemical changes by making images with elements such as phosphorus or sodium, as well as with hydrogen. By analyzing the amount of phosphorus in the heart, for example, physicians could determine at an early stage whether or not the muscle tissue was being starved of nourishment by a clogged artery. Future research may perfect methods of tagging cloned antibodies with a magnetically traceable element and using them as scouts in the body to search out cancerous tumors. Getting an MRI scan may someday become as common as getting an X ray.

How often while preparing this story did I hear: "I couldn't have saved this patient ten years ago." Because of the computer and the new tools of machine vision, many more lives will be saved in the years to come, and the quality of all our lives will be improved. □



HARVARD MEDICAL SCHOOL (RIGHT)

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BOARD OF GOVERNORS

RESOLUTION

WHEREAS, in August, 1985, the Board of Regents approved the purchase by the University of 34% of the stock in Primary Care Network Management Company; and,

WHEREAS, the closing with respect to the acquisition of Primary Care Network Management Company occurred on September 5, 1985; and,

WHEREAS, it has become necessary for Primary Care Network Management Company to increase its credit line;

NOW, THEREFORE BE IT RESOLVED that the Board of Governors recommend to the Regents of the University of Minnesota that the appropriate administrative officers be authorized to sign the requisite financial documents to increase the University's guarantee of Primary Care Network Management Company debt from the University's current obligation of \$600,000 to an amount not to exceed \$1,120,000.

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