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A Tale of Two Nursing Centers: A Cautionary Study of Profitability

Despite the recent proliferation of nurse run ambulatory care clinics, the lack of profitability threatens the viability of many academic-based nursing centers.

One study found that about 50% of the typical academic-based nursing center's financial support came from its affiliated school of nursing.

If nursing centers are to survive and prosper, they must be able to understand and manage their costs.

The authors show how analyzing cost structures at two academic-based nursing centers using both gross costing and activities-based costing methods identified operational inefficiencies and examined cost drivers.

Costs were categorized as either: space lease, contract services, operating expenses or salaries and benefits.

Revenue was defined as only those funds generated by producing a patient encounter no matter whether it was from direct patient payment, insurance reimbursement or managed care contracts.

WITH THE EMPHASIS on primary care in the past few decades, there has been a marked growth in academic-based nursing centers in the United States. These ambulatory care clinics, where nurses provide health care to clients and manage both the operational and financial functions of the center (Barger & Rosenfeld, 1993; Gray, 1993), have proliferated due to significant underwriting by charities, grants, and affiliated nursing schools. Despite this explosive growth, lack of profitability threatens the survival of many academic-based nursing centers. The objective of this study was to examine two academic-based nursing centers with a close look at what practices result in profitability for one and questionable survival for the other.

This study was designed to examine the operational costs of two free-standing, academic-based nursing centers, determine the relative efficiency of operations, and estimate the effects of employing different costing methodologies on the cost per visit ratio. Costs of providing care in the two nursing centers were analyzed and the costs of the unprofitable nursing center were compared to a benchmark profitable center.

The majority of nursing centers have been unable to achieve financial self-sufficiency and remain dependent on funding from charities, grants, and affiliated schools of nursing (Mackey & McNiel, 1997). One study found that slightly more than 50% of the typical academic-based nursing center's financial support came from its

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affiliated school of nursing (Barger & Bridges, 1990). This lack of self-sufficiency places nursing centers in financially precarious positions and increases the likelihood of closing (Barger & Rosenfeld, 1993; Mackey, Adams, & McNiel, 1994). In the current cost-conscious environment, fewer schools of nursing will be able to continue to financially support nursing centers (Barger, Nugent, & Bridges, 1993). If nursing centers are to survive and prosper, it is crucial for them to understand and manage their costs.

Nursing Center Cost Studies

Few studies document nursing center cost structures. An early cost study by Kos and Rothberg (1981) suggested that nursing center operations were more costly when compared to care provided at an HMO. The cost per visit was $42 at the nursing center and $30 at the HMO. Although this study was conducted many years ago and under a different health care environment, the findings are supported by a recent study by Saywell, Wright, and Flynn (1995). This study describes a nurse-managed community health center in rural Indiana. Physician charges were used as proxies for physician costs in comparing the nursing center to primary care physicians. The nursing center's costs compared favorably with those of comparable, local, primary care physicians when only direct costs were included in the analysis. When indirect costs were included, the cost per visit of $64 at the nursing center exceeded the $38 charged by local primary care physicians. This higher cost is largely a function of low patient volume. At full operating capacity, the researchers estimate the nursing clinic cost per visit would be below the prevailing charges in the community.

Kerekes, Jenkins, and Torrisi (1996) analyzed costs of providing care under a fully capitated payment system. According to this study, Abbottsford Community Health Center in Philadelphia had lower costs than did a comparable family practice HMO with a similar patient population. It also had fewer hospital admissions and shorter lengths of stay.

THE STUDIES CITED make it difficult to determine the inefficiencies in production at nursing centers and to identify cost drivers. Notably absent are studies comparing costs between nursing centers. In this study researchers analyzed the cost structures of two academic-based nursing centers, identified any operational inefficiencies, and examined cost drivers.

Methods

The cost analysis was conducted from the perspective of the affiliated nursing school. The study used a descriptive retrospective design and examined data for 1 fiscal year. Data were collected at two free-standing, academic-based nursing centers and included data from year end financial statements from the University of Michigan School of Nursing and the University of Texas Health Services (UTHS). Both nursing centers are nurse-managed, follow a nursing model, and are affiliated with a university-based school of nursing. The North Campus Nursing Center (NCFHS) relies on grants and in-kind support from the University of Michigan School of Nursing for operations and is not self-supporting. The other site, UTHS, has achieved financial self-sufficiency and profitability.

The Costing Model

Since each nursing center used different formats for its income and expense reports, a costing model was developed to provide a method for systematically analyzing the costs at the two nursing centers. In the model, costs were categorized by similar characteristics into four categories: space lease, contract services, operating expenses, and salaries and benefits. Costs associated with contracting with another agency or company to provide services to the nursing center's patients were placed in the contract service category. Included in the contract services category are expenses for laboratory, radiology, and other diagnostic testing which are incurred by contracting with a laboratory or diagnostic imaging company. Since these costs were pass-through costs, they were subsequently excluded from the cost analysis as was the revenue they generated. Operating expenses were all costs other than rent, employee compensation, and contract expenses and included office supplies, professional supplies, telephone, postage, and marketing expenditures. The salary and benefit category included all salaries and benefits for direct patient care providers, consultant, office manager, other administrative and research personnel.

Gross Costing

The majority of cost analysis studies use gross cost estimation methods. In this method, all costs are aggregated and a cost per visit ratio is calculated. This study first examined costs using gross costing and then examined costs using activities-based costing methods. Scenario analyses were conducted to determine a break-even point for the unprofitable center.

Activities Based Costing

When using aggregate methods for costing, the details and nuances that may contribute to cost variations are lost. Activities-based costing is useful when analyzing more than one product. The purpose of activity-based costing is to improve accuracy in estimating the resources consumed in producing a product by avoiding arbitrary allocations when collecting cost data (Finkler, 1994). In this costing method, total indirect costs are categorized into cost pools representing various resources and activities associated with those resources identified. These activities are known as cost or activity drivers (West, Hicks, Balas, & West, 1996).

Table 1.
Gross Cost Comparison of NCFHS and UTHS

	NCFHS	% of Total Costs	UTHS	% of Total Costs
Space Lease	$15,222	7	$113,047	17
Operating Expenses	$13,063	6	$138,371	21
Salary & Benefits	$181,508	87	$403,730	62
Total Costs	$209,793	100	$655,067	100
Total Encounters	5,073		14,708	
Cost per Encounter	$41	100	$45	100
Revenue per Encounter	$27	75	$60	125

Process Mapping

Process mapping, a visual display of how work actually is accomplished, can be useful in identifying activities to be costed. The mapping process begins with identifying the job categories involved in the process and then the movement of the patient through all of the steps is sketched. In this study, the process map was used to determine cycle time, the total length of time required to complete the patient visit. Time studies using purposive sampling were performed to acquire accurate activity-based time data and total cycle time.

Results

Cost Costing

Direct, indirect, and opportunity costs were aggregated for both nursing centers. UTHS has a larger operation than does NCFHS and its overall expenses were greater than NCFHS. Space lease costs and operating expenses accounted for a larger percentage of overall costs at UTHS than at NCFHS. Salaries and benefits accounted for the majority of expenses at both nursing centers but were 87% of overall expenses at NCFHS and 62% of total expenses at UTHS (see Table 1).

When fixed and variable costs of the two nursing centers were compared, several important differences emerged. At NCFHS fixed costs ($112,670) were 54% of total costs and at UTHS fixed costs ($258,304) were 39% of total costs. The fixed cost per encounter of $22 was greater at NCFHS than the $18 per encounter incurred at UTHS. Although, UTHS incurred higher costs for rent, insurance, travel, and capital equipment, the fixed labor expense at UTHS was considerably less than at NCFHS. Total fixed labor costs were $118,127 at UTHS and were 18% of total costs. At NCFHS, fixed labor was $98,873 and accounted for 47% of total costs. The administrative overhead was substantially greater at NCFHS than at UTHS, approximately 2.5 times, and was the major contributing factor to the fixed costs at NCFHS.

Variable costs per encounter at the two nursing centers were quite different but in this case the cost at UTHS was greater. At UTHS the variable cost per encounter was $27 which was considerably higher than the $19 variable cost per encounter sustained by NCFHS. Professional supplies, which included the cost of medications for the class D pharmacy, and equipment expenses were the major factors contributing to this higher cost.

At NCFHS, professional supplies, though a small percentage of total expenses, accounted for 47% of all operating expenses. The NCFHS did not have a class D pharmacy but did purchase some medications, generally immunizations, from the University of Michigan pharmacy. This expense accounted for 43% of consumable supplies.

The variable cost of labor was similar at the two nursing centers. Total variable labor at UTHS was $285,604 for a variable labor cost per encounter of $19. At NCFHS variable labor cost per encounter was $17 with a total variable labor expense of $84,635. While the total cost per encounter at NCFHS was slightly lower than at UTHS, its administrative overhead costs were substantially higher (see Table 2).

Revenue

To ensure the revenue comparison of UTHS and NCFHS was equivalent, revenue was defined as those funds generated by producing a patient encounter. Direct patient payment, insurance reimbursement, and managed care contracts were all classified as rev-

Table 2.
Comparison of Fixed and Variable Costs at North Campus Family Health Services and University of Texas Health Services Center

Expense Object	North Campus Family Health Center	University of Texas Health Services Center
Fixed Expenses	**$112,670**	**$258,304**
Space Lease	$15,222	$113,047
Security	$575	0
Operating Costs	0	$27,129
Salaries and Benefits	$96,873	$118,127
Fixed Cost per Encounter	**$22**	**$18**
Variable Costs	$97,123	$396,763
Contract Services	-	-
Operating Costs	$12,488	$111,160
Salaries and Benefits	$84,635	$285,604
Variable Cost per Encounter	**$19**	**$27**
Total Expenses	**$209,793**	**$655,067**

enue. Other income such as grants and gifts were excluded from the category of revenue. Total adjusted revenue for NCFHS was $138,936 for revenue per encounter of $27. While this is sufficient to cover average variable costs and make some contribution toward the fixed costs, the nursing center loses $14 per encounter. At UTHS, total adjusted revenue was $879,359 and the revenue per encounter was $60 for a profit of $15 per encounter.

NCFHS has two distinct activities or product lines: primary health care services and the Women, Infants, and Children (WIC) program. A process map was developed for each of these and a time study was completed for each product line. UTHS had one product, primary care, and a time study for this product line was performed. Total visit time at the two nursing centers for primary care visits was very similar. At NCFHS the average visit took 28 minutes and 35 seconds and at UTHS the average visit took 29 minutes and 27 seconds. A T-test suggests no statistically significant differences between visit times at the two nursing centers (p=.92).

Using the 1996-1997 year-end expense reports for NCFHS, individual expense reports were developed for each product. The WIC program occupied a separate physical space and the dietitian was employed solely for WIC. The office manager's time was shared between WIC and the primary care program. Based on the hours of operation and her primary care clinic duties, it was estimated that 40% of her time was spent on WIC activities. Given this estimate, expenses that were shared between WIC and primary care that could not be directly costed to either product were allocated to WIC at a rate of 40%. Other expenses included office supplies, postage, telephone, and security.

Patient encounters produced during the fiscal year were categorized as WIC or primary care. The primary care clinic produced 1,895 patient visits and WIC produced 3,178 encounters. Clinic revenue was also traced to each product line. Primary care clinic revenue was $115,381 for a revenue per visit of $61, which is nearly identical to the revenue per encounter of $60 generated at UTHS. WIC revenue was substantially lower, $21,290, for revenue per encounter of $7.

Total expenses for the primary care clinic were $209,793 for a cost per encounter of $90 and total expenses for WIC were $38,447 for a cost per encounter of $12. These results demonstrate that each product line was unprofitable but the loss per encounter was six times greater for the primary care clinic than for WIC. Details of the analysis are presented in Tables 3 and 4.

An analysis of fixed and variable expenses for each product line revealed important differences in the cost structure of the two product lines. According to these results, increasing the number of WIC encounters would only increase the net loss because the variable costs are greater than the revenue generated. Increasing the

Table 3.
NCFHS Costs and Revenue by Product Line

Expense Object	WIC	Primary Care	Total
Contract Services	-	-	-
Space Lease	$5,506	$9,715	$15,222
Operating Expenses	$2,194	$10,869	$13,063
Office Supplies	$1,013	$2,964	$3,977
Professional Supplies		$6,133	$6,133
Postage	$128	$192	$320
Telephone	$823	$1,235	$2,058
Security	$230	$345	$575
Salaries & Benefits	**$30,746**	**$150,762**	**$181,508**
Total Expenses	**$38,447**	**$171,346**	**$209,793**
Cost per Encounter	$12	$90	$41
Total Revenue	$21,290	$115,381	$138,936
Revenue per Encounter	$7	$61	$27
Net loss per Encounter	$5	$29	$14

number of WIC clients would only increase the variable costs and will not make WIC profitable.

For the primary care clinic, revenue was sufficient to cover variable expenses and make some contribution toward fixed costs. Therefore, increasing the number of patient visits would drive down fixed costs per encounter and improve the financial status of NCFHS.

UTHS divided its expenses into two separate accounts, one for student and employee health services and the other for private patients (for example, contract service agreements, managed care, fee-for-service). The process map for UTHS demonstrated that only one process was used to provide services to all types of clinic patients. For the purposes of this analysis, expenses from the two accounts were combined into one expense report. Costs were then analyzed using the same costing model discussed in the gross-costing section. Since there was only one product, expenses in each category are identical to the expenses in the gross-costing section. The following summarizes the expenses for each category: $113,047 for space rental, $138,289 for fixed and variable operating costs, and $403,730 for fixed and variable salaries and benefits. Fixed and variable costs were the same as in the gross-costing section. Total fixed costs were $258,304 and total variable costs were $396,763.

Table 4.
NCFHS Activities-Based Fixed and Variable Costs

	Primary Care	WIC
Fixed Costs	$83,226	$14,132
Cost per encounter	$44	$4
Variable Costs	$88,058	$24,378
Cost per Encounter	$46	$8
Revenue per Encounter	$61	$7

In the case of the NCFHS, activities-based costing provided valuable information not produced by gross costing. Gross costing demonstrated that salaries and benefits were the major cost category at NCFHS accounting for 87% of total costs. NCFHS could become more profitable by decreasing labor costs. This could be done by increasing the number of paying patient visits, decreasing the number of staff, substituting lower paid staff, or all of these.

To reach the break-even point at NCFHS, total expenses must equal total revenue. Patient rev-

enues for NCFHS were $138,936 for fiscal year 1997 and the total expenses were $209,793. Assuming that revenue per encounter remained constant, patient visits would have to increase by 1,162 visits for total patient visits of 3,057 to reach the break-even point. Given current staffing and scheduling patterns, maximum patient capacity is 2,548 visits. Therefore increasing patient visits alone will not allow NCFHS to break-even.

Activity-based costing provided more specific information about the cost structure at NCFHS. Both WIC and primary care were operating at a deficit but activity-based costing suggested different solutions. Increasing the number of WIC encounters would only increase the net loss because the cost of direct labor is greater than the revenue generated, whereas increasing primary care visits would improve profitability since revenue is greater than variable costs.

Activity-based costing of the primary care clinic at NCFHS and its comparison to UTHS suggest different possibilities for reaching the break-even point. Visit times and direct labor costs were very similar between the two nursing centers. Staffing mix was different with UTHS substituting lower-cost LVNs to perform some nursing activities that were performed by a nurse practitioner at NCFHS. This substitution results in a small increase in total nursing time for each visit but reduces total cost.

Using activities-based costing techniques, total costs per visit at NCFHS were $90 while at UTHS they were $77. The difference in total costs was largely the result of differences in the costs of indirect labor. At NCFHS, the cost ratio of direct to indirect labor was 1:1 while at UTHS the cost ratio was 2:1. This suggests that NCFHS must substantially reduce its indirect labor expense to reach the break-even point.

Scenario analyses were conducted to determine the number of patient visits needed for NCFHS to reach a break-even point. These scenarios examined primary care visits only and did not include WIC. Visit time, indirect labor costs, and direct labor costs were varied in these analyses. The scenario analyses suggested that a break-even point could be reached if NCFHS increased the number of primary health care patient visits to 2,321, an increase of 22%. At this volume of patient visits, the nursing center would increase production from 75% to 91% of operating capacity. Additionally, indirect labor costs must be decreased to a maximum of 25% of total costs.

To survive in the current cost-conscious environment, nursing centers must achieve financial independence. Understanding and managing operational costs are crucial in attaining financial stability. The combined methodologies of gross-costing and activities-based costing to analyze operational costs enhanced understanding of two nursing center's cost structures. Results of this study suggest that indirect labor costs are important indicators of nursing center profitability. From this study, it appears that nursing centers with lower ratios of indirect labor costs to direct labor costs are more likely to be profitable than nursing centers with high ratios of indirect to direct labor costs. Unless nursing centers affiliated with schools of nursing make fiscal awareness and responsibility as much a part of their mission as patient care, closings are inevitable. Dependence upon financial support from charities, grants, and nursing schools, rather than managing operational costs, is no longer acceptable.**$**

REFERENCES

Barger, S.E., & Bridges, W. (1990). An assessment of academic nursing centers. *Nurse Educator, 15*(2), 31- 36.

Barger, S.E., Nugent, K.E., & Bridges, W.C. (1993). Schools with nursing centers: A 5-year follow-up study. *Journal of Professional Nursing, 9*(1), 7-13.

Barger, S.E., & Rosenfeld, P. (1993). Models in community health care: Findings from a national study of community nursing centers. *Nursing & Health Care, 14*(8), 426-431.

Finkler, S.A. (1994). The financial impact of management innovations by health centers. *Journal of Ambulatory Care Management, 18*(2), 15-32.

Gray, P.A. (1993). Can nursing centers provide health care? *Nursing & Health Care, 14*(8), 414-418.

Kerekes, J.J., Jenkins, M.L., & Torrisi, D. (1996). Nurse-managed primary care. *Nursing Management, 27*(2), 44-47.

Kos, B.A., & Rothberg, J.S. (1981). Evaluation of a free-standing nurse clinic. In L.H. Aiken (Ed.), *Health policy and nursing practice* (pp. 19-42). New York: McGraw Hill.

Mackey, T., Adams, J., & McNiel, N.O. (1994). Nursing centers: Service as a business. *Nursing Economic$, 12*(5), 276-282.

Mackey, T., & McNiel, N. (1997). Negotiating private sector partnerships with academic nursing centers. *Nursing Economic$, 15*(1), 52-55.

Saywell, R.M., Wright, L.L., & Flynn, B.C. (1995). A cost analysis of a nurse-managed, voluntary community health clinic. *Journal of Nursing Administration, 25*(10), 17-27.

West, D.A., Hicks, L.L., Balas, E.A., & West, T.D. (1996). Profitable capitation requires accurate costing. *Nursing Economic$, 14*(3), 162-170.

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