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# A Model of Care for Bone Marrow Transplantation Patients

by Kent Giles, M.P.P.M., and William P. Vaughan, M.D.

## IN BRIEF

To overcome problems with traditional care models for bone marrow transplant (BMT) patients, the University of Alabama Hospital merged inpatient and outpatient staff responsible for bone marrow transplant patients. The goal: to expedite patient discharge by providing inpatient services on an outpatient basis. Administrators reasoned that traditional outpatient facilities were ill-equipped to provide follow-up care to recovering BMT patients because these facilities lacked round-the-clock coverage and specialized staff, and were not equipped to follow strict infection control guidelines. The result was that physicians were reluctant to discharge BMT patients until well on their way to recovery. The one-staff model was designed to overcome problems with traditional outpatient care and to provide physicians with "worry-free" early discharge of BMT patients. The model lowered BMT patient care costs and reduced length of stay nearly 30 percent.

**P**roviders of oncology care have been effective in developing and deploying new technology. They have made major strides in increasing survival rates and patient quality of life. Yet in these days of health care reform and managed competition, their ultimate challenge is not only to provide the highest quality of care and facilitate patient access but also to reduce unnecessary expenditures.

An excellent population for which to develop a better, more cost-effective model of care is bone marrow transplantation (BMT) patients. They undergo extensive medical evaluations, require care from several medical specialists, and receive extensive inpatient and outpatient care. They are best served by proactive medical decision making (care paths and multidisciplinary medical

management). In addition, these patients undergo one of the most costly treatment modalities in oncology and face the emotional, spiritual, and financial stressors common to all cancer patients.

The development of the Bone Marrow Transplantation Program at The University of Alabama at Birmingham (UAB) afforded the opportunity to reconsider traditional paradigms. The goal was to reduce costs and at the same time improve quality of care, enhance patient quality of life, provide staff job enrichment, foster patient convenience, and create operational efficiency.

The result was a cost-effective, integrated model of care that uses one staff of care givers in one facility for all phases of patient care—from the time of patient evaluation through the time the patient returns to the care of their primary or referring physician.

## TAILORING THE PROGRAM

Development of the model of care began with three guiding premises. First, no organizational structure or model is sacred. Second, the patient is the focus. And third, inefficient processes result in higher costs, poorer care, and patient and staff dissatisfaction. Any model of care developed had to be one tailor-made for the patient—not one in

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which the patient was forced to fit the model.

Typically, BMT patients require:

- A long duration of care (10 to 20 or more days of preadmission evaluation, 20 to 60 or more days of ICU, and 30 to 100 days of subsequent outpatient care)
- High acuity of inpatient care (Medicare relative weight of 15.2890 and a mean length of stay of 37.8 days)
- Intensive surveillance
- High use of pharmaceuticals, blood products, and infusion
- Proactive decision making and care even when hospitalization is no longer required.

Team members at UAB had to meet these complex patient needs. They also had to face their own challenges. Many had time constraints because of separate management structures and allegiances. All required specialized treatment knowledge, although some had only limited exposure to the entire patient course.

While any model for care that was to be developed and implemented had to be cost effective, successful implementation largely depended on how well the model served the needs of both patients and staff (Table 1). The goals for the model evolved from these challenges, needs, and constraints (Table 2).

Once the challenges and needs were examined, the best solution was to develop a model of care consisting of a single staff of care givers (physicians, nurses, pharmacy, social work, chaplaincy, administration, billing, and consultants). A care team approach was chosen over a compartmentalized approach to care. Care would be provided in one easily accessible location open round the clock.

The only facility capable of meeting all of the requirements was the hospital inpatient unit, and the most

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appropriate nursing staff was the hospital inpatient nursing staff. Only this facility and staff were available 24 hours a day, seven days a week. (The original outpatient clinic was open only weekdays, from 7 a.m. to 6 p.m.) The staff had the level of expertise required to maximize patient care outcomes.

Initially, one inpatient room was converted for outpatient purposes. This dedicated outpatient clinic had curtain dividers to create private examination areas. The full range of outpatient services was available, including transfusions, infusions, nursing assessments, physician

exams, blood draws, skin biopsies, and removal of IV lines.

### OVERCOMING THE OBSTACLES

There were a number of potentially serious obstacles to the implementation of this model. The ambulatory clinic might resent *their* revenue being transferred to the hospital. Nursing would be required to think about the entire episode of care rather than just the hospitalization. The roles of consultants and housestaff, although potentially enhanced, would be affected. Third parties might resist any change in billing or object to loss of control over where the patient receives each phase of care.

Financial risk was an area of concern. The cost per square foot of inpatient space was higher than the cost of outpatient space. No outpatient revenue system existed for managing outpatient charge structures on an inpatient unit. No reimbursement experience existed for this type of unit, and reimbursement could not be assured. Internal budgeting and accounting systems did not provide a mechanism for allocating indirect program costs to the outpatient cost center. There was no method in place for reimbursing the inpatient nursing budget for their efforts in the management of ambulatory patients.

Last were the physical and administrative challenges, which included solving such problems as 1) developing an outpatient facility within an inpatient unit, 2) deciding who would report to whom, and 3) finding out how lost revenue or uncompensated services in one cost center would be compensated for from another.

### POSITIVE RESULTS

Ultimately, all major obstacles were overcome. The most important reasons for this success were an

entrepreneurial, product-line management structure, institutional commitment to excellence in patient care, successful team-building among managers and care givers, and an open dialogue during implementation. As the concept grew, patient and staff feedback was continuously sought. Policy and other modifications were made as needed. Entirely new billing systems were developed, and new budgetary structures were created.

Because the hospital was in an initial stage of growth, the model was able to take advantage of initial staff overcapacity. Physicians, nurses, and other team members had the opportunity to learn to perform simultaneous, intensive inpatient care and less intensive outpatient care without the stress of overutilization.

The primary reason for the establishment of the one-staff model was the expectation that results would include higher patient and staff satisfaction and improved patient outcomes. Indeed, patients, referring physicians, and third parties rapidly accepted the model during the first year of implementation.

Lost revenue and underutilization of expensive space were offset by efficiencies in the system. After-hours patient service gaps and opportunities for medical mismanagement, for example, were eliminated. Ambulatory patients could come directly to the BMT Unit any time of day or night to receive care from nursing and physician staff who were expert and known to them. No readmissions—because of the unavailability of appropriate facilities or staff—were required. In the third quarter of operation, a patient satisfaction score of 97 percent was noted for this unit—the best in the UAB hospital system.

Using single staff for both inpatient and outpatient care resulted in earlier discharges of patients.

**TABLE 1: PATIENT AND STAFF NEEDS**

**PATIENT NEEDS**

- Continuity of care and security in knowing their care givers
- Access to expert, familiar, acute care on nights, weekends, and holidays
- Flexible family access and education
- Simplified billing and up-front knowledge of costs
- Personalized attention
- Effective education
- Patient and family housing and security
- Convenience and simplicity

**STAFF NEEDS**

- Good patient outcomes (low mortality, high disease free survival)
- Involvement and awareness of the total process from consult to long-term follow-up
- Reduced staff turnover
- Simplified yet specialized patient care locations
- Access to necessary services at all times
- Positive multidisciplinary interactions
- Role reinforcement

**TABLE 2: GOALS AND OBJECTIVES OF THE ONE STAFF MODEL**

- Design a model of care conforming to the patient rather than forcing the patient to conform to the model
- Implement a model flexible enough to change with new developments in medical technology
- Develop a care team and delivery system that promotes staff satisfaction and reduces turnover
- Develop a sense of esprit de corps among the care team so that patient outcomes could be improved through greater teamwork and better communication
- Develop a care model where everyone feels ownership of the outcome rather than just accepting responsibility for their sector of care
- Ensure that all needed patient support services are provided in a quality manner regardless of their individual return on investment.
- Maintain the highest possible levels of patient satisfaction
- Ensure that reimbursement is sufficient to support the care model
- Reduce the true costs of patient care by implementing a proactive medical management system that focuses on preventing rather than managing complications
- Use optimally all human and clinical resources

During the first year, the average length of stay (29.2 days) was 12 days below the national average (Figure 1). At the same time, physician efficiency was increased because patient care was consolidated in one location. A single dedicated nursing staff (who already knew the patients) was able to provide a higher level of care. The result was a shortened length of stay; the hospital increased the potential annual number of transplants per bed from

7.5 to 11. Even with the loss of space to outpatient care, about 77 cases per year could be transplanted, compared with 52 cases per year under the traditional model.

The cost savings resulting from the efficiencies of the single staff/facility model were substantial.

- An outpatient billing system was developed. The system, which could be accessed by the inpatient unit secretary, eliminated the need for an additional outpatient billing clerk

**FIGURE 1: COST SAVINGS FROM REDUCTIONS IN LENGTH OF STAY**

Average total costs per inpatient day	\$3,043
Variable costs per inpatient day <sup>1</sup>	1,522 <sup>2</sup>
Number of inpatient days eliminated	12
Estimated inpatients savings per audit	18,264
Number of patients per year	55

Total annual estimated inpatient savings **\$1,004,520<sup>3</sup>**



<sup>1</sup> National average. Source: *St. Anthony's DRG Working Guidebook*, 1992 edition.  
<sup>2</sup> Advisory Board estimates variable costs approximately 50 percent of total costs.  
<sup>3</sup> Additional outpatient expenses from earlier discharge not included, roughly equivalent to cost of one inpatient day (less than \$4,000 per patient).

**FIGURE 2: COST SAVINGS FROM CONSOLIDATION OF STAFF**

POSITIONS ELIMINATED	REASON	SAVINGS
2.0 FTE RNs	Consolidation allowed inpatient nursing staff to take on all outpatient duties without adding any additional personnel.	\$106,600 <sup>1</sup>
1.0 FTE Unit Clerk	Consolidation of billing eliminated need for outpatient billing clerk.	\$16,000
0.5 FTE Social Worker	Consolidation of preadmission, inpatient, and acute outpatient care into one facility increased efficiency of social support services.	\$19,600
<b>3.5 FTEs</b>		<b>\$142,200</b>

<sup>1</sup>Includes \$76,000 for regular salary and benefits plus \$30,600 for on-call and overtime pay.

and the generation of a separate outpatient bill.

- Outpatient care in one facility resulted in outpatient assessments and therapies without duplication of nursing staff.
- The need for evening and weekend on-call pay for outpatient nurses was eliminated.
- Efficiency of social work, chaplaincy, and other support services was increased due to the consolidation of preadmission, inpatient, and

acute outpatient care into one facility managed by one staff (Figure 2).

- Lost time and costs associated with transferring medical records were eliminated.

These cost savings and the ability to more efficiently use the existing facility more than compensated for the revenue lost by taking out one bed in inpatient service and converting the space into an ambulatory clinic.

Other longer term advantages are

anticipated. Excellent staff morale may result in lower staff turnover and a higher level of commitment. High patient satisfaction and good outcomes provide an opportunity to negotiate from a standpoint of strength with third-party payors and help to protect valuable referrals.

A number of improvements, most in the direction of expanding the concept, have been made. For example, nursing and facility staff are involved with the patients from the time of decision to transplant until the time the patient is transferred back to the care of the primary care physician.

All initial goals were met. The one-staff model has been well accepted by our own staff and administration, our patients, and our referring physicians. The model represents the kind of common sense thinking that can shift paradigms and improve patient services. The effective implementation of this model shows that it is possible to develop care models that provide high patient satisfaction, quality clinical outcomes, staff satisfaction, and cost reductions.

The true test of a care model should not be how cheaply one can buy each phase of care, but rather what is the total cost for a given patient outcome. Outcomes should be measured in terms of improvements in quality of life related to dollars spent, patient satisfaction, and, of course, long-term disease-free survival. The total cost should be calculated for all costs incurred for the entire care episode (diagnosis through recovery) rather than for only the cost of the hospital admission. Implementation of the one-staff model for episodes of care such as bone marrow transplantation or for entire cancer programs can result in a synergy between quality of care and cost reduction...in other words, value. ■