

A Clinician-driven Home Care Delivery System

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The financial, entrepreneurial, administrative, and legal forces acting within the home care arena make it difficult for clinicians to develop and operate home care initiatives within an academic setting. HomeMed is a clinician-initiated and -directed home care delivery system wholly owned by the University of Michigan. The advantages of a clinician-directed system include:

- Assurance that clinical and patient-based factors are the primary determinants of strategic and procedural decisions;
- Responsiveness of the system to clinician needs;
- Maintenance of an important role for the referring physician in home care;
- Economical clinical research by facilitation of protocol therapy in ambulatory and home settings;
- Reduction of lengths of hospital stays through clinician initiatives;
- Incorporation of outcome analysis and other research programs into the mission of the system;
- Clinician commitment to success of the system; and
- Clinician input on revenue use.

Potential disadvantages of a clinician-based system include:

- Entrepreneurial, financial, and legal naivete;
- Disconnection from institutional administrative and data management resources; and
- Inadequate clinician interest and commitment.

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The University of Michigan HomeMed experience demonstrates a model of clinician-initiated and -directed home care delivery that has been innovative, profitable, and clinically excellent, has engendered broad physician, nurse, pharmacist, and social worker enthusiasm, and has supported individual investigator clinical protocols as well as broad outcomes research initiatives. It is concluded that a clinician-initiated and -directed home care program is feasible and effective, and in some settings may be optimal. *Cancer* 1993; 72:3542-7.

Key words: home care, health care delivery, multidisciplinary care.

Patient-based problems confronted by health care clinicians (physicians, nurses, pharmacists, dietitians, and physician associates) involved in direct, comprehensive patient care often stimulate the development of innovative therapeutic modalities and strategies. These medical innovations may in turn spur the development of alternate health care delivery systems. The evolution of parenteral nutrition therapy offers an example. The need for a method to feed patients who could not meet their nutritional requirements enterally stimulated Rhoads, Dudrick, and associates to initiate a concerted laboratory and clinical research program that led to the development of total parenteral nutrition.¹ The clinical successes achieved through the in-hospital use of total parenteral nutrition led to the creation of home parenteral nutrition for carefully selected patients under the watchful eyes of a few expert and dedicated clinicians.² These therapies did not come into widespread use, however, until the expert innovators distilled from their experiences the clinical elements required to make routine use of total parenteral nutrition and home parenteral nutrition safe and effective. The innovators' insights led to the formation of nutrition support teams with the expertise and empowerment to create both inpatient and outpatient multidisciplinary nutrition groups responsible for supervising specialized nutrition therapy,

establishing appropriate policies and procedures for nutrition support and venous access, overseeing clinical monitoring and quality assurance functions, and developing cost monitoring and reimbursement methods.^{3,4}

Similar creative forces have been active within the home infusion therapy field during the past 5 years.⁵ Innovative clinicians have recognized both the medical and psychosocial advantages of providing infusion therapies in the home setting. In fact, some therapies are best administered in the home setting. For example, treatment of febrile neutropenia in an outpatient or home setting can shield patients from the virulent microbes associated with nosocomial infections. Similarly, posttransplant antirejection therapy is often best administered in an outpatient or home setting, away from hospital-based pathogens and in an environment conducive to and encouraging of rehabilitation. In certain situations, home infusion therapy may be the only effective palliation for terminally ill patients who depend on high-technology therapies.^{6,7} A theme common to the creation of all of these innovative therapies is the seminal role of clinicians actively caring for patients with unusual, atypical, or difficult care problems. The clinicians recognized the problems and suffering of their patients, and were motivated by their clinical and compassionate instincts to develop innovative and practical therapeutic and health care delivery approaches. Not incidentally, many of these innovative approaches have also proved to be cost-effective for the providing institutions, and even for the health care system at large.

Unfortunately, the financial, entrepreneurial, administrative, and legal forces acting within the home care arena make it difficult for clinicians to develop and operate home care organizations. The patient care instincts that motivate clinicians to develop new therapies often cause clinicians to avoid the potentially overwhelming responsibilities associated with institutionalizing preliminary efforts that have achieved success. HomeMed, a home infusion therapy venture established by the University of Michigan, offers an example of a clinician-oriented and -operated health care delivery system that meets the home care needs of more than 200 patients at any given time and that has remained therapeutically innovative, strategically forward looking, and financially beneficial to clinical departments and the broader institution.

The HomeMed Organization

Historical Context

Before the formation of HomeMed in 1989, there were only limited coordinated home care efforts at the Uni-

versity of Michigan Hospitals (UMH).⁸ The multidisciplinary Parenteral and Enteral Nutrition Team supervised home parenteral nutrition patients and drug-related home infusion therapies were supervised by the Home Medication Infusion Service. Other therapies were offered on a more sporadic basis. These early home care efforts were inpatient based. To meet the logistic and clinical demands posed by home care, primary responsibility for the home care involved with infusion therapy was contracted out to private-sector vendors. This resulted in lack of continuity of care, little control by patient care clinicians over quality of care and care standards, minimal clinician and institutional input into the types of therapy available, absence of opportunities for clinicians and UMH to learn home care as a potential future strategic asset, and lost reimbursement opportunities for care providers and UMH.

In 1989 HomeMed was created as a home infusion therapy venture solely owned by the University of Michigan. It was structured as a collaborative effort with a national vendor; this vendor-associate provided compounding, logistic, and reimbursement services. The University retained responsibility for patient identification and recruitment, patient pre-discharge training, and clinical supervision of home care through vendor and private nursing agency intermediaries. This structure facilitated some UMH clinician input into quality of care and care protocols, captured some reimbursement for home care activities of the institution, and enhanced clinician and UMH opportunities to learn home care and the home care business. Additionally, HomeMed was chartered to set aside 5% of its net revenues to fund research into home therapies and home care delivery systems, and 10% of its net revenues to support charity care. These objectives were achieved with minimal financial risk and overhead for the University, because the vendor-associate provided much of the personnel and the physical plant.

Although the benefits of this venture were substantial, HomeMed and University clinicians became increasingly frustrated with the venture's limitations. Responsibility for in-home nursing visits was still being delegated to non-University clinicians, the vendor-associate exercised control over disbursement of charity funds, new therapies could not be undertaken without the consent of the vendor-associate, and care protocols were created primarily by the vendor-associate. Furthermore, the vendor-associate was responsible for billing, collections, and reimbursement, so UMH did not have the opportunity to learn the home care business or integrate home care into the overall ambulatory care—inpatient care—home care continuum.

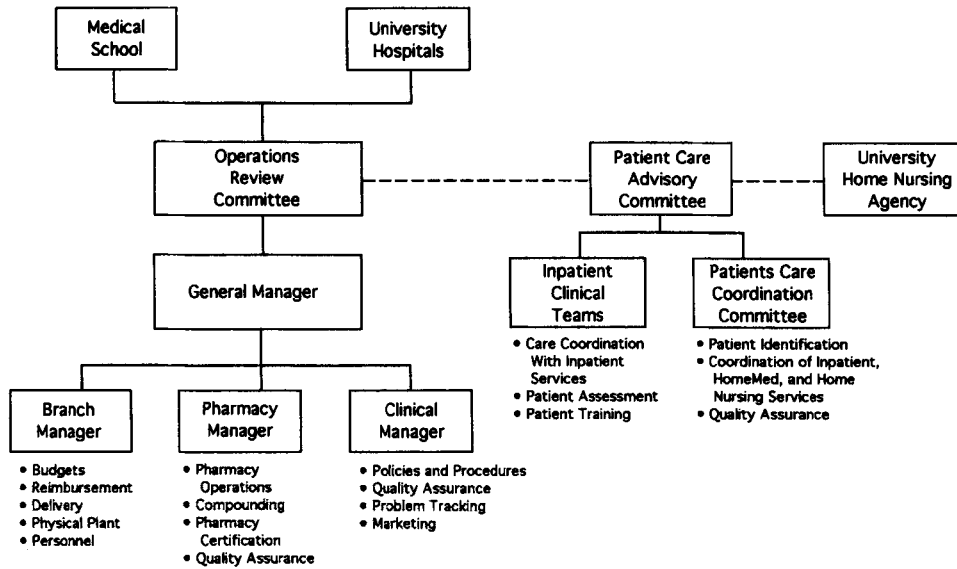


Figure 1. The Organization of HomeMed (see text for details).

To overcome the limitations of this administratively and financially successful venture, HomeMed clinicians achieved a restructuring of HomeMed. With expiration of the original 3-year contract with its vendor-associate, HomeMed reached an agreement with a different vendor. Clinicians and the University assumed responsibility for all aspects of HomeMed's operation and patient care. The new vendor contracted to provide product (medications, pumps, etc.). Additionally, the vendor has provided consulting support to the University for setting up an off-site compounding facility, a billing and reimbursement program, a delivery network, and a University-directed home nursing agency. The University and the vendor-associate worked jointly to prepare HomeMed for Joint Commission for the Ac-

creditation of Healthcare Organizations accreditation. Under this new arrangement, HomeMed's clinical activity has continued to grow, net revenue has increased, care coordination across the entire patient care continuum has been achieved, UMH and its clinicians now fully control the quality and breadth of patient services provided, new therapies are continually being evaluated, and accreditation by the Joint Commission for the Accreditation of Healthcare Organizations has been achieved.

The importance of clinician control cannot be over-emphasized with regard to the development of HomeMed. Clinicians conceived the HomeMed concept and created the organization. Before beginning the relationship with the second vendor, at a time when the

Figure 2. HomeMed therapy starts. The number of patients started on a HomeMed therapy for each 6-month period has increased steadily since the foundation of HomeMed in 1989. In December 1992, more than 80 patients were started on HomeMed therapies.

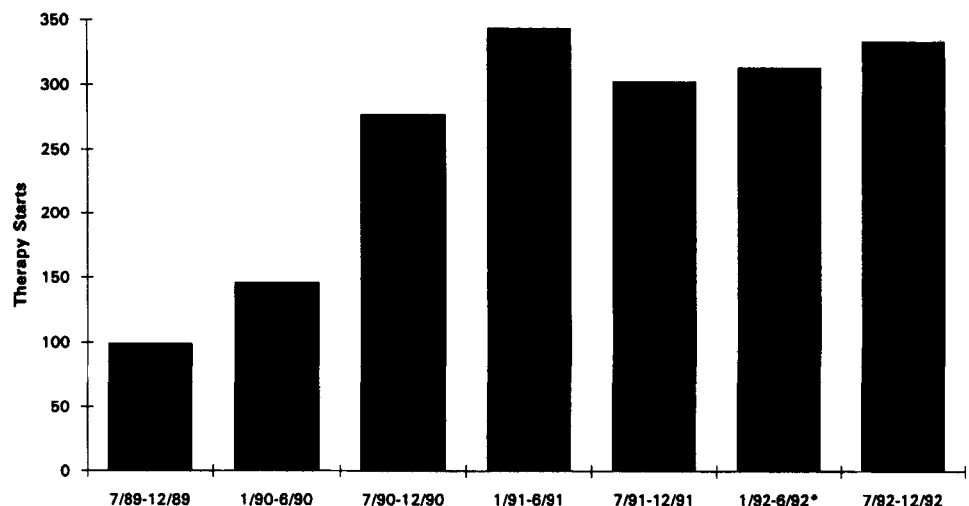


Table 1. Home Therapies Offered by HomeMed

Total parenteral nutrition
Enteral nutrition
Antibiotics
Antivirals
Antifungals
Pain management
Hydration
Chemotherapy
Chelation therapy
Tocolytic therapy
Heparin therapy
Aerosolized pentamidine
Post-transplant antirejection therapy
Colony stimulating factors
Erythropoietin
Immune globulin therapy
Cardiovascular therapies

financial and administrative overseers of HomeMed were quite satisfied with its function and profitability, it was the clinicians running HomeMed and caring for its patients who mandated its restructuring. The outcome of this restructuring, clinically, financially, and administratively, has been met with approval throughout the Medical Center.

HomeMed Organization

The organization of HomeMed is summarized in Figure 1. The Operations Review Committee (ORC) functions as the HomeMed board of directors. Chaired by the HomeMed physician director, its members include representatives of the medical school faculty, the Dean’s Office, the faculty practice plans, the hospital administration, the home nursing agency, the nonphysician hospital clinicians, and the vendor-associate, and the HomeMed general and clinical managers. Six of the

eleven ORC members are clinicians, including two physicians, three nurses, and one pharmacist. Through the general manager, the ORC is responsible for supervising HomeMed budgeting and operations. The ORC physician chairperson coordinates these functions with the activities of the Patient Care Advisory Committee (PCAC). Responsibility for HomeMed strategic planning resides within the ORC. Additional important functions of the ORC and its chair include keeping various University constituencies informed and supportive of HomeMed activities and initiatives, and protecting the independence of the PCAC from financial and administrative impingement on patient care activities.

The PCAC is responsible for the patient care activities of HomeMed. It too is chaired by the physician director of HomeMed, assuring congruence of the clinical functions and strategic goals of the organization. The chair and the HomeMed clinical manager play leading roles in the PCAC. The additional primary members of the PCAC are inpatient continuing care coordinators (discharge planners), clinicians on the inpatient clinical teams, and nurses working in the home agency. The inpatient clinical teams include the Parenteral and Enteral Nutrition Team, the Home Enteral Nutrition Team, and the Home Medication Infusion Service (responsible for drug-related home infusion care such as anti-infective, antineoplastic, and pain management therapies). The independence of the PCAC is carefully guarded by its members and the HomeMed organization to ensure that patient care issues are dealt with on their clinical merits, with only subsidiary consideration of financial and administrative consequences. The PCAC is the seat of clinical innovation within HomeMed. It is here that new therapies are conceived, implemented, monitored, and institutionalized.

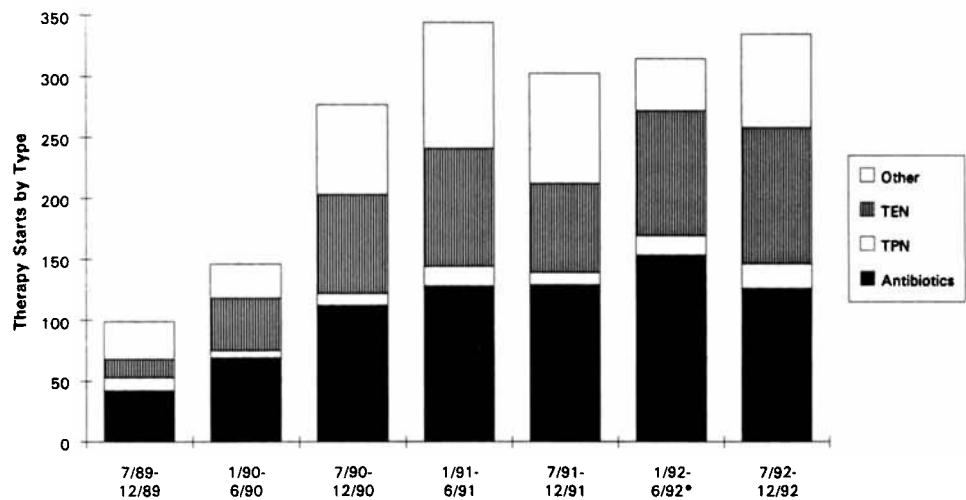


Figure 3. HomeMed therapy starts by type. Consistent growth has been seen in all categories since HomeMed was founded in 1989. (TPN, total parenteral nutrition; TEN, total enteral nutrition; Other, see Table 1). *Contract initiated with new vendor-associate, 4/1/92.

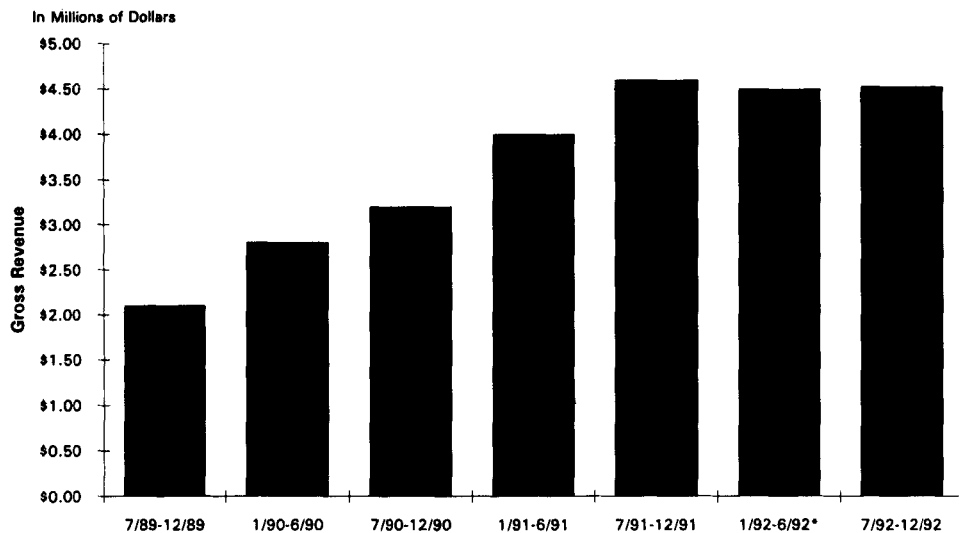


Figure 4. Gross revenue. Gross revenue has increased steadily since HomeMed was founded in 1989. A significant portion of the generated revenue has been returned directly to clinical departments to support professional clinical activities. *Contract initiated with new vendor-associate, 4/1/92. New contract resulted in approx 10% decrease in charges.

It is also through the PCAC that home care activities of inpatient services are supported. For example, the adult bone marrow transplant (BMT) program at UMH chooses to coordinate postdischarge therapies for BMT patients such as home antibiotics, colony-stimulating factors, antirejection therapy, and transfusion therapy. The PCAC works with the BMT service to provide the necessary products, documentation, and home nursing expertise; in return, the BMT program receives support for patient training and home therapy monitoring activities while BMT clinicians are relieved of organizational and logistic burdens.

The organization of HomeMed ensures the primacy of clinical issues. It further benefits clinicians by facilitating clinician involvement with HomeMed management and innovation. Finally, it provides opportunities for departmental reimbursement for home care related training and monitoring expenses.

HomeMed Clinical and Financial Activities

Since its creation in 1989, HomeMed has met or exceeded all of its patient activity and financial goals. Except for a dip in patient discharges to HomeMed coinciding with the change in vendors, clinical activity has risen steadily since 1989 (Fig. 2). Currently, approximately two patients each day are discharged from UMH to HomeMed therapies. More than 15 different therapies are supported by HomeMed (Table 1). Because of the clinical interests of HomeMed's clinician founders, the therapies most fully developed and heavily used are nutrition support (both enteral and parenteral) and home antibiotics (Fig. 3). As the organization matures, the distribution of discharges is becoming

more even. An increase in the use of home chemotherapy and support of neutropenic patients coincides with the growth of the BMT service and the assumption of the directorship of HomeMed by a surgical oncologist; this is further evidence of the dominance of clinician influences on the activities of HomeMed.

Despite its clinical orientation, HomeMed has generated more than \$25 million in gross revenue (Fig. 4). Approximately \$800,000 of this has been returned directly to clinical departments to support professional services provided by clinicians.

Research

By setting aside 5% of its net revenues to establish a peer-reviewed research fund, HomeMed has been able to support a number of seed projects. These projects have included investigations of intravenous access devices, bioavailability of intravenously administered colony-stimulating factors, and all-in-one total parenteral nutrition formulations. The HomeMed research committee is currently considering funding a large-scale, home infusion therapy outcomes research project in collaboration with the HomeMed vendor-associate.

Summary

HomeMed is a model of a home care delivery system developed, operated, and directed by clinicians. Without sacrificing profitability, this clinical orientation has allowed HomeMed to provide new and innovative high-quality home therapies. Patients, clinicians, and

the University have benefited. This model may have broad applicability not only to other institutions, but also to other clinical settings.

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