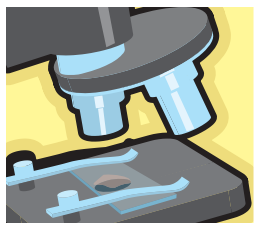
Responsible construction guides DHMC's high-profile infection control project… page 2



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Skylight

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About the People and Programs at Dartmouth-Hitchcock Medical Center

Dartmouth-Hitchcock Clinic Celebrates 75 Years

"The founding of the clinic in 1927 and the partnership with Mary Hitchcock and Dartmouth College marks the beginning of what we know today as the Dartmouth-Hitchcock Medical Center," says John Collins, CEO of the Dartmouth-Hitchcock Clinic. "It is a story that describes how a physician group practice, a hospital, and a college came together and—against seemingly insurmountable odds—built an institution that others said could not prosper in our rural and relatively isolated area of northern New England."

For 75 years, the clinic has played a pivotal role in health care in the Upper Valley—even though policies, politics, people, accepted practice, and a remote location threatened its success every step of the way.

Hitchcock Clinic members in 1933 from left to right. Back row: L.K. Sycamore, J. A. Coyle, J.J. Boardman, C.C. Stewart. Front row: H.T. French, J.P. Bowler, P. Bartlett, E. H. Carelton, J.F. Gile. Bowler had the idea and Boardman, French, Gile, and Sycamore joined as founding members in 1927.

Building a Rural Healthcare Resource

In 1927, Dr. John Bowler and his colleagues formed a partnership committed to the vision of a multi-specialty group practice. Bowler believed that if they pooled their incomes, planned on the basis of community needs, partnered with a community hospital, and invested in clinical programs that the community needed the most, the group could build a strong, rural healthcare institution.

These four doctors, practicing on Main Street in downtown Hanover, were the founders of the Hitchcock Clinic. They paid themselves modest and equal salaries in order to support the community hospital, Mary Hitchcock, and the two-year medical degree program at Dartmouth Medical School (DMS). Dr. Bowler and his colleagues were clear right from the beginning that surplus funds would be used to improve and expand programs. In addition to subsidizing the hospital during the lean years, clinic proceeds helped create a more comprehensive, sophisticated medical center than would have been possible in a rural area with no highways.

Part of the Hitchcock Clinic's initial success was due to Bowler's lengthy tenure and commitment to core values. He simultaneously held the role of clinic president, medical school dean, and hospital chief of staff for many years, establishing the Dartmouth-Hitchcock tradition of linking group practice and academic medicine.

Sea Changes

By the 1960s, change was on the horizon. There were significant social and economic forces, such as the passage of Medicare and Medicaid. In addition, the college, the hospital, and the clinic were at a crossroads over their collective identity—especially over the decision to either close the medical school completely or resurrect the full MD-granting program.

"It was an interesting organizational challenge," says John Hennessey, former trustee and chair of both the MHMH and DHMC Boards and Professor Emeritus of organizational behavior at the Amos Tuck School of Business at Dartmouth College. "Three organizations were coming together for a common purpose, and trying to work together in the midst of natural professional and creative tensions."

It took several rounds of compromise and genuine sacrifice. It wasn't going to be easy to rebuild a medical school in a rural area, and each entity had distinct preferences and motivations. In order to succeed, all three players needed to redefine themselves: the clinic doctors had expand their commitment to teaching and research; the college had to commit to funding and staffing the "start-up" medical school; and Mary Hitchcock needed to evolve from a regional referral center to a teaching hospital.

Defining and creating the Dartmouth-Hitchcock Medical Center was the first step. The idea of an integrated academic medical center created common ground for all three entities—and provided a stage for planning, effective communication, and establishing priorities. Everyone agreed that a mission statement that incorporated research, education, and patient care would ultimately serve them all.

Dr. Richard Cardozo, clinic president from 1974 to 1983, helped shape the evolving medical center and developed the clinic into a modern academic group practice. By the early 1970s, DMS had returned to a full MD-granting program, the residency programs had expanded, and clinic physicians served as both DMS clinical faculty and Mary Hitchcock medical staff.

Growth beyond Anyone's Dreams

Soon it was apparent that the medical enterprise had outgrown its space in Hanover.

Expansion of research and increasing clinical sophistication sparked the move to *Continued on p. 2*

IN HONOR OF A DOCTOR

Borden Avery had heart troubles, but care at DHMC and the surgical skills of Stephen Plume, MD, helped him live a long and happy life. To show appreciation for the patient care that Plume provided—and to honor and recognize Plume's contributions to the medical practice of cardiothoracic surgery—the Avery family recently announced a gift of $1 million to DHMC.

"I just haven't enough words to describe my admiration for Dr. Plume," said Louise Avery, Borden's wife, after the gift was announced at Plume's retirement party.

The Averys have long contributed to DHMC, but this gift is "a completely unexpected and wonderfully generous gesture by the Averys," said Plume. Plume—who contributed to the Dartmouth-Hitchcock enter- *Continued on p. 3*

Dr. Stephen Plume (left) is surprised at his retirement party by a $1 million endowment gift from the Avery family. Louise Avery and son Allen share the moment.

Clinic 75th Anniversary

Continued from p. 1

a new Lebanon facility in 1990. It was the culmination of years of planning around the vision of delivering the very best health care to patients, and marked the beginning of DHMC's national reputation as a teaching and research institution.

"No other academic medical center has been able to start a physical plant from scratch," says Hennessey. "Over the years, DHMC has had the good fortune to develop the programs, the people, and the promise."

Collins agrees. "Our reputation began to grow significantly during this time. In addition, we developed a regional group practice system in Manchester, Nashua, Concord, Keene, and elsewhere. We created the Dartmouth-Hitchcock Alliance—a network of healthcare facilities throughout New England that share our values—underscoring our truly collaborative approach to health care."

Quality emerged as a theme for the institution during Dr. Stephen Plume's ten-year tenure as clinic president (1990 to 2000). Plume led the effort to embrace process improvement, to insist that decisions be both data and mission driven, and to recognize that it took inclusive processes and teams of people to address the challenges facing academic medicine today.

"No other academic medical center has been able to start a physical plant from scratch."

In the late 1990s, the Hitchcock Clinic was renamed the Dartmouth-Hitchcock Clinic, reinforcing the partnership which commenced almost 70 years ago. Despite enormous change and growth over the years, the underpinning values—like quality—remained. Plume speaks of "good-hearted folks working together with genuine mutual respect. And not just to deliver health care, but to understand what works and what could work better."

Diamond in the Woods

The foundation laid long ago has provided the Dartmouth-Hitchcock Clinic with an uncommon stability. The vision and mission have remained true, and strong, effective leadership by all eight presidents has advanced the clinic to a national leadership position.

We are on the cutting edge with resources like the Children's Hospital at Dartmouth (CHaD) and Norris Cotton Cancer Center (NCCC), New Hampshire's only National Cancer Institute designated comprehensive cancer center. We are home to leading specialists and researchers who provide care in almost every area of medicine and share a common commitment to finding cost-effective and innovative ways to meet the health care needs of the community.

"The physicians of the clinic, both past and present, have much of which to be proud," says Thomas A. Colacchio, MD, FACS, Professor of Surgery and President of the Dartmouth-Hitchcock Clinic. "The future is bright and we look forward to the challenges of meeting the needs of our patients, generating new knowledge, and educating the next generation of physicians."

A **Responsible** Approach to CONSTRUCTION

In the West Patient Tower on Level 1, DHMC Engineering added seven beds to the Hematology/Oncology Special Care Unit (HSCU). This new space will be utilized for allogeneic transplants (a technique which uses marrow from an unrelated donor)—a program that is growing rapidly under the direction of Kenneth Meehan, MD, Director of the Bone Marrow Transplant (BMT) Program.

But the project isn't as straightforward as it sounds. Renovation occurred next door to a patient care unit with immunocompromised patients. During three months of construction, Engineering, Infection Control, and HSCU worked hard to keep the renovation activity in Pod 3 separated from Pod 4, an area with patients that have received a bone marrow transplant or are receiving chemotherapy.

Phil Lafata, Project Engineer with McCarthy, changes one of three screens in the HEPA filter. In the background, Raymond Dauphinais, McCarthy's Project Safety Coordinator, evaluates building plans to determine which air safety measures will be used for the project.

"Given the extent of the renovation and its proximity to patients whose immune systems are most challenged, this new construction is one of the most complex that Engineering has undertaken," notes Steve Cutter, Director, Bio-Medical & Facilities Engineering.

Almost a year of planning preceded the renovation. In December 2001, Steve Stark, Construction Project Manager, and Susan M. Donnelly, Senior Drafter, started discussing development plans with the HSCU team and Judy Ptak, RN, MSN, Infection Control Practitioner.

"When you don't have an immune system, you're much more susceptible to demolition dust, which may include mold spores," says Ptak. "Mold can grow in walls, and construction disturbs a lot of that. It's not a problem for a normal immune system, but can cause an infection in hematology/oncology patients."

Engineering built a temporary partition from floor to slab to enclose construction. Then the renovation work was done from the outside in. "We used a window as our entry and exit to the area," says Stark. "We built a ramp and removed all debris through the window. It was challenging, but we made sure that all construction was away from the unit and the patients."

The construction area was made as airtight as possible to contain construction dust and debris. "We made sure that no air infiltrated the surrounding area. Air pressure was monitored at all times by a meter and we had a back-up fan as well," says Stark. "A three-filter system cleaned air before it was blown outside, away from the corridor and patient rooms."

Ptak carefully monitored lab reports for any fungal cultures of patients; positive results would trigger an immediate investigation. "Engineering was great at being able to think of ways to keep construction sites as isolated as possible," she says. "If there were infections, we were going to look at the situation and decide whether to close the HSCU or if the construction area was sealed well enough." (Fortunately, there were no concerns.)

In addition to keeping patient care areas safe, the team gave great thought to what the new unit should look like. Donnelly lists a few of the updates: "We reworked the nurses station, replaced the heating systems with radiant heat, moved the air diffusers so there was less draft directly on the patient, moved the nurse call button for easier access, and made sure that all surfaces—including the ceilings—were washable."

You may be surprised to learn that the renovation of the BMT unit is not related to Project for Progress expansion. Every day, an in-house team of experts manages smaller, complex construction projects throughout the institution. In fact, DHMC is one of the few hospitals with a full-time staff for complex design and construction projects.

"People may not realize that we have the capacity to do this type of work," says Stark. "We don't just build an office here or there, but we complete very sophisticated work—like the BMT renovation—that involves a lot of preparation, planning, design, and budgeting."

Phase one of the quarter million dollar project was completed in September and patients moved into Pod 3 in early October. Phase two, updating Pod 4, is in progress.

"This was a potentially risky situation for some of the patients," says Ptak. "Everyone—the HSCU unit, the in-house design team, the project supervisor and crew, and Infection Control—cooperated to minimize the risk." Cutter agrees: "It was a responsible approach to construction."

The Air You Breathe

A ladder, tools, and a flashlight used to be all maintenance workers needed to do repair work above ceiling tiles. But many facilities, including DHMC, are going the extra mile and using plastic barriers from floor to ceiling to make sure that air from the work area doesn't circulate into occupied spaces. This concept, called containment, was primarily used during asbestos removal. Today, it is being adopted for everyday maintenance in patient care and employee work areas.

"How you control air quality during construction is important," says Steve Cutter, Director, Bio-Medical & Facilities Engineering. "Certain construction activities stir things up inside and outside the building—dust, dirt, molds, spores, cement particles, sprayed-on fireproofing. More sophisticated measures are used even for maintenance issues."

In addition to containment, healthcare construction engineers tackle issues such as traffic control, soundproofing, air exchange rates and HEPA-filtering, monitoring air pressure, and debris removal. Many of these protective procedures are included in a recently published set of standards published by the Center for Disease Control. DHMC, however, has been ahead of the curve.

"We've used these steps for two years, and evolve more stringent procedures as concerns arise," says Cutter. Every project at DHMC, for example, uses an Infection Control Risk Assessment (ICRA), a measure strongly supported by the American Institute of Architects. An ICRA brings together a multi-disciplinary group—including infection control—at the initial stages of planning and design to look at all aspects of the development. "We look at the project, the area, the adjacent populations, and the risks involved. The primary purpose is to anticipate the risks that the activity poses to staff and patients, and develop strategies to minimize them."

Although it may seem that hospital-related infections are frequently in the news, "very few of them are related to construction," Cutter says. "But because construction has the potential to create problems, we are proactive with every single project whether it is a simple maintenance procedure or a significant renovation."