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BREAKING DOWN THE BARRIERS

RESULTS FROM AN INNOVATIVE INTERDISCIPLINARY PROGRAM

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Breaking Down the Barriers: Results from an Innovative Interdisciplinary Program

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Introduction

In a previous paper,[1] we documented the benefits and challenges of developing interdisciplinary centers of excellence organized in seamless, well integrated clinical care environments that bring together the various disciplines needed to provide patient-centered care, to educate trainees, and to conduct research into a particular disease or episode of care. Continued changes in health care make it incumbent on all providers to organize their resources to improve service, outcomes, and value, particularly given the widespread availability of provider performance data.

Our previous article described why and how academic health centers (AHCs) should develop interdisciplinary programs despite the resistance to change typically encountered when developing new organizational models. Increasingly, AHCs must demonstrate the most effective outcomes and costs per episode of care in their communities to remain relevant and to thrive in an era certain to be more challenging than the past decade. Most AHC faculty are organized in unified practice plans which represents a tremendous competitive advantage. However, some AHCs will lose this advantage unless they can evolve to compete with integrated health systems that increasingly employ large numbers of physicians and can more readily establish interdisciplinary programs organized to meet patient and payor needs.

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In this paper, we provide an in-depth case study of a highly successful interdisciplinary program, the Emory Transplant Center (ETC), and the opportunities and improvements enabled by this new model. Many of the approaches and lessons learned in building an interdisciplinary transplant program should be readily adapted to other diseases and programs in both academic health centers and non-academic health systems.

Models of Integration

In our previous paper on interdisciplinary institutes, we showed that integration in provider organizations traditionally has consisted mostly of "horizontal integration" that enables different specialists who provide the same or similar services to collaborate or share technologies or facilities.[2] While such collaboration, for instance, might allow neurologists, pulmonologists and psychiatrists to share a sleep disorder clinic and lab or for orthopedic and neurosurgical spine surgeons to share equipment and clinics, it generally fails to result in alignment of business functions and patient care to provide a truly integrated, patient-centered clinical environment.[3]

We described a more robust "vertically integrated" approach to patient-centered care, education and research which "brings together the multiple clinical specialists and scientists who have either a primary or other important relation to a particular patient population or disease state, regardless of whether they are similarly situated."[4] A comprehensive vertically integrated program also consolidates key financial, administrative and management functions within the integrated unit, usually a designated center or institute. In an AHC, such an approach should also integrate the teaching and research functions. Others have since called for the further development of fully integrated models of care along the lines we described.[5,6]

Transplantation at Emory

Creating a vertically integrated center requires sophisticated planning and strong, dedicated leadership. Emory University's Woodruff Health Sciences Center (WHSC) leadership embarked on a wide-ranging effort beginning in 2004 to become a national leader in interdisciplinary patient-centered care, discovery and education. WHSC leadership recognized that providing quality, affordable health care and the best training and translational science lay in developing integrated, interdisciplinary care, discovery, and learning environments. They were determined to leverage the Health Science Center's clinical and academic capabilities across its many units (including the Medical, Nursing, and Public Health Schools, as well as Yerkes National Primate Center, and Emory Healthcare) to help transform health care. (Fig. 1)

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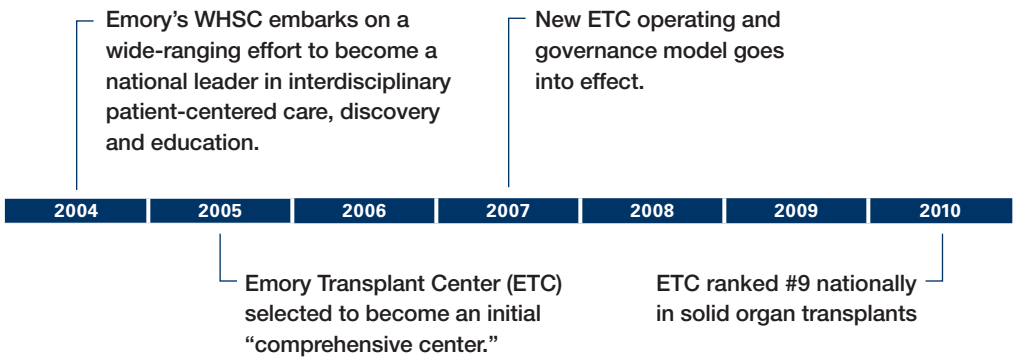
FIG. 1

Evolution of a 'new model' interdisciplinary center at Emory Transplant Center



The Emory Transplant Center (ETC) was selected by WHSC leadership in 2005 to become an initial "comprehensive center" based principally on its research success, impact as a clinical service line, comprehensive vision, and potential for both clinical and scientific advancement. While ETC, originally formed in 2000, was nominally a recognized WHSC "center," it had an "ad hoc" status. The ETC was one of dozens of collaborative efforts that were formed at Emory over many years that operated under a "center" designation, either formally or informally. As in every AHC, such centers proliferated as clinical care and research became increasingly interdisciplinary and as patients demanded more "customer-friendly" service. More than 130 Centers were identified in a 2005 inventory; these centers ranged from informal collaborative agreements among two or more faculty members to large, cross-disciplinary, departmental or institutionally driven centers or institutes.

The ETC faced a number of challenges reflecting the silo organization of health care and of most academic health centers. In 2005, the ETC consisted of more than 30 medical, surgical and pediatric faculty members, not including hospital-based specialties. These faculty members were based in 5 different Department of Medicine divisions, 2 Department of Surgery divisions, and 3 Department of Pediatrics divisions. The faculty members from the Department of Medicine were part of large divisions (e.g. nephrology, pulmonary medicine) where the transplant faculty represented a small fraction of the division's overall activity. While the individual faculty members were professionally and academically oriented towards transplantation, the departments and divisions established their work assignments based on overall departmental and divisional needs including achievement of productivity targets. As a result, the faculty complement focused on transplantation was often insufficient to achieve desired access levels and programmatic growth.

This was emblematic of a larger issue. ETC's leadership and operations existed in a kind of no-man's land with center leaders lacking the necessary authority and institutional support to achieve the organization's desired goals for the Center. For example, ETC leadership lacked the authority and resources necessary to control faculty complement and work assignments, to drive recruitment needs, or to acquire space or core shared resources and technologies.

The Emory Transplant Center as a Model of Vertical Integration

Understanding the strengths and weaknesses of the existing model provided a good starting point for defining and gaining leadership agreement regarding the issues that must be addressed in establishing a comprehensive, integrated center. After selecting the ETC as the first new comprehensive interdisciplinary center, ETC and WHSC leaders designed and implemented a new operating and governance model. The new model went into effect in September of 2007. It redefined the role of the ETC director by providing him with direct authority and accountability for managing essential transplant activities across the health sciences center. In addition, a new WHSC-wide senior management position was established with responsibility for development and management of all integrated centers. This new senior management position provided an organizational home for the leadership of ETC and other future centers that would be developed over several years.

The vision

A key first step in restructuring ETC was the establishment of an ETC vision that would define an exciting future and describe why the new model would be attractive to patients, staff and faculty. ETC's vision is to become "the leader in the field of transplantation in the United States as defined by clinical volume, transplant outcomes, and research endeavors."[8] Establishing and gaining agreement on a vision and goal based on achieving a national leadership position enabled ETC to define the resources required to achieve these objectives and to determine how best to organize ETC and WHSC resources to help achieve success.

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Management authority and responsibility

As mentioned above, the ETC model in place prior to 2006 provided the ETC Director with little authority to manage faculty, space, or other resources essential to the program's success. The new model represents a significant expansion and redesign of the ETC Director's scope of authority. It gives the ETC leader direct authority and accountability for managing several activities critical to achieving ETC's mission and vision even though they cross the health sciences center. These areas of authority for the ETC director include:

- Management of the core transplant faculty in renal, liver, and pulmonary medicine as well the renal and liver transplant surgeons. Core transplant faculty members are defined as those who spend more than 50% of their time in transplant-related work. (This definition precluded heart and lung transplant surgeons from being managed through ETC.) The ETC now manages the clinical activities and research collaboration of such core faculty and their corresponding financial performance. The clinical activities managed by the ETC include faculty time and deployment, as well as compensation including incentives and annual performance reviews (in conjunction with the Departments of Medicine, Surgery, and Pediatrics). Faculty appointments, promotion and research administration remain the primary responsibility of the departments with input from the ETC.
- Management of dedicated transplant hospital outpatient resources as well as the associated organ expense budgets. The ETC now has responsibility for daily management of the multidisciplinary hospital-based outpatient transplant clinic. There is also close collaboration and joint planning with a dedicated inpatient nursing unit managed through established nursing administration. Emory University Hospital (EUH) retains direct management of the inpatient transplant unit to ensure efficient utilization of this key resource given the fluctuations in transplant inpatient census. Management of the inpatient transplant unit was structured as a dotted-line relationship with the ETC Director with direct reporting to the hospital nursing leader to ensure quality of care and effective utilization of bed capacity.
- Management of the ETC clinical research group comprised of clinical research nurses and coordinators to support core ETC faculty in the enrollment of patients in clinical trials. This includes responsibility for metrics, screening and enrollment. However, the fundamental research administration remains the responsibility of the departments of the Principal Investigators as well as the School of Medicine.

Integrated governance oversight

WHSC established a new position, Vice President for Clinical and Academic Integration, to oversee ETC and other Comprehensive Centers and Institutes being developed shortly after ETC's restructuring. This new position ensures that all of the new Center Directors have access to a senior Health Science Center executive who represents the Centers in senior management forums and addresses issues that cross schools, departments, and other parts of the health science center. This new position, Vice President for Clinical and Academic Integration, reports to the CEO of the WHSC. This new Vice President ensures that the new Centers succeed in bridging the traditional organization by facilitating the delivery of resources from across the health science center. Making this new position report directly to the CEO of the WHSC provides the Centers with a strong institutional voice and reflects the commitment of WHSC to the development and success of the Centers. (Note: the Vice President for Clinical and Academic Integration is currently the Interim Executive Vice President for Health Affairs.)

An internal "governance" mechanism was established to ensure engagement of all aspects of the Health Sciences Center involved in transplantation.

In order to bring the ETC out of the typical no-man's land occupied by many interdisciplinary centers, an internal "governance" mechanism was established to ensure engagement of all aspects of the Health Sciences Center involved in transplantation. The Transplant Executive Oversight Committee includes the Dean of the School of Medicine, the CEO of Emory Healthcare, the CFO of the WHSC, VP for Clinical and Academic Integration, the COO of Emory University Hospital, the CNO of Emory Healthcare, the VP of Research for the WHSC, and the Chairs of Surgery and Medicine. This committee meets 6 times per year and reviews ETC's strategic plan and progress toward implementing the plan, identifies challenges to achieving its plan and facilitates their resolution, approves strategic recruitment or other investment opportunities, and reviews on-going performance through a balanced scorecard approach.

Programmatic and organizational components

The new model has enabled ETC to restructure its operations to strengthen essential programmatic and organizational components in the following ways:

Enhanced organ program teams. Clinical activities are organized around organ program teams. The primary goal of each organ team is the establishment of a unified approach to delivering care. Each team is led by surgical and medical co-directors who are selected by the ETC Center Director. The co-directors function as the co-leaders/managers of the relevant organ program with shared accountability for achieving annual performance objectives, including quality, service and financial objectives and metrics that are accounted for within the overall ETC annual operating plan and budget. In addition, each team of organ program co-directors:

- establishes and monitors annual performance goals for individual faculty, ensures availability of sufficient faculty and staff resources to meet patient demands for same location multidisciplinary visits;
- develops patient clinical protocols and reviews outcomes; and
- establishes annual community outreach and marketing targets.

Performance data are measured and presented at the organ program level rather than by specialty to further encourage team behavior and performance. While the co-director positions have always existed, in part to meet United Network for Organ Sharing (UNOS) requirements, the new model significantly strengthened their leadership role. The organ co-directors meet at least monthly with their team of faculty and staff to review clinical protocols, outcomes and other program metrics.

Coordinated on-site clinical support. ETC and the organ program co-directors define the clinical services needed to enable patients to receive the majority of their transplant outpatient care within a single clinic setting. In addition to the core medical and surgical services provided by each organ program, specialty services that are not dedicated ETC resources were identified to provide services within the transplant multidisciplinary outpatient clinic. These include infectious disease, dermatology, cardiology, nutrition and social services. These specialty services are structured and provided through designated clinic times within the outpatient transplant clinic. For example, infectious disease physicians work not by consult request but as part of the regular outpatient clinic days. Scheduling of these faculty members is aligned with peak post kidney transplant clinics and other transplant disciplines to meet patient demands. This approach enables patients to receive the majority of their care within a single location, which improves overall patient service and satisfaction.

Mechanisms for transparent information sharing. A monthly Program Directors Meeting was established that brings together the entire ETC leadership team including all of the organ program co-directors. The purpose of this meeting is to review outlined performance metrics and progress toward annual operating plan objectives and budget. Operational issues are also reviewed and discussed as well as any on-going recruitment efforts and planning initiatives.

ETC also established a Clinic Operations and Service Committee that meets monthly and a Center Quality Council charged with reviewing on-going performance improvement initiatives across ETC and for each organ program.

Research program advancements

An essential element of ETC's core mission involves leadership in discovery and translational research. The many new administrative, governance and programmatic enhancements have enabled ETC to grow and intensify its research program.

ETC has built the integrative approach described above into its research model and agenda. ETC employs numerous approaches to create a seamless interface between basic, translational, and clinical investigators. Each faculty member is expected to have identified and active areas of research even if the individual is primarily focused on clinical care delivery. At the same time, all basic science research is linked with clinical application. A number of unique characteristics of the ETC research approach are contributing to its growth and success:

An actionable vision. The research model is based on a vision to transform the field of transplantation by leveraging all aspects of research, from discovery in the basic science laboratory, to animal research at Emory's Yerkes National Primate Center, to national leadership of clinical trials in both adult and pediatric patients.

Scientific focus. A strong vision has enabled the ETC to focus on key scientific areas and to select specific opportunities that best support achievement of that vision. One element of the vision is to focus on developing solutions to the side effects of the existing regimen of medications, such as investigational protocols that minimize immunosuppression.

Team research. Basic and translational research are conducted through an interdisciplinary team approach. All laboratory space is shared; there is a core shared infrastructure, including histology and flow cytometry; and even technicians are shared. The culture is such that faculty share responsibility for research, including primate research at Yerkes, and routinely will step in to conduct or complete protocols or studies when colleagues become engaged in a period of intensive clinical service or are otherwise unavailable.

Weekly "all hands" lab meetings. To maintain close linkages between research and clinical application, ETC conducts weekly lab meetings at which 80+ participants, from basic scientists through clinicians and techs, present data, review research projects, and test new ideas. This weekly meeting has become an indispensable, foundational activity.

Systematic patient research subject screening. Nearly 100% of patients are assessed for participation in research project with close to half ultimately enrolled in a research study.

A bio-repository. To support the clinical research activities, a bio-repository was established to capture a large, comprehensive set of data elements that could be used for current and future research. In its first two years, over 900 patients have consented to have their information included there.

Strong, dedicated Informatics group. There is a very strong informatics group associated with the ETC. The combination of the bio-repository and strong informatics capabilities have enabled ETC to serve as a leading center for a variety of adult and pediatric multi-center clinical trials

Shared credit for research awards. Credit for research awards is given to both ETC and to home departments so as to encourage ready collaboration between departments and the ETC. This approach has enabled ETC to help mentor and gain funding for young investigators in areas such as pediatrics, which also serves to build the research portfolios for the departments.

Strong grant application support. The role of the ETC academic director has been designed to foster collaboration around large cross-cutting opportunities and to help individual faculty and faculty teams to submit grant proposals which have led to several large program project and consortium awards. ETC's role is additive and differs from the departments, which continue to provide grant administration.

Interdisciplinary trainee focus. The team approach has also enhanced the educational programs by increasing exposure of trainees to multiple disciplines, faculty, and research projects.

The result of this comprehensive, integrated approach to research is that the ETC attracts strong faculty as well as leading fellowship candidates. The work and research environments are goal-directed and collaborative, which helps make them also extremely satisfying and productive.

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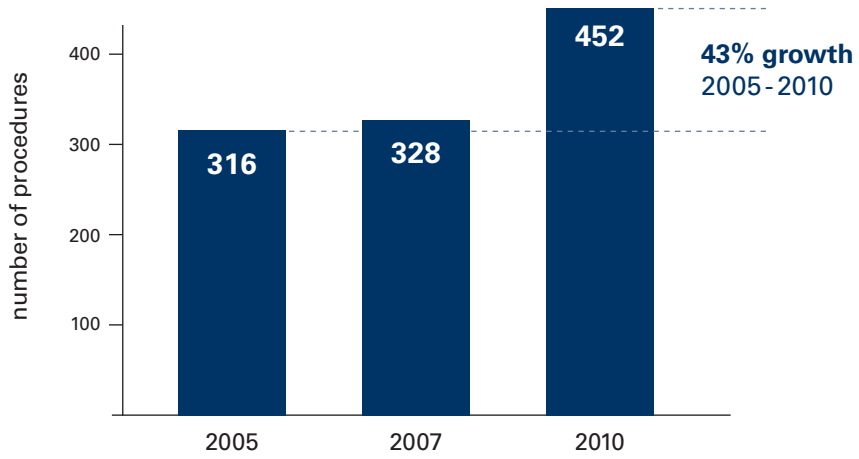
Results and outcomes

Clinical metrics

- Transplant candidates, recipients and donors receive coordinated care in a single location from surgeons, nephrologists, hepatologists, cardiologists, pulmonologists, psychiatrists, dermatologists, infectious disease specialists, nurses, pharmacists, and social workers.
- In calendar year (CY) 2010, ETC performed 452 solid organ transplants making it the 9th largest program nationally in 2010, including pediatrics; ETC was the 19th largest program in 2007. (Fig. 2) During this period, ETC doubled the number of liver transplants. This is a direct result of having assembled a nationally recognized team of hepatologists and surgeons whose efforts have transformed clinical care and quality outcomes for liver transplant patients.
- The liver program has seen a 45% improvement in the time from referral to listing from FY 2008 to FY 2010
- Transplant admission length of stay has dropped by nearly half with average ICU stays declining by nearly two thirds.
- Intra-operative blood product utilization has decreased by more than 50% and average intubation times by more than 25%.
- Readmissions within the first 30 days have decreased by approximately two thirds.

FIG. 2

Growth in solid organ transplant activity at ETC



- Clinic visits in the Transplant Center Outpatient Clinic have gone from 19,451 in FY 2006 to 30,946 in FY 2010.
- ETC Physicians and Surgeons have been able to increase the number of pediatric transplants at Children's Healthcare of Atlanta, which recently became one of only a handful of children's hospitals to reach the 1000th solid organ transplant milestone, and ranking in the Top 5 for pediatric transplant for the eighth consecutive year.
- Risk adjusted patient outcomes for all transplant programs are either within the expected range or exceed expected results.
- The clinical program has experienced increasingly strong financial performance commensurate with growth in volume and improved effectiveness.

Academic metrics

ETC investigators and programs are making major strides in research productivity. This vitality stems from ETC's focus on translation of scientific research to patient care - facilitated by unparalleled collaboration among faculty and with staff.

- Extramural funding is growing robustly despite declining federal funding trends. Total program funding is now over $29 million (FY 2010), an impressive increase of more than 250% since FY 2004 ($8.1 million). (Fig. 3)
- There are 26 faculty who are PIs on sponsored grants in FY 2010, up from 16 faculty PIs in FY 2004. Sixty-eight percent of sponsored funding comes from the NIH.
- With a new focus on diversifying federally-sponsored support, non-NIH federal awards tripled from FY 2009 to FY 2010.
- The ETC has excelled in recruitment and retention, reaching approximately 50 faculty members, all working towards an ever-increasing level of success.
- The ETC also attracts top trainees into its transplant surgical fellowship programs.

FIG. 3

Growth in extramural research funding at ETC

Key Lessons Learned

Transplantation is a good choice for piloting comprehensive vertical integration. It lends itself to integrative approaches due to inherent characteristics, including, faculty altruism, requirements of multidisciplinary care, the importance of cutting edge research, and the episodic nature of transplantation that allows faculty to have periods of focused research. Nonetheless, comprehensive vertical integration is an organizational approach that can and should be adapted to other diseases and programs.

Creating the right governance model is critical to success. While every center has to design the model appropriate to its environment, history and goals, strong participation and oversight by executive leadership and department chairs appears vital to success. The ETC has achieved this through an inclusive process of center development, by institutionalizing this with an executive Oversight Committee, and by creating an institutional Vice President for Clinical and Academic Integration responsible for helping ETC and other comprehensive centers succeed.

Comprehensive vertical integration is an organizational approach that can and should be adapted to other diseases and programs.

It is important to define a desired center culture that fits with the institutional culture and mission and then to hire individuals that fit that culture. ETC has focused on a creating a collegial, learning team culture marked by collaboration and transparency.

An ambitious strategic plan and successful execution is required. Recruiting the very best faculty and staff and achieving at the highest levels of performance requires clear, unified vision and the investments in resources necessary to achieve desired outcomes.

Vertical integration can be a retention tool. Blending faculty disciplines across multiple departments and divisions into a single organizational structure is both necessary and attractive to faculty, trainees and staff.

Leadership matters. Traditional academic credentials are helpful but not sufficient. We find that this type of high-complexity center development is best undertaken by leaders chosen from within the institution, who have a track record of success in building interdisciplinary and integrated programs, and who understand the organization's culture.

Creating a truly integrated center is challenging. This initiative should only be undertaken in areas where the organization believes it is worth the challenges of change to achieve significant improvements in volume, effectiveness, research and other important performance objectives. The results should be designed for a win/win for both the program and the institution. The institution's senior executive(s) must see clinical integration as a major priority. Top leadership has to be not just on-board, but driving the change process.

The industry is moving toward increased integration. The vitality seen in this robustly integrated model to date, across a wide range of clinical, academic and operational goals and metrics, is likely strongly adaptive and anticipatory of future trends in healthcare delivery and financing. It should be of high interest to both AHCs and non-academic health systems.

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