

Benefit Analysis of OTTR at Saint Barnabas Medical Center

INTRODUCTION

When we think of transplant clinical data, several things come to mind - A chart that is several inches thick with dog-eared tabs and pages of physician notes, test results and interpretive reports. A wallpaper-like flow sheet filled with laboratory values and surgical comments. A call book printed on several reams of paper with dozens of handwritten notes and miscellaneous reports tucked in between pages that requires a cart to be carried around. At our center, we sought the help of HKS to find a computerized solution to data management that would not only improve our data collection and management, but also facilitate our daily operations.

The following describes our center, and the activity that we wanted to accommodate with HKS's OTTR. Saint Barnabas Medical Center performs approximately 180 transplants annually – of which can be categorized as 10 Simultaneously Kidney Pancreas, 5 Pancreas after Kidney, 5 Pediatric and 160 Adult Kidney transplants. Approximately 50% of our kidney transplants are from living donors. Our Transplant Division is comprised of the following departments – Pre-Transplant, In-Patient, Post-Transplant Clinic, Transplant Research and a Pediatric Nephrology practice. Our patients range from newborn to mid 70's. The division utilizes 13 nurse coordinators, 4 medical assistants, 1 data coordinator, 1 financial coordinator, and support staff of 5. We receive approximately 750 referrals, perform approximately 600 pre-transplant evaluations, maintain approximately 800 patients listed for transplant, and accommodate over 5,000 post-transplant clinic visits annually. Our Transplant

Research Department follows 160 patients, who are enrolled in about a dozen clinical trials. We also have a referral base that consists of 1400 physicians and surgeon designees. With all of this activity, it was imperative to integrate our data and bridge the span across the patient continuum.

METHOD

We began in October 1999 to develop the concept of a comprehensive patient tracking solution. We purchased OTTR and customized it to serve our program as a whole, as well as at each point of entry for the patient. Derived from plain-paper flowsheets originally used in transplantation, OTTR begins tracking patients from their first phone call at the time of referral, and continues throughout the continuum of care, essentially making all clinical and demographical information easily accessible. OTTR maintains all patient information including the pre-transplant evaluation, inpatient care, post-transplant follow up and transplant research activity. Essentially, through the use Oracle, our database engine, OTTR is able to integrate every aspect of patient care management, and through real-time updates and interfacing, the transplant staff has immediate access to critical clinical information necessary to provide the best patient care. OTTR did not require a substantial investment in new hardware, although we did elect to supplement with computer upgrades and additional printers for some of our staff members.

Upon implementation of OTTR we fully integrated all activities of our transplant center, and then initiated an analysis for the purposes of measuring both the direct and indirect benefits realized from the increased coordination of data to determine if the system was serving the program to its fullest potential. The healthcare industry has come to demand a higher level of service and accuracy than ever before¹, and transplant centers of all sizes continue to struggle with data management issues and regulatory reporting compliance. In the transplant environment, we needed to find an innovative solution for efficiently creating and conserving our most precious resource - time. The result was the selection of OTTR – a comprehensive, multi-user patient care management system that allows access to a wealth of searchable, real-time data presented exactly the way we want to view it. From data coordinator to physician to hospital administrator, OTTR is able to provide information regarding a patient's medical status at any given moment. By instituting OTTR into all aspects of our organ transplant program, we endeavored to automate our processes and streamline our ability to formulate information and utilize such to increase both our efficiency and efficacy, and therefore profitability.

We recognized that the need to integrate information is vital for both data accuracy and integrity, which lends to improved internal quality assurance, as well as expeditious external reporting. Our antiquated system would have become increasingly time-consuming, translating into less effective and more costly procedures and processes. For example, prior to the availability of OTTR, the on-call coordinator was printing a call-

book each week, which consisted of 1000 green-bar computer pages of clinical information – some of which was outdated soon after it was printed. Now, OTTR enables us to utilize an electronic call book, updated and stored daily on a laptop computer that contains all of the patient's demographic and medical information for the coordinator to easily search and review to determine the selected candidate's transplant suitability. We have also been able to implement procedures that assist in the periodic review of our listed patients. With over 800 patients listed, we needed to be able to systematically identify patients with certain risk factors and monitor their status, to ensure their continued suitability for transplantation. OTTR allows for the generation of lists of patients that a Transplant Candidate Review Board (TCRB) can discuss and review, to determine if patients are still viable transplant candidates. With no prior means of being able to track risk factors, reviewing these patients was labor intensive and resulted in listed patients who were no longer suitable. Our advances in technology via OTTR have helped us to improve our ability to evaluate our patients, in any treatment phase, on an on-going basis which has not only enhanced the quality of our program, but has also proved to facilitate more efficient use of our resources. We realized that decreased administrative time, increased accuracy and enhanced availability of information would enable our center to fully maximize our program's capabilities and focus on achieving status as a "Center of Excellence".

RESULTS

As we implemented OTTR and customized patient lists and reports to our center's needs, we began to examine how beneficial its use would be in order to achieve performance improvement initiatives². Our methods for measuring the benefits our program has realized were based upon provider, patient and staff feedback, time study, statistical review and retrospective cost analysis. This analysis allowed for the benchmarking and monitoring of a variety of factors that effect both performance and operations. The following will detail our observations, but overall it was evident that enhanced data collection has a cyclic effect, and as each initiative was addressed, it produced a multitude of performance improvements.

While we knew that OTTR supported the patient's overall management and provided secure, live communication, we were now able to select indicators to evaluate performance and improve internal procedures. One of the first factors that we examined was the effect that OTTR had on time spent on administrative responsibilities. Many centers have nurse coordinators who wear multiple hats, and are required to perform many administrative and clerical tasks in addition to the clinical evaluation and care of transplant patients. By tracking tasks via time studies, we realized that the elimination of paper charting and efficiently managed workflow has decreased administrative time by 20%. Nurse coordinators reported an increased ability to track patient clinical information and automate correspondence, which dramatically

decreased clerical tasks, improved accuracy and availability of patient medical information. In addition, the automation of patient information taken for initial patient referrals expedited the process of scheduling, financial coordination and retrieval of pre-transplant medical information, which facilitated processing for our support staff. Follow-up patient contact and appointment confirmation improved as an indirect benefit. Data coordination has also significantly improved. Monthly performance statistics and requests for clinical information have been automated for periodic review by administration and the transplant team. Any number of factors can be easily selected as indicators on a regular basis – a task that in the past required many hours of manually tracking and sorting data. See Table 1 – ‘Decrease in Administrative Task Time Study’.

The computerization of each patient file has coordinated efforts to maintain current clinical information into a master database. OTTR has created a system that accurately tracks and monitors patients and expedites evaluations and listings, facilitates marketing efforts and referral base communications, and even automates correspondence. Automated screens to facilitate intake and improved communications with both providers and dialysis units are credited for an increase in referrals by 17% during the first year after going live with OTTR. One way by which this was achieved was through informational mailings and surveys to providers, an uncomplicated task with OTTR since we can easily produce labels and personalized letters with a few clicks of a mouse. We also developed reports for dialysis centers and referring physicians in

order to keep providers informed of their patients' and their status. An additional indirect benefit was the bolstered relationships with and additional confidence of our referral base. See Table 2 – 'Annual Patient Referrals to Transplant Program'.

All patient data is entered as the patient progresses throughout each phase. Thus, we are able to maintain current and historical demographics, laboratory values, transplants, medications, diagnoses, re-admissions, and research trial candidacy and enrollment. While hard copy charts have not been completely eliminated, their content and order has greatly improved, increasing compliance with medical record protocol standards^{3, 4}. A patient's medical history no longer needs to be pieced together like a puzzle, but rather is assembled and organized to meet standard criteria in an effective charting system.

As a high volume transplant center, we have continued to struggle with regulatory reporting requirements and compliance. For example, like many centers, as we continue to develop and grow our program, it has become increasingly difficult to manage the completion and submission of forms as per the OPTN/United Organ Sharing Network (UNOS) Data Advisory Committee standards for submission of data collection. As a result, we have utilized OTTR to assist in collecting the information required by UNOS in order to expedite forms processing and increase adherence to reporting guidelines. The increase in availability and access to information has increased on-time reporting by 34%, based on actual forms submitted within the specified due dates. See Table 3 – 'Percentage of Forms Completed on Time'.

We were also able to measure an improvement in the length of stay of our patients. With the availability of clinical data, we were able to analyze morbidity and clinical protocols, which enabled us to make decisions that improved clinical outcomes via changes in medication protocols and courses of standard treatment⁵. These changes facilitated inpatient care and patient management and directly attributed to a decrease in the average length of stay. See Table 4 – ‘Average Length of Stay’.

We also looked to measure the effect of improved data on our center’s profitability. All of the above performance initiatives can be translated into dollar savings, as they have increased productivity of staff, decreased administrative overhead, and decreased the average length of stay of our transplant patients. We were also able to realize an increase in profitability, as we were now able to analyze and review statistics which enabled us to be better equipped for managed care contract negotiations. From the ability to produce statistics regarding insurer’s requests for information, payor mix, morbidity, and length of stay, we were able to monitor and negotiate consistently with payors to ensure profitability to our center. An overall compilation revealed a 65% increase in profitability for our transplant program during the first year from the coordinated efforts of OTTR and our other performance improvement initiatives.

Lastly, we have seen that the availability of information has expanded our capabilities and opportunities for the study and analysis of data for the purposes of publication and clinical research trials, both internal and those sponsored by pharmaceutical companies. OTTR data is now verifiable and therefore comparable.

Research capacity has also benefited through the standardization of budget processes, time study, cost analysis and patient recruitment. Potential trial participants can be easily identified via protocol selection criteria and events can be readily researched and documented for case reporting and monitor visits.

CONCLUSION

The results of our analysis concludes that data integration through the use of OTTR has maximized performance while decreasing administrative time, increasing data accuracy and availability and decreasing costs. Essentially, decreased administrative time translates into increased clinical time and efficient and effective operations. Our benefit analysis overwhelmingly supports increased performance and program savings, and the prospect of continued improvement of both factors in the future. We are now able to focus on statistics and indicators that will lead us toward future improvement and assist us in our primary responsibility – patient care. We continue to enhance the continuum of care by the expedience and availability of clinical information as we endeavor to improve our patients' quality of life and physical fitness, while we continue to make our transplant center fiscally fit.

Table 1

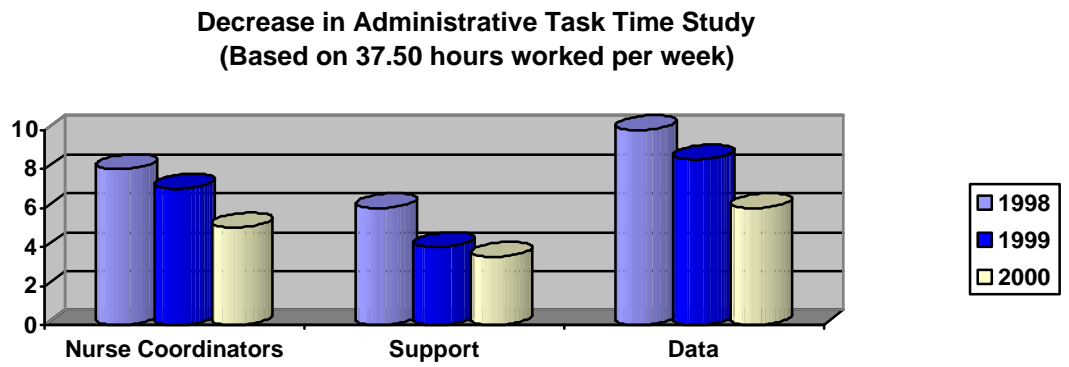


Table 2

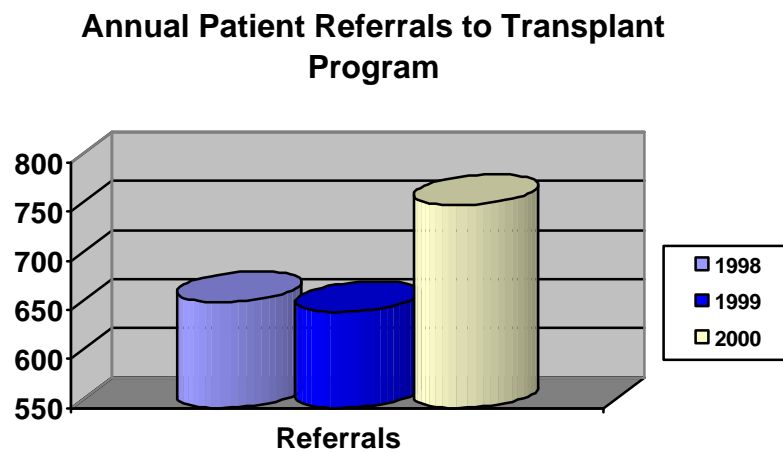


Table 3

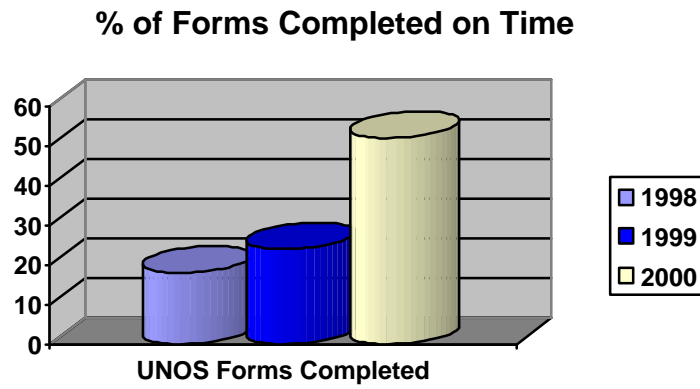


Table 4

