

Running head: CARDIOLOGY AND RADIOLOGY OPTIMIZATION

Graduate Management Project
Optimizing Cardiology and Radiology Services at
Evans Army Community Hospital
Major Harold J. Geolingo
U.S. Army-Baylor University Graduate Program in Healthcare
Administration

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Abstract

During fiscal years 2003 and 2004, Evans Army Community Hospital (EACH), Fort Carson, Colorado, diligently prepared itself to meet the operating challenges under the new TRICARE contracts. As part of EACH's preparation efforts, this study provides an optimization analysis of cardiology and radiology services, utilizing the business case analysis process. The results of this study indicate that a recapture opportunity exist by providing in-house non-invasive echocardiograph services, which would yield a 36-month return on investment (ROI) of \$210,000. Additionally, the potential for an 80 percent reduction in radiology purchased care can be realized, provided EACH procures a magnetic resonance imaging device, sustains current staffing levels, and institutes strict referral management under the new TRICARE contracts. Furthermore, diagnostic and therapeutic cardiology product lines possessed no recapture opportunity, as recapture efforts would yield an annual net loss exceeding \$500,000. The primary cost savings effort under these cardiology product lines would be to negotiate a discounted reimbursement rate with the Veteran's Administration (VA). Engaging in these optimizing efforts will increase EACH's ability to operate within budgetary limits, and more importantly provide the best health care delivery options to all beneficiaries to whom EACH serves.

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Optimizing Cardiology and Radiology Services at
Evans Army Community Hospital

Introduction

Conditions that Prompted the Study

From the late 1990's to 2002, the United States Army Medical Department (AMEDD) implemented many primary care optimization (PCO) initiatives aimed at improving beneficiary access to care, achieving higher quality of care through evidence-based medicine, and providing the most cost-effective mechanism for primary care delivery. As medical treatment facilities (MTFs) focused on primary care, many in-house specialty care services dwindled, or were disbanded completely, referring beneficiaries who required those services to the TRICARE network.¹ Since the MTFs did not bear the burden of paying for purchased care, or care referred to the network, managing referrals, and monitoring costs did not become a top priority within each organization. The TRICARE Management Agency (TMA) provided the oversight and collective reimbursement mechanism for network providers. MTFs, having access to purchased care data, slowly embarked on piecemeal initiatives to recapture purchased care services, providing enormous savings to the entire military health care system (MHS). Recapture was accomplished by performing referred services in-

¹ The TRICARE network is a local network of civilian providers established by the managed care support contractor to provide medical services to TRICARE beneficiaries reimbursed at established CHAMPUS maximum allowable charge (CMAC).

house via a resource share agreement, contract services, government service (GS) positions, or assigned military personnel based on the computed return on investment (ROI) from the AMEDD's business case analysis (BCA) process.

In fiscal years 2004 through 2005, the Department of Defense (DOD), in conjunction with Health Affairs (HA), and TMA, will begin the phase-in of the TRICARE next generation of managed care support contracts. The new parameters established in the TRICARE next generation of managed care support contracts represent some significant changes to MTF business operations throughout the MHS. The most pertinent change applicable to this research project is that MTFs will bear the full financial risk of care referred to the local TRICARE network (Tinling, 2003). This includes managing referrals, recapturing services to prevent leakage to the TRICARE network, and paying for purchased care directly out of a MTF's operating budget through revised financing plans (RFP). The TRICARE contractor will have incentives under the TRICARE next generation of managed care support contracts to partner with MTFs and recapture services in-house. The contractual changes in the TRICARE next generation of managed care support contracts provide many challenges and force cooperative efforts within healthcare markets designated by the newly established three TRICARE regions (J. Wilber, personal communication, September 23, 2003).

In an effort to prepare itself for the new contractual changes under the TRICARE next generation of managed care support contracts, Evans Army Community Hospital (EACH), Fort Carson,

Colorado, established a transition team to look at the various facets of the TRICARE next generation of managed care support contracts. One product that the team was charged with producing was a market analysis for the surrounding Pikes Peak area using fiscal year 2002 as a baseline cost year.² Fiscal year 2002 was utilized as a baseline cost year due to the lag time in claims data, and number of military deployments in support of Operation Enduring Freedom, and Operation Iraq Freedom in fiscal year 2003. The two most salient points derived from the market analysis for this research project are: (1) EACH spent over \$1.5 million in purchased care for cardiology and radiology services and \$15.7 million overall for fiscal year 2002; and (2) EACH is in a multi-market area which represents possible collaborative efforts between facilities to minimize purchased care (Jordan, 2003). After review and further analysis, the EACH Commander, Colonel Brian Lein, suggested that research be conducted on specialty care optimization, with particular interest on two of the highest drivers of the MTF's purchased care costs, cardiology and radiology services. This prompted the rationale behind research on cardiology and radiology services optimization. Optimization,

² The Pikes Peak area consists of the 10th Medical Group at the Air Force Academy, the 21st Medical Group at Peterson Air Force Base, Schriever Air Force Base and EACH. Under the TRICARE next generation of managed care support contracts, the Pikes Peak area represents a multi-market area, with the 10th Medical Group Commander designated as the multi-market manager.

for the purpose of this research, encompasses direct care capacity, physical space constraints, demand, or workload management, referral management, increasing capacity and services in-house in order to recapture workload referred to the network, and the financial feasibility of network costs, or purchased care.

EACH needs a viable internal and market plan to possibly recapture services through in-house product lines of cardiology and radiology services. Additionally, MTFs within the Pikes Peak multi-market area experienced similar purchased care costs in cardiology and radiology during fiscal year 2002. A feasible market plan for cardiology and radiology services would benefit all MTFs and beneficiaries within the Pikes Peak area and provide a control mechanism for network leakage.

Prior to the phase-in date of the TRICARE next generation of managed care support contracts, EACH will have to analyze all purchased care services, and decide if recapture opportunities exist, or if network costs are financially feasible. The phase-in date for the TRICARE next generation of managed care contracts for EACH is October 1, 2004 (Fiscal year 2005). If EACH continues on an increasing trend of purchased care costs, fiscal year 2005 could result in costs exceeding \$16 million. Although the cost increase is lower than the experienced national medical inflation growth rate, EACH will not be able to afford the escalating purchased care costs under the RFP. This is due to the MTF's 2005 RFP being based on the previous FY purchased care expenditures. EACH must ensure that FY 2005 purchased care expenditures remain

at or less than the previous FY level, or else any additional expenditures will come from the MTF's operational budget, which greatly impacts the funding for direct care (J. Hawkins, personal communication, March 30, 2004). In order to remain within budgetary limits in fiscal year 2005, EACH must implement a specialty care optimization plan to provide the most cost-effective mix of in-house services and purchased care, while maintaining quality and access to its beneficiaries.

Fiscal year 2003 staffing levels in cardiology and radiology utilize resource share agreements (RSAs) to augment the staff and increase service capabilities. RSAs are TRICARE contractor personnel staffed in-house at the MTF to provide required services at an established compensational adjusted price between DOD and the TRICARE contractor. Under the TRICARE next generation of managed care support contracts, RSAs will fall under the discretion of the MTF and funding will come from the MTF's operational budget through the RFP. EACH will not receive full funding to maintain its current level of RSAs and must convert those positions to personal services contracts, GS positions, or enter a local support contract agreement. EACH will bear the full financial risk of the current RSA staffing structure. An analysis of cardiology and radiology capacity and capabilities is vital due to the reliance on RSAs and historical purchased care costs. In direct care pediatric cardiology services, all care is provided by a RSA, while in radiology services, 36 percent is provided by RSAs. A reduction in staff and services in both service areas would increase purchased care costs and greatly

impact access to services provided by EACH for beneficiaries. This is due to the fact that if EACH eliminated its RSAs in cardiology and radiology, it would not be able to meet historical demand, which would then, as a default, shift, or refer TRICARE prime patients to the network.

EACH has more physical space to increase capacity than the other MTFs in the multi-market. Since the other MTFs experience similar purchased care costs, the ability for EACH to serve enrollees from the other MTFs would greatly improve the multi-market access. At a Pikes Peak Executive Council meeting in September 2003, the MTF commanders agreed that each MTF is staffed to serve their appropriate service population, that is, U.S. Army for U.S. Army beneficiaries within the area, and U.S. Air Force accordingly.³ Additionally, referrals to the network, or other MTFs, will be assessed, approved and controlled by the enrolled beneficiary's MTF. Approved referrals will be executed within the agreed upon protocols established by beneficiary category within the Pikes Peak multi-market. Given the demographics and capabilities of EACH (Appendix A), it would be extremely beneficial for EACH to develop a cardiology and

³The Pikes Peak Executive Council is a governing body chaired by the multi-market manager consisting of all MTF Commanders within the Pikes Peak multi-market area. It is an important forum which facilitates decision making at the executive level given the new market structure under the TRICARE next generation of managed care support contracts.

radiology optimization plan and open services to the other MTFs within the Pikes Peak multi-market area to further meet increased demand and enhance its contribution to contain financial costs within the Pikes Peak MTFs, or financial stewardship to the multi-market concept.

The contractual changes under the TRICARE next generation of managed care support contracts directly effect funding of purchased care, and RSA staffing, which impacts direct care services provided to beneficiaries. In order to achieve a seamless transition from the beneficiary's perspective, as warranted by DOD and HA, EACH has to adapt to the new business environment, by ensuring that it is at the optimal mix of direct and purchased care.

Statement of the Problem

The imposing problem that EACH must strategically confront is how to reduce and control cardiology and radiology purchased care costs in order to meet budgetary constraints imposed under revised financing. The ability to capitalize on recapture opportunities in cardiology and radiology will provide more in-house services, and the ability to control purchased care to a financially acceptable level will enhance EACH's ability to operate under the RFP. This project will examine financial and intangible costs, identify capacity and demand internally and within the market, and make appropriate recommendations to improve and recapture cardiology and radiology services at EACH.

Literature Review

In fiscal year 2003, the United States Air Force embarked on a pilot test of specialty care optimization (SCO). The governing body, or highest command element of the Air Force medical department, known as the Air Staff, believed that "specialty care optimization is the next step in the process of optimizing our health care system" (Sales, 2003, p. 2). Additionally, the Air Staff wanted to capitalize on the success of PCO through a \$5 million funded pilot test of specialty care optimization. The 10th Medical Group (10MDG) at the Air Force Academy, Colorado, was one of the pilot test sites for four specialty services. Major Stephen Sales served as the primary project officer for the SCO project, and became a valuable subject matter expert to the Air Staff. The primary purpose of this pilot test was to validate a specialty care staffing model based on research from the Medical Group Management Association (MGMA) (S. Sales, personal communication, September 2, 2003). Meeting each staffing model's projected capacity, and returning a positive return on investment, however minimal, achieved validation. The Air Force utilized appropriate MGMA models corresponding to MTF type and further compensated for military unique factors (MUFs) like provider non-availability time due to readiness training, etc. Each specialty service was staffed according to the appropriate MGMA model, but the appropriate mix of military and civilian providers became the primary staffing issue. For example, if a current military provider could not fill a required position, the position was contracted and if no contract providers were

available the Air Staff assigned a military provider (S. Sales, personal communication, September 2, 2003). Overall, the Air Staff declared their SCO project a success and began its implementation Air Force-wide in fiscal year 2004 (Sales, 2003). SCO initiatives allowed the Air Force to better understand their specialty care services and further prepare them for the business environment under the TRICARE next generation of managed care support contracts. The primary challenge for the Air Force will be to maintain staffing levels validated by the SCO project, given budgetary constraints and the conversion of RSAs. The success of their SCO project definitely places them ahead of the other services, as the next step could be to further prune, or add product lines to maintain services and meet RFP guidelines.

In comparison to the Air Staff, the AMEDD utilizes the Automated Staffing Assessment Model version III (ASAMIII), which is based on patient population demographics. The primary difference is the AMEDD did not conduct a SCO pilot test to validate the model and rarely is a MTF fully staffed according to the ASAMIII findings (P. Kelly, personal communication, September 29, 2003). On April 29, 2003, a manpower survey was conducted on EACH by the United States Army Medical Command (MEDCOM) utilizing ASAMIII (MEDCOM, 2003). The findings from this ASAMIII application supported increased staffing numbers based on population demographics versus workload specific variables in the previous ASAM versions. The ASAMIII application supports an increase in cardiology and radiology staff at EACH, but appropriate staffing for those positions will have to be funded

by EACH, or arbitrated and justified as military positions during the AMEDD officer distribution plan (ODP) process. Thus, the findings, or outcomes ASAMII produces does not necessarily equate to more manpower provided by the AMEDD, which leaves the usefulness of the model in question.

In an effort to align itself with implementing smart business practices, the AMEDD utilizes the BCA process to fund venture capital projects, or further enhance decision-making capabilities. M.J. Schmidt (2002) suggests that the BCA is " a decision support and planning tool that projects the likely financial results and other business consequences of an action" (Schmidt, 2002, p.1) The BCA provides commanders, at all levels, a systematic process to make decisions, but it is not the decision maker. The BCA can support business plans and is "what follows from a single action or decision alternative" (Schmidt, 2002, p. 12). Under the TRICARE next generation of managed care support contracts, MTF commanders will have to formulate business plans in order to execute health care delivery within their respective markets. The BCA process is a managerial tool that provides MTF commanders an analysis of opportunities and possibly recapture of workload referred to the TRICARE network. It is imperative that MTFs look at all costs, tangible and intangible, to the organization and its beneficiaries. BCAs in the AMEDD are more restrictive than in the civilian health care sector, as MUFs and mandated constraints make the process and implementation of strategic decisions, more difficult (Ardner, 2003).

In September 2003, the Congressional Budget Office (CBO) published a study entitled, *Growth in Medical Spending by the Department of Defense*. This study looked at the factors that contributed to the growth in DOD medical spending from 1988 to 2003, and provided projections of future growth under current policies (CBO, 2003). The CBO accounted for a large number of the growth due to national changes, Congressional increases in benefits, and changes in the beneficiary population, all of which are factors beyond the control of the MHS. The projections for future growth portray spending to possibly exceed \$52 billion by the year 2020. The findings by the CBO support the need for change within the MHS. Although many of the factors affecting the MHS are congressionally driven, the implementation of smart business practices needs to be instituted as a control mechanism for future medical spending. The TRICARE next generation of managed care support contracts provides the initial steps to control medical spending by attempting to empower MTF Commanders with the ability to manage capacity and services more efficiently. Although the CBO study magnifies the issue of spending growth, it also provides insight to the top driven factors that add to spending inflation, leaving the MHS to struggle in remaining financially viable within congressional debates (CBO, 2003).

Peter M. Ginter, Linda E. Swayne, and W. Jack Duncan (2002) suggests that the health care industry is facing many turbulent times, to include increased federal regulations, and strategic management is the process for coping with external change. From a

business perspective, MTF commanders are limited to the adaptive strategies, strategic postures, and overall strategic management they can implement when compared to their civilian executive counterparts. Civilian health care agencies may have more liberties to adopt many adaptive strategies to meet financial needs, but the MHS's top driven constraints limit its abilities to strategically operate. Civilian health care agencies function more in a business sense to generate profit. "The AMEDD leadership does not have as much flexibility, as civilian businesses do, to leverage new business practices in an effort to improve productivity and optimize performance" (Pace, 2001, p.20). The AMEDD must achieve a balance with its core asset, primary care, and specialty care through the utilization of staffing models, cost analysis and aligning goals within each optimization plan (Ronning & Meyer, 1996). During times of increased scrutiny from congress, changing health care reforms and initiatives, and an intense focus on military deployments, the AMEDD must strategically posture itself to optimize productivity and capitalize on possible cost saving initiatives.

The focus under the TRICARE next generation of managed care support contracts will push towards SCO. "As health care organizations endeavor to provide comprehensive, cost-effective, quality medical care, greater focus will be directed to strategies to impact primary care providers' use of specialists" (Bertakis, Callahan, Azari & Robbins, 2001, p. 208). The integration of primary and specialty care is vital to the delivery of a true integrated healthcare system. Like the Air

Staff, the AMEDD must integrate SCO effectively to provide comprehensive care within newly implemented budgetary guidelines. "The ultimate challenge will be to provide appropriate access to specialty care while maintaining the highest level of medical quality and patient outcomes" (Bertakis, Callahan, Azari & Robbins, 2001, p. 208). Unlike civilian counterpart agencies, which focus on profit-generation, and can curtail services that infringe on profits, MTFs operate under a budgetary limit, and must follow strict guidelines for health care delivery. While the challenge is to provide the same level of medical services, the ability to recapturing as much specialty care services provides the next step in balancing PCO and SCO to benefit all patients and the MHS.

The literature supports the rationale for SCO as the next step in developing an integrated health care system. SCO provides the balancing mechanism to equalize the dwindling effects PCO had on specialty care services. Although some MTFs have disbanded some specialty care services, the ability to recapture services utilizing a cost-effective means and process will be the difference under the TRICARE next generation of managed care support contracts.

Purpose

The purpose of this project is to determine the optimal mix of direct and purchased care in cardiology and radiology services. This study will also identify the best optimization opportunities in cardiology and radiology product lines through the use of the BCA process. Additionally, this study will seek to

determine how effective a multi-market approach is in cardiology and radiology services and whether its adaptation is more effective from a market perspective.

Methods and Procedures

Business Case Analysis

Since the method and procedure of formulating business decisions in the AMEDD is through the BCA process, the design of this project will follow the BCA format. Additionally, this researcher will utilize concepts from civilian BCA formats to enhance the interpretation and provide meaningful insight to address the research problem. The researcher will apply the BCA format to cardiology and radiology services in an effort to provide a meaningful decision tool for the final analysis. According to Lieutenant Colonel David Ardner (2003), a subject matter expert on the BCA process within the AMEDD, the BCA follows nine logical steps:

1. Background. This researcher will investigate the opportunities and threats posed by the purchased care issues by gaining insight through interviews, and obtaining data through system analyst within the facility. Key data required would be financial performance of cardiology and radiology, historical purchased care services referred to the network and staffing capabilities. The historical perspective is necessary to ascertain whether referrals to the network fall outside of the scope of service within each product line. Additionally, demand within the market for

cardiology and radiology services and referral protocols affecting capacity will be utilized.

2. Goals and objectives. Throughout the course of this project, the researcher will ensure that the goals and objectives are aligned with the MTF executive committee. Additionally, any new guidance under the TRICARE next generation of managed care contracts will be evaluated to ensure that it does not impact the research.

3. Measure of success. The performance metrics utilized for cardiology and radiology for this project will be based on purchased care costs, or network leakage rates, referral rates, and clinical staffing required to provide necessary product line services. Additionally, any performance metrics from the AMEDD command management system (CMS) Website will be applied to portray success in terms of AMEDD CMS standards.

4. Identification and analysis of alternatives. This researcher will evaluate alternatives, which include the utilization of the TRICARE network, increasing in-house capacity, and possible hybrids of service delivery. Furthermore, opportunity costs will be evaluated, as part of the analysis and business initiatives will be formulated to achieve optimal results in performance, productivity and financial profitability.

5. Economic analysis. Upon receipt of final budgetary guidance by TMA, the researcher will determine what the final controlling costs will be and its economical impact.

6. Clinical and/or intangible improvements. The benefits and costs that cannot be quantified will be presented and further interpretation will be made as to the impact they have on the project.

7. Constraints and risks. The researcher will provide the worst-case scenario from the standpoint of its impact on cost, quality and access. The primary constraints will impact the overall outcome and will be evaluated to formulate the risks involved.

8. Deployment plan and performance to-date. A timeline of execution will be recommended with the phase-in date of the TRICARE next generation of managed care contracts taken into consideration.

9. Autopsy. This step in the BCA process will be addressed with possible situations on what could go right/ wrong and what improvements could be made. This step is an after thought once the project has been implemented.

Throughout the nine-step process, the researcher will input information into the AMEDD Excel BCA template and further formulate final opportunities for recapture with overall net savings to the MHS. Final recommendations will be presented on possible improvements within each product line and an overall impact from a Pikes Peak multi-market perspective.

Validity and Reliability

The validity of the research instrument, or BCA, to measure optimization is based on a logical process through the utilization of appropriate data elements. By selecting

appropriate data elements to measure recapture, savings, capacity and impact on quality and access, optimization can be achieved. The reliability of the research instrument depends on the accuracy of the data, or the ability of the coding to capture the actual episode of care. Although the accuracy of the coding process is not one hundred percent, it is the most reliable source of data available for analysis. Additionally, EACH institutes a data quality management control program that reviews data quality issues, and reports to the executive committee on data problems. This researcher is confident that the data collected will be valid and reliable for the purpose of this project.

Data Sources

Data will be collected utilizing the Military Health System Management and Reporting Tool (M2) and the Composite Healthcare System (CHCS). The data collection period will be from January 2000 to September 2002. Fiscal year 2003 data were not utilized in the analysis due to military deployments, fluctuations in the beneficiary population, and the lag time associated with purchased care claims. The primary ethical consideration relating to this research is the protection of patient privacy. Under the Health Insurance Portability and Accountability Act (HIPAA), patient privacy must be protected and information must be given to only those users requiring access for the administration of patient care. The researcher will ensure that the data are cleaned with no reference to names, or social security numbers in order to protect patient privacy.

Results

The applied management research results for cardiology and radiology optimization provide a cost analysis focused on the options of providing services in-house, or buying them through an alternate source. This researcher found the BCA process to be the most useful management tool for service optimization, as the process clearly highlights key financial areas, and provided a logical approach for managerial analysis.

Cardiology Optimization

Table 1 summarizes the research results of the BCA process for cardiology optimization at EACH. The table highlights three of the five cardiology product lines that EACH must analyze to achieve optimization in cardiology. The two product lines that are left off the table are direct care and institutional charges. Optimization in the three primary product lines of non-invasive, diagnostic, and therapeutic/ interventional cardiology directly affect the other product lines. An analysis of direct care services revealed that EACH could expand services in its current clinic operations. Any additional recapture opportunities found in the three primary product lines will increase direct care costs and services at EACH. Institutional charges have many unavoidable costs due to emergency room and surgical capabilities for cardiac patients. The main optimization opportunity in institutional charges is the control and monitoring system of referrals, as agreements with the Veteran's Administration (VA) will reduce costs provided EACH shifts workload to the VA.

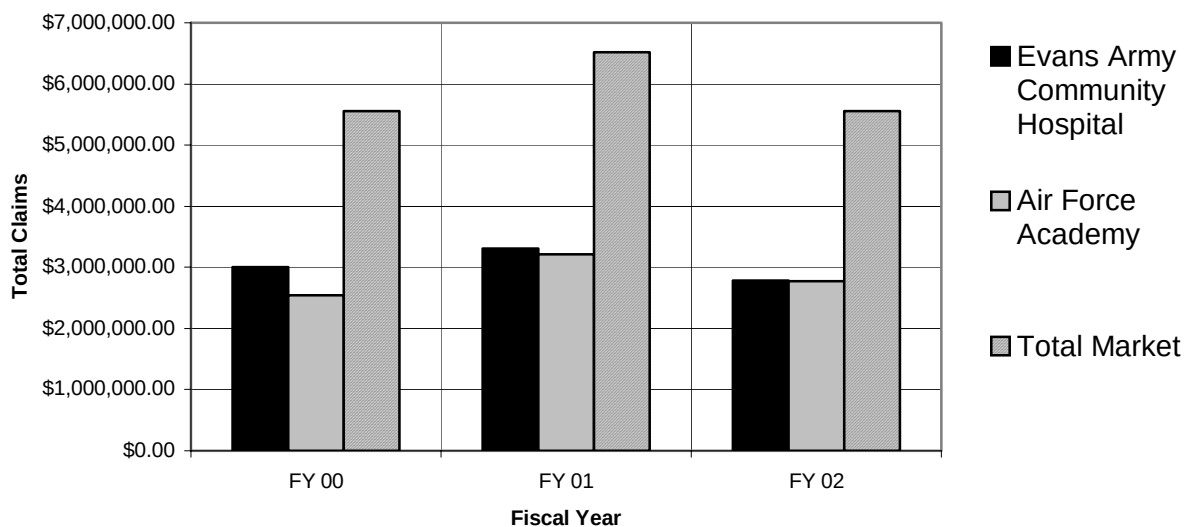
Table 1. BCA Summary for Cardiology Optimization

Cardiology Product Line	Optimization Results
Non-Invasive	In-house echocardiography services will provide an annual net savings of \$70,000, equaling a 36-month return on investment (ROI) of \$210,000.
Diagnostic	Investing in in-house diagnostic cardiology services will not meet the AMEDD required three year ROI. The service will have an average net operating loss of \$453,000, excluding initial start-up costs.
Therapeutic/ Interventional	The annual purchased care costs represents 30% of a base salary for an interventional cardiologist. Providing this service in-house would create a significant operating loss for the facility.

The optimization results stem from an examination of the purchased care costs, and demand for cardiology services, which was conducted during step one of the BCA process. From the Pikes Peak multi-market perspective, cardiology purchased care costs,

which include non-institutional and institutional costs, have exceeded an annual total of \$5 million from FY 00 to FY 02. Figure 1 depicts the total cardiology purchased care claims for the Pikes Peak multi-market area.

Figure 1. Pikes Peak Multi-Market Cardiology Purchased Care for Enrolled Beneficiaries from FY 00 to FY 02

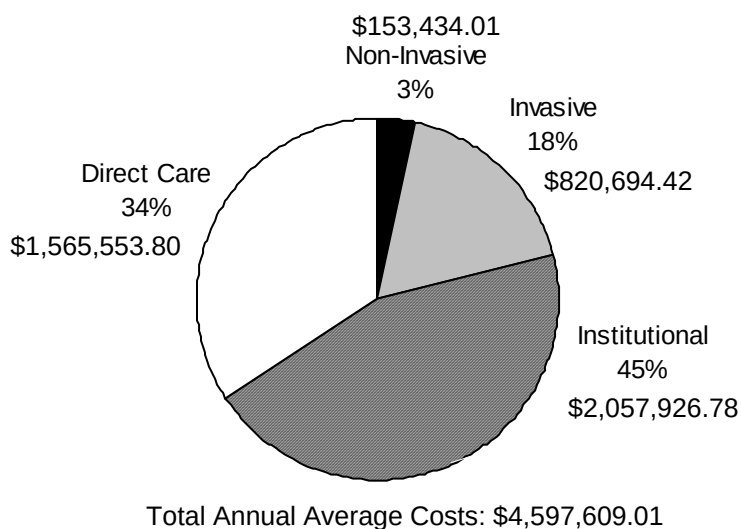


Data Source: M2 data query conducted November 11, 2003

In order to obtain a better understanding of EACH's total costs and demand for cardiology services, further dissection is required. Figure 2 depicts the average costs of cardiology services segmented into key cardiology product lines (Invasive cardiology includes diagnostic, therapeutic and interventional services). Figure 3 depicts the average demand for cardiology product line services from fiscal years 2000 to 2002. The cost and demand data obtained from figures 2 and 3 presented the areas to focus on for cardiology optimization, and more importantly

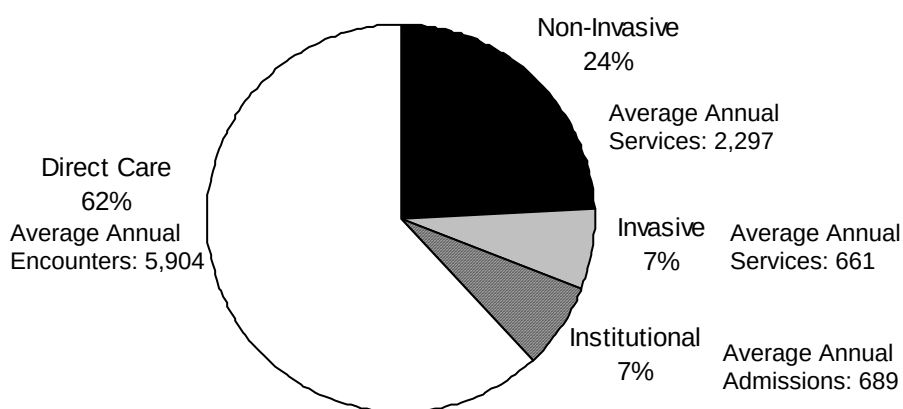
provided a structure for the data, which facilitated constructive analysis.

Figure 2. Evans Army Community Hospital's Average Cost of Cardiology Product Lines from FY 00 to FY 02 (Enrolled Beneficiaries)



Data Source: M2 data query conducted November 12, 2003

Figure 3. Evans Army Community Hospital's Average Demand of Cardiology Product Lines from FY 00 to FY 02 (Enrolled Beneficiaries)

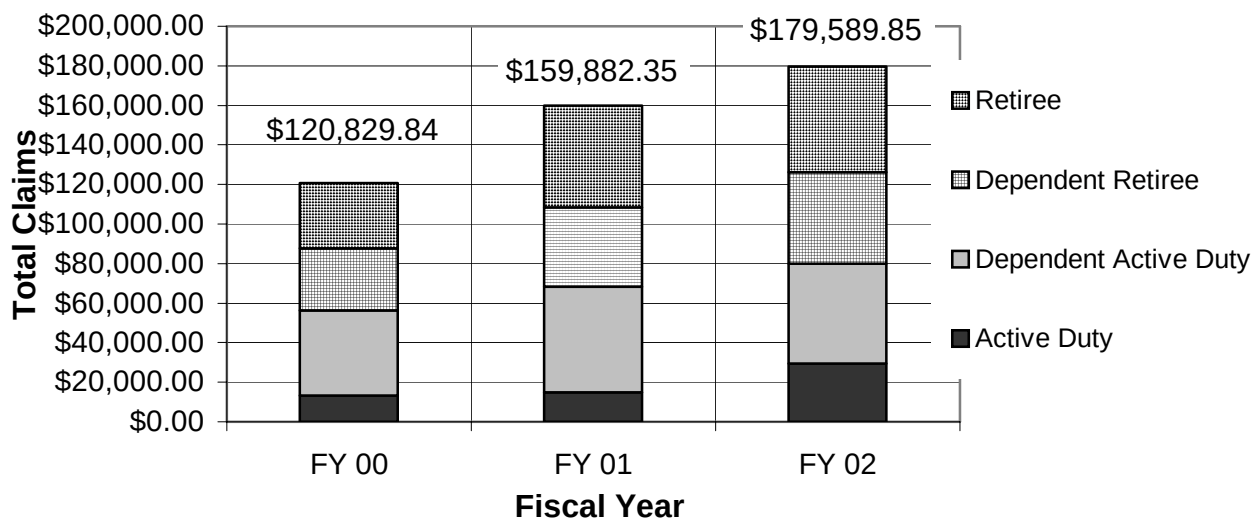


Data Source: M2 data query conducted on November 12, 2003

Non-Invasive Cardiology

Figure 4 shows EACH's purchased care costs for non-invasive cardiology by fiscal year and beneficiary category.

Figure 4. Evans Army Community Hospital's Non-Invasive Cardiology Purchased Care by Enrolled Beneficiary Category



Data Source: See Appendix D, non-invasive cardiology data tables

This figure depicts a relatively proportional increase in demand by enrolled beneficiary category and an upward trend for non-invasive cardiology purchased care. After inputting critical data into the BCA template (see Appendix B), non-invasive cardiology broke-even within twelve months of implementation, and had a net savings of \$70,000 annually, with the possibility of more savings to the Pikes Peak multi-market region through absorbing network leakage by the Air Force Academy. Figure 5 depicts the break-even graph for non-invasive cardiology utilizing a historical average

demand of 2,297 services at EACH. The break-even point for non-invasive cardiology is at 1,250 services, which is almost half the average historical demand at EACH. Anything after 1,250 represents a net savings to EACH with the total calculation equaling \$70,000 at an annual demand of 2,297 services. The mathematical equation utilized for break-even is as follows: (Austin & Boxerman, 1995).

$$\text{Total Revenue} = \text{Total Costs}$$

$$\text{Total Revenue} = \text{Price} \times \text{Quantity}$$

$$\text{Total Revenue} = \$66.80 \times \# \text{ of services}$$

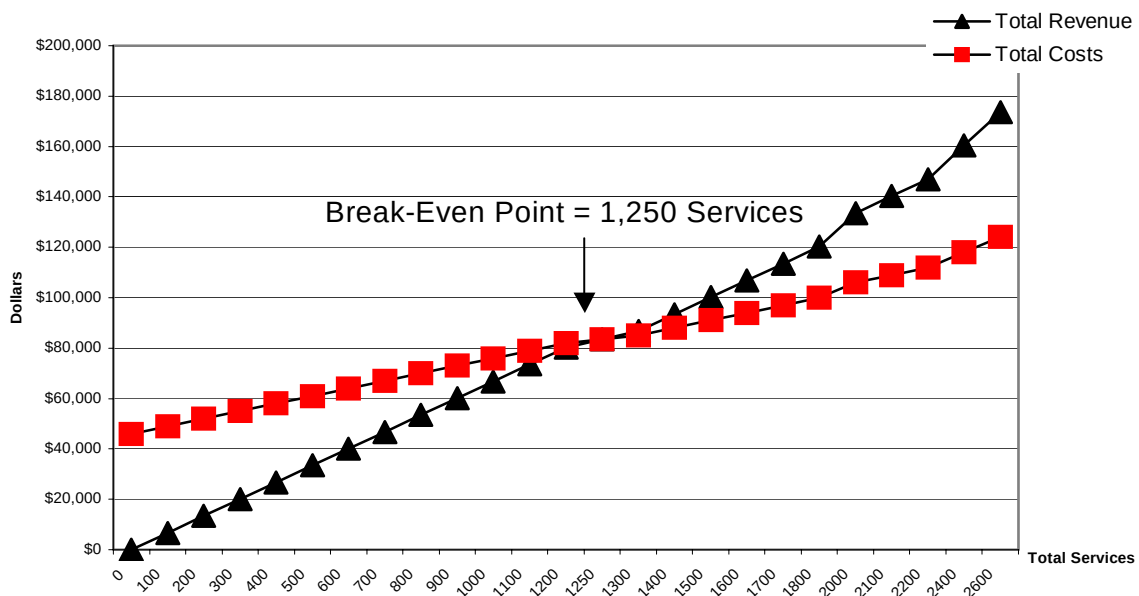
$$\text{Total Costs} = \text{Fixed Costs} + \text{Variable Costs}$$

$$\text{Total Costs} = \$46,000 + (\$30 \times \# \text{ of services})$$

$$\$66.80 \times \# \text{ of services} = \$46,000 + (\$30 \times \# \text{ of services})$$

$$\text{Break-even point} = 1,250 \text{ services}$$

Figure 5. Break-Even Graph for Non-Invasive Cardiology



Diagnostic Cardiology

Diagnostic cardiology had a ROI of 648 months, which does not meet the three year AMEDD standard, and does not take into account necessary equipment, or software upgrades required at year five (see Appendix C). Figure 6 depicts the break-even graph for diagnostic cardiology utilizing an average demand of 582 services at EACH (for calculation see Appendix C). Further calculation of additional workload from the Air Force Academy still presented an annual net operating loss and a ROI exceeding the AMEDD standard. Figure 7 shows the total cost and services by fiscal year and beneficiary category.

Figure 6. Break-Even Graph for Diagnostic Cardiology

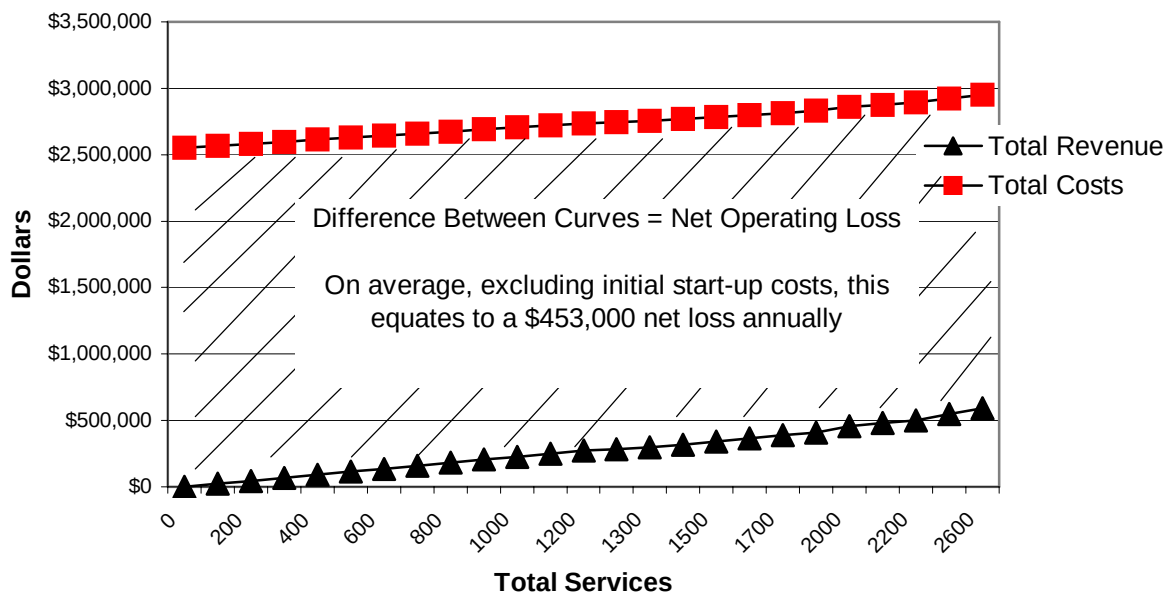
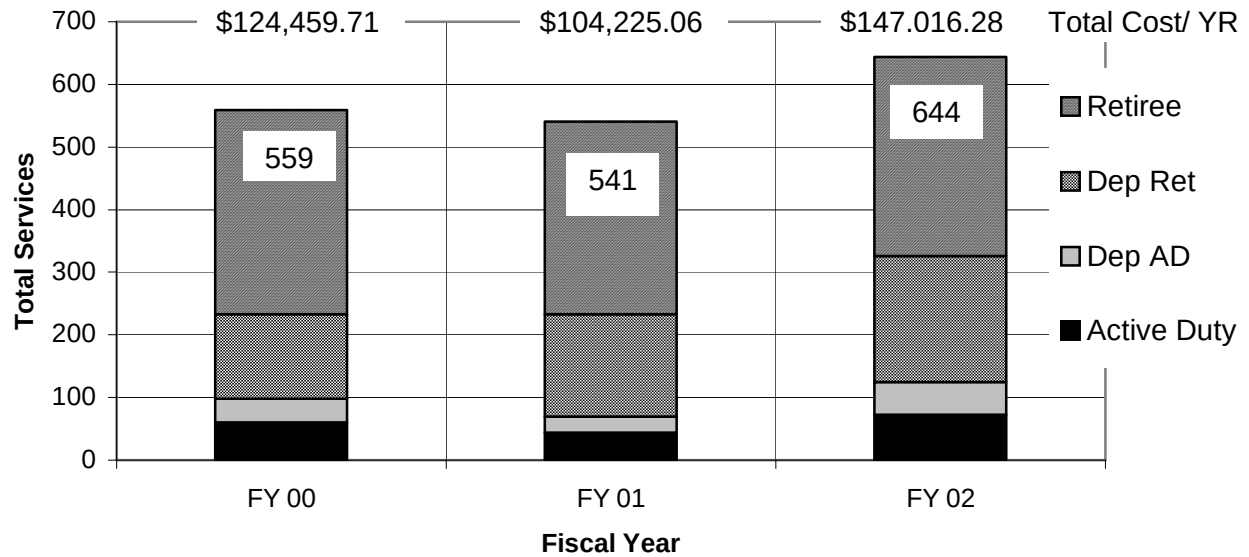


Figure 7. Evans Army Community Hospital Cost and Demand for Purchased Care Diagnostic Cardiology Services (Enrolled Beneficiaries)

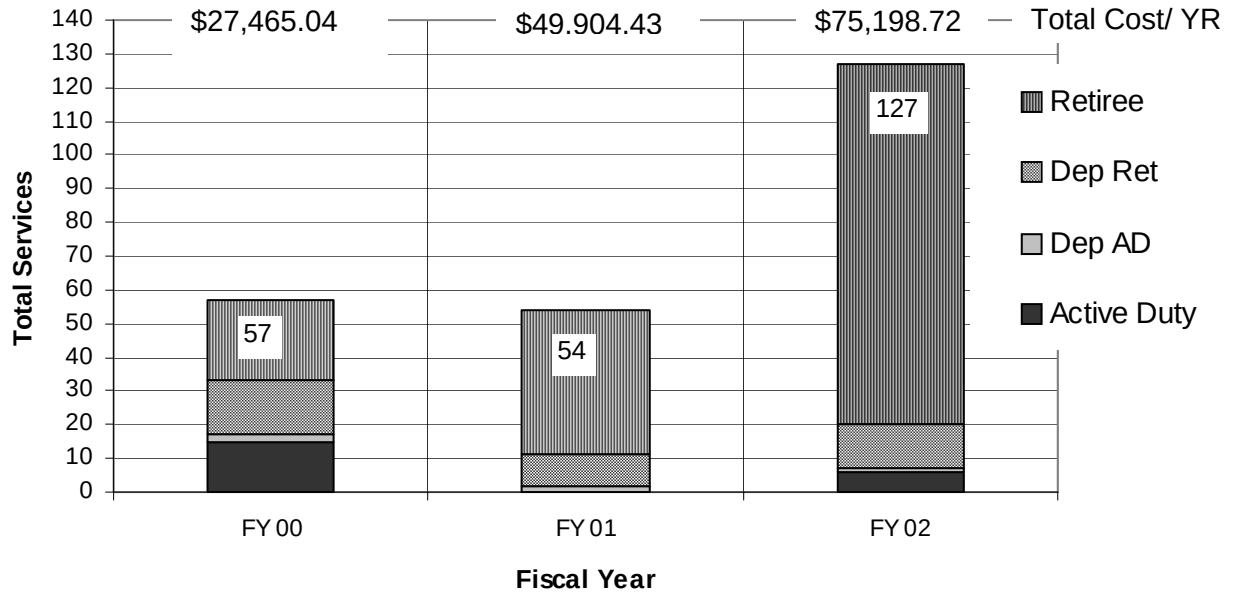


Data Source: See Appendix D, diagnostic cardiology data tables

The ROI for therapeutic/ interventional cardiology was not calculated due to the obvious disparity in cost savings and investment capital. The associated cost savings represented only thirty percent of the annual base salary of an interventional cardiologist, which is an important cost for the product line, and further calculation of additional staffing, equipment, and cardio thoracic (CT) surgery would make it impossible to overcome the total costs of producing the product line in-house. The obvious optimization result for this product line is to purchase the care from another facility, which is able to achieve economies of scale on the product line, in order to achieve a more favorable financial solution. Figure 8 shows the total costs and demand by beneficiary category and fiscal year. The amount of

services and purchased care costs does not present a financially feasible recapture opportunity for EACH to provide in-house therapeutic cardiology services.

Figure 8. Evans Army Community Hospital Purchased Care Costs and Demand for Therapeutic Cardiology Services (Enrolled Beneficiaries)

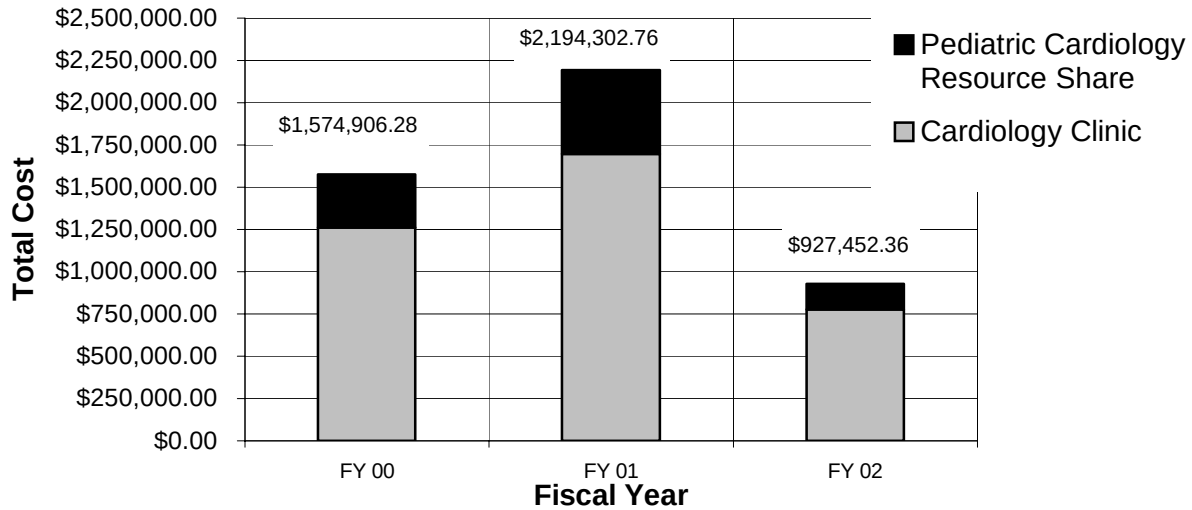


Data Source: See Appendix D, therapeutic cardiology data tables

Direct Care

Figure 9 illustrates EACH's direct care costs, as it relates to pediatric and adult (labeled cardiology clinic) services. Any attempt to curtail direct care services would increase purchased care costs, and diminish EACH's capability to expand services in non-invasive cardiology. Optimization results in direct care indicate that EACH needs to expand its capability to provide all the services deemed recapture opportunities under non-invasive cardiology.

Figure 9. Evans Army Community Hospital Direct Care Costs (Enrolled Beneficiaries)

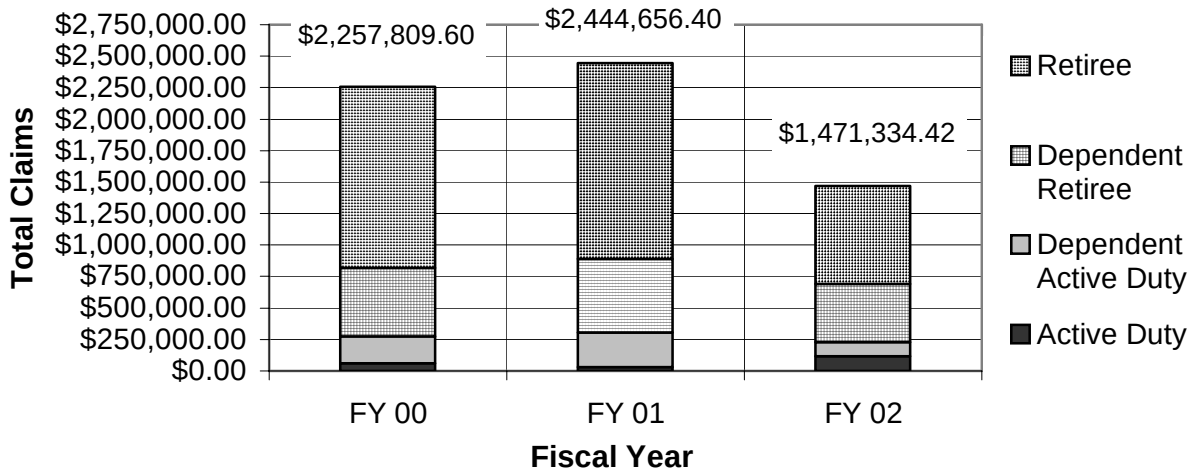


Data Source: M2 data query conducted November 12, 2003

Institutional Charges

Although institutional charges represent 45 percent of EACH's average costs, the amount spent from FY 01 to FY 02 has decreased by approximately 40 percent. As figure 10 depicts, a 50 percent decrease in retiree institutional costs, coupled by fluctuating increases and decreases in other beneficiary categories, enabled total costs to decrease by the 40 percent experienced. However, EACH still spends a significant amount on institutional charges in comparison to the other cardiology product lines. Optimization results in institutional charges indicate that alternatives to network referrals need to be pursued in order to decrease charges. Additionally, extensive

Figure 10. Evans Army Community Hospital Institutional Cardiology Purchased Care by Enrolled Beneficiary Category



Data Source: M2 data query conducted November 12, 2003

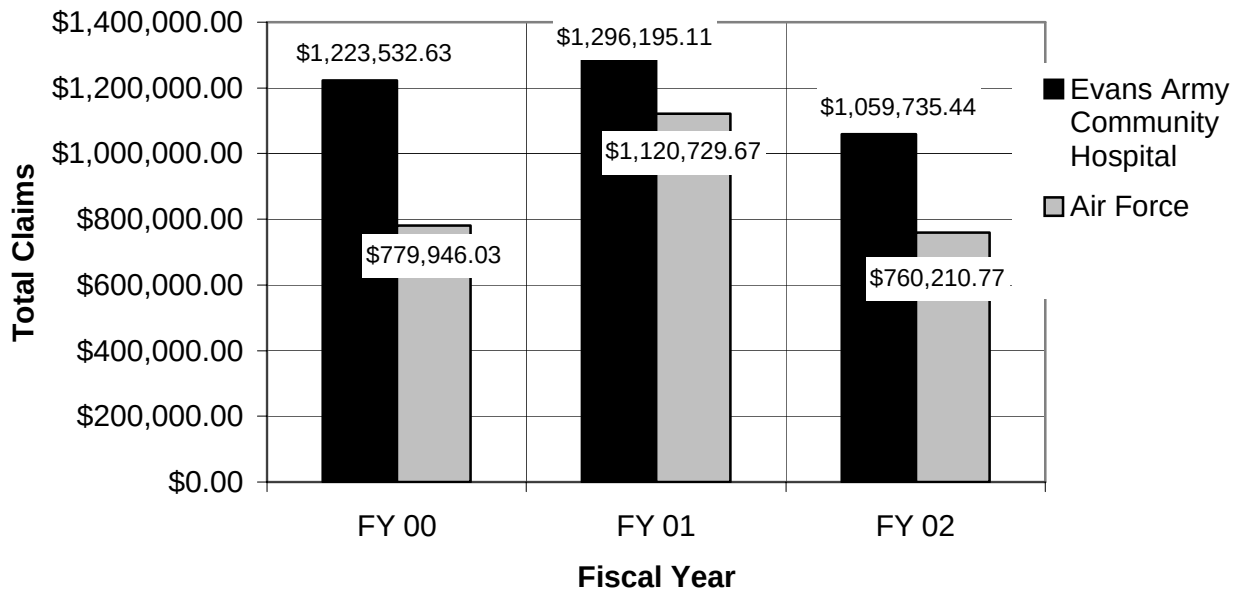
monitoring by case and referral management needs to be conducted in order to provide best and financially feasible care options.

Radiology Optimization

The Pikes Peak multi-market area has experienced high network leakage in radiology purchased care (see Figure 11). Network leakage is the amount of TRICARE prime patients referred to the network for services provided at local MTFs. The purchased care data support a need for optimization in order to decrease expenditures to the network. The ability to provide an accurate analysis of radiology services became difficult due to organizational issues, such as shortages in staffing and the need for essential equipment improvements. During FY 00 to FY 02, EACH experienced a gradual increase in staffing to the point that FY 04 staffing levels are able to meet radiology services demand.

Additionally, technological equipment improvements enabled EACH to explore avenues of optimization not available during the timeframe under analysis. The main technological improvement is the implementation of the digital imaging network picture archived communication system (DINPACS), which allows EACH to transmit digital images to other facilities under teleradiology initiatives. This improvement opened the possibility of shifting workload to other MTFs when required, which allowed for services to be conducted in-house versus referrals to the TRICARE network. EACH is actively engaged in radiology services through venture capital projects, and creative hiring initiative to bring

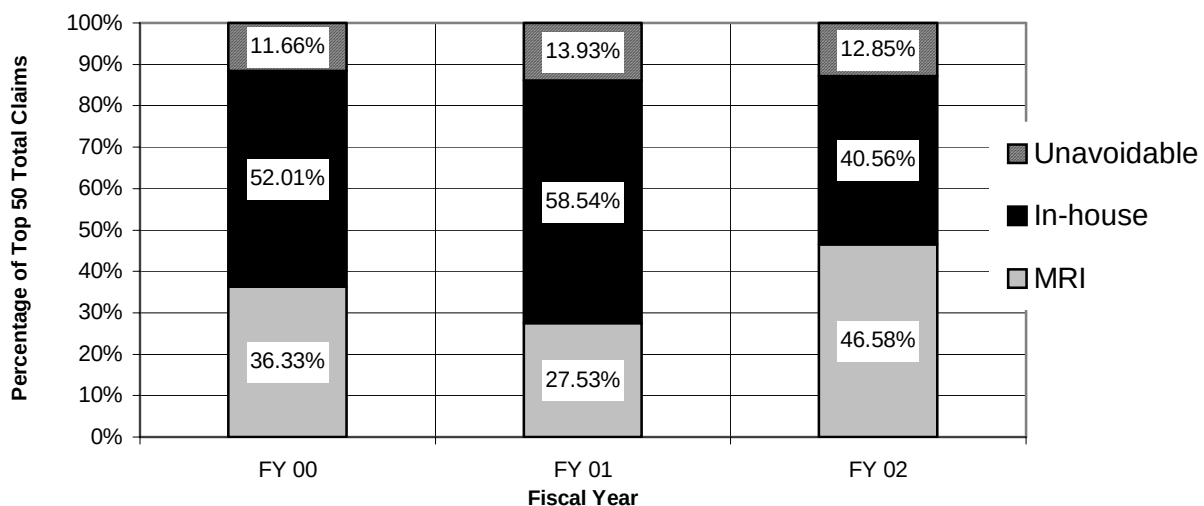
Figure 11. Pikes Peak Non-Institutional Enrolled Beneficiary Purchased Care for Radiology FY 00 to FY 02



Data Source: M2 data query conducted November 12, 2003

radiologist staffing to its required level of 6.0 full-time equivalents (FTE). Due to the plethora of organizational issues surrounding radiology services, this researcher looked closely at the purchased care data during FY 00 to FY 02 to determine if current capabilities facilitated the optimization of radiology services. The top 50 CPT codes for radiology purchased care (see Appendix E) were utilized, in order to determine if current projects aimed at radiology services were meeting network leakage. After reviewing the purchased care data, it seemed logical to sort the CPT codes into three product lines: current in-house services EACH provides to capture possible saved costs due to increased capabilities, magnetic resonance imaging (MRI) due to current MRI procurement initiatives, and unavoidable radiology services due to emergency, or referred services to other medical facilities. Figure 12 depicts the percentage of

Figure 12. Evans Army Community Hospital Radiology Top 50 CPT Codes Cost Distribution (Enrolled Beneficiaries)



Data Source: See Appendix E

costs that each product line consumed of the top 50 CPT codes. As expected, the amount of in-house services decreased from FY 01 to FY 02 due to possible staffing issues, and the percentage of MRI costs increased due to EACH's reliance on the Air Force Academy, and network facilities. At first blush, it appears that EACH can save over 80 percent of the radiology purchased care costs, provided that strict referral management is enforced, and services produced in-house do not have to be referred to the network due to emergencies, or other referred medical services unique situations. This researcher found that initiatives at EACH are focused on recapturing the 80 percent illustrated in figure 12 through the procurement of a MRI, and the sustainment of critical staffing to meet workload requirements. The radiology department determined that its critical staffing level is 5.0 FTE radiologists. MUF issues such as permanent change of stations (PCS), and deployments could bring them to the critical level (W. Marshall, personal communication, March 18, 2004). However, this effect can be compensated for by utilizing teleradiology and possible interim hires, should the opportunity, or current job industry allow for such an option.

Discussion

Cardiology Optimization

In order to gain insight into cardiology optimization, this researcher conducted extensive interviews with hospital staff, clinic personnel, other MTFs, a civilian cardiology group practice, and the VA in Denver, Colorado. This led to a logical separation of cardiology into four distinct product lines: non-

invasive, invasive (diagnostic and therapeutic/ interventional), institutional, and direct care. In order to evaluate all recapture opportunities for the BCA, purchased care costs and workload factors had to be divided into the CPT codes associated with the cardiology product lines. Appendix D shows the division of CPT codes into non-invasive, diagnostic and therapeutic product lines. All data in Appendix D were extracted from M2 and sorted by fiscal year, beneficiary category, and facility. It was necessary to organize the data into separate tables for comparative and analytical reasons. The CPT codes in each area are pure to the services outlined in the American Medical Association's CPT manual. The associated codes for supplies are not calculated into the product lines due to the fact that supply costs would be absorbed by the facility and only the true service costs would be the realized savings. Table 2 displays the additional data utilized for personnel salaries, and associated equipment costs in the BCA template. This researcher utilized the BCA template contained in Appendix B and C, obtained from the resource management department at EACH (J. Hawkins, personal communication, September 2, 2003).

Non-Invasive Cardiology

After gathering and inputting all appropriate cost, savings, avoidance, and workload factors into the BCA template (see Appendix B), an investment in in-house non-invasive cardiology services would yield the greatest product line recapture opportunity. In order to implement this initiative, EACH would have to hire 1.0 FTE contract echocardiograph technician, and

further renew telecardiology agreements with Brooke Army Medical Center (BAMC) for the interpretation and reporting on

Table 2. Salary and Equipment Costs for the BCA

Product Line	Cost per Year
Non-Invasive	Cardiologist - \$219,000 Echocardiograph Technician - \$46,000 Annual Supplies - \$60,000
Diagnostic	Cardiologist - \$250,000 Support Staff (2 ICU RNs, 2 Techs) - \$200,000 Equipment Costs - \$2.0 million + \$100,000 facility modification costs (One-time cost) Maintenance Contract - \$50,000/yr Supplies - \$100,000/yr
Therapeutic/ Interventional	Cardiologist - \$250,000 (Other costs not calculated due to net loss)

Note: Salaries were compiled from <http://www.salary.com>, using base salary calculations for Colorado Springs, CO. Equipment, supplies and maintenance contract costs were obtained from personal communication with G. Schwartz on February 26, 2004.

echocardiographs. A contract echocardiograph technician is necessary in order for EACH to compete with civilian groups and practices, which are short echocardiograph technicians.

During fiscal years 2000 and 2001, EACH had a resource share agreement for an adult cardiologist and echocardiograph technician. Towards the end of fiscal year 2001, EACH dissolved its resource share agreement for adult cardiology services and shortly after that timeframe, lost its echocardiograph technician. The rationale behind the dissolution of its adult cardiologist was the internal medicine and family practice clinics could absorb the services of the cardiologist and the interpretation and reporting could be done by BAMC at Fort Sam Houston, Texas. This situation prevailed until EACH lost its echocardiograph technician, and all echocardiograph services were referred to the TRICARE network. Since EACH did not bear the burden of purchased care, it did not realize the true effect of disbanding this service. The resource share agreement actually saved EACH approximately 30 percent due to the fact that services were provided in-house and no facility charges were incurred. Under the TRICARE next generation of managed care support contracts, it will benefit EACH to recapture echocardiograph services, providing all non-invasive services with the exception of echocardiograph transesophageals (TEEs).

Table 3 provides the top ten non-invasive cardiology CPT codes, which were determined by using the accumulative amount spent from FY 00 to 02. On average, these top ten CPT codes represent 90 percent of the non-invasive purchased care costs.

An echocardiograph technician can perform nine of the ten services, with an interpretation from a cardiologist at BAMC, or possibly through the VA. The only CPT code on the list that must

Table 3. Top 10 Purchased Care CPT codes for Non-Invasive Cardiology

CPT Code	Description
93307	Echocardiograph, transthoracic, real-time with image documentation
93325	Doppler echocardiograph color flow
93320	Doppler echocardiograph, pulsed wave
93350	Echocardiograph, during rest and cardiovascular stress test
93015	Cardiovascular stress test
93303	Transthoracic echocardiograph
93005	Electrocardiogram tracing only
93000	Electrocardiogram, routine w/ interp
93312	Echocardiograph transesophageal
93012	Telephonic transmission of electrocardiogram rhythm strips

be performed by a cardiologist is CPT code 93312 (echocardiograph transesophageals). In order to realize a 10 percent savings in CPT code 93312, EACH can contract the service through the VA utilizing a VA/DOD share agreement. The 10 percent savings is a

targeted negotiable rate that the MTF strives to achieve, in that the total reimbursement to the VA would be the CMAC rate minus 10 percent. Again, this is the standard negotiable rate and can differ based on contracted services with the VA (J. Hawkins, personal communication, March 30, 2004).

Diagnostic and Therapeutic/ Interventional Cardiology

The BCA for diagnostic and therapeutic/ interventional cardiology did not meet the AMEDD's venture capital requirements. Additionally, both product lines would operate at a financial loss continuously. If the workload from the Air Force Academy were taken into consideration, both product lines would still operate at a financial loss. This researcher utilized the data from Appendix D and Table 2 for the BCA process. Diagnostic cardiology had a significantly high ROI, 648 months, while therapeutic/ interventional cardiology could not even overcome the single cost of a salaried invasive cardiologist. Thus, the obvious findings were to purchase the care at the most cost effective means.

Although no recapture opportunities presented themselves in diagnostic and therapeutic cardiology, the optimization results are focused towards an alternative to achieve a degree of cost savings. The financially feasible alternative for EACH is to shift as much diagnostic and therapeutic cardiology workload to the VA in Denver, Colorado, in order to achieve a possible 10 percent savings in reimbursable costs. As stated earlier, the 10 percent savings is based on a negotiated reimbursement rate with the VA. Although the VA cannot absorb all the demand from EACH,

within fiscal year 2005, current projects aimed at increasing cardiology capabilities at the VA will eventually enable them to meet a large majority of the demand. EACH can begin by shifting, or referring 100 cases in FY 05 and then increase workload as space and capacity allow (G. Schwartz, personal communication, February 26, 2004). This will provide an additional savings in institutional costs since any admissions stemming from VA workload will be admitted to their facility.

The main challenge in analyzing low-risk diagnostic and therapeutic/ interventional cardiology services is the fact that demand is difficult to predict due to possible variations in medical diagnosis. Although there are historical averages to support workload, the fact that variations can occur in which one cardiologist may medically diagnose as low-risk, versus another cardiologist. Additionally, a patient may progress from low-risk to interventional during a procedure. That is, once a diagnostic procedure begins, the cardiologist may find an additional undiagnosed condition requiring a more interventional procedure. Thus, you cannot count on diagnostic workload levels with certainty due to variations in medical diagnosis, patient demographics, and possible medical history, which could make them more of a therapeutic/ interventional procedure. The VA has the ability to conduct diagnostic and therapeutic/ interventional procedures within the same health care setting. They utilize their cardiac catheterization laboratory for diagnostic procedures and can shift to interventional procedures should the scenario call for it. Pikes Peak Cardiology has a stand-alone

cardiac catheterization laboratory outside a hospital setting, and must transport a patient to Memorial Hospital for additional interventional procedures. This incurs additional charges and the patient must endure transport and additional preparation for another procedure. It seems more beneficial to the patient to receive care in a setting like the VA to ensure no additional transports occur, nor additional charges for interventional procedure preparation.

Table 4 provides the top 10 CPT codes for invasive cardiology, which shows that catheterizations, supplies, and emergency department visits comprise a majority of the invasive purchased care services. All of the CPT codes on the table 4 exceed the capabilities at EACH and are cheaper to purchase versus produce them in-house. These CPT codes were analyzed to determine if any savings could be achieved. However, 50 percent of the CPT codes were deemed unavoidable due to the possibility that the majority could be related to emergency medical services. The other 50 percent of the CPT codes are diagnostic procedures and were analyzed as part of the BCA for diagnostic cardiology.

Direct Care

The current capabilities of the cardiology clinic can be expanded to meet the recapture opportunities in non-invasive cardiology. The hiring of an echocardiograph technician will increase direct care costs and services provided in-house. The current clinic environment can support the services, and further benefit patients served by the cardiology clinic. EACH should continue its resource share agreement with the pediatric

cardiologist (0.10 FTE), and maintain its staffing levels for adult cardiology services, with the addition of an echocardiograph technician. Deviating from this will only increase purchased care costs, and dwindle cardiology services at EACH.

Table 4. Top 10 CPT Codes for Invasive Cardiology

CPT Code	Description
99070	Supplies and materials provided by physician over and above those usually included with office visit
93510	Left heart catheterization, retrograde, from brachial artery
99284	Emergency department visit
92980	Insert intracoronary stent
99285	Emergency department visit
99088	Other room, ancillary, drug charges
99214	Office/ Outpatient visit, EST
93651	Intracardiac catheter ablation of arrhythmogenic focus
93797	Cardiac rehabilitation
93609	Intraventricular mapping of tachycardia sites with catheter, add-on

Note: Top 10 CPT codes based on FY 00 to FY 02 accumulated costs.

Institutional Charges

The institutional cost, which primarily included associated admissions charges, represents the largest cost for EACH, but hidden within that product line are unavoidable costs. These costs include cardiac emergencies, evacuated to a higher level of care exceeding the emergency capabilities of EACH, and require a length of stay for observation of the patient. Due to the constraints of current capabilities, and no plans to increase emergency capabilities in the future, evacuated emergencies are deemed unavoidable, and virtually uncontrollable, except through wellness initiatives targeted at those at risk of cardiac emergencies. The factors that are possibly controllable, or present optimization opportunities are the diagnostic, therapeutic and interventional services that require an admission. If recapture, or cost savings can occur in the invasive cardiology product group, then the possibility for savings in institutional charges exist. This led to the creation of diagnostic, and therapeutic/ interventional product lines as additional areas of possible recapture. The options for optimizing institutional costs are creating the in-house capability, aggressive case management, and utilization of the VA. Creating the in-house capability requires hiring additional nursing staff, expanding the intensive care unit, hiring an interventional cardiologist on staff, the creation of a step-down nursing unit, the ability to provide appropriate care if the patient's acuity should become worse, and possible CT surgery considerations. All of which are linked to the question of whether EACH can provide in-house diagnostic and therapeutic/

interventional cardiology. EACH is physically and financially constrained from taking on diagnostic, therapeutic and interventional cardiology due to the lack of a return on investment, and the ability of the network, and VA to provide quality care at financially reasonable rates.

Radiology Optimization

This researcher was able to gain invaluable insight into radiology services at EACH through extensive interviews, the Technology Assessment and Requirements Analysis (TARA) visit, various ad hoc meetings and video teleconferences (VTC), and executive committee discussions. EACH appears to be attacking the issues on radiology from all fronts: staffing, equipment, purchased care dollars, inadequate MRI services for a power projection platform, and constant pressure on higher echelons of command. The tremendous efforts that EACH has placed on recapturing radiology services should provide a significant reduction of approximately 80 percent in purchased care costs, provided there is not a significant increase in unavoidable costs. Since EACH has adequate staffing, it is actively pursuing a MRI and will have the capability within fiscal year 2004.

During the timeframe of analysis, FY 00 to FY 02, EACH experienced a heavy reliance on the TRICARE network for radiology services. This was primarily due to a shortage in radiologist to read, interpret and report on services provided in-house (B. Kelly, personal communication, March 18, 2004). From FY 00 to FY 02, EACH experienced a radiologist staffing low of 2.0 FTEs. In comparison, the current (FY 04) staffing high of 6.0 FTEs

includes a VA/DOD share agreement of 0.5 FTEs. This would have never been possible without the utilization of DINPACS. In fact, EACH has revolutionized the VA/DOD radiology share agreement with the first VA link to DINPACS.

The main challenge in analyzing radiology optimization is the significant improvements and initiatives ongoing. The data represent a timeframe where current factors provide viable solutions to overcome increased costs. Fiscal year 2003 is difficult to gauge any balancing effect of EACH's efforts due to the vast number of deployments, and fluctuations of transient populations. This researcher felt the best analysis for radiology purchased care data was to focus on the top 50 CPT codes to determine if current initiative could recapture, or optimize radiology purchase care. The top 50 CPT codes were utilized because it represented approximately 60 percent of the total purchased care costs. When an analysis was conducted of all the CPT codes, it became difficult to sort them into product lines because of the limitation of knowing whether the service was related to other MTF referrals, or referred due to unavailability of in-house radiology services. The utilization of the three product lines, and knowledge of radiology staff facilitated the analysis of the top 50 CPT codes. Unlike the case of cardiology optimization, where EACH simply did not possess the capability, radiology optimization possessed the capability, and the reason for referral was difficult to ascertain. This researcher is confident that the analysis of the top 50 CPT codes provides an adequate analysis of how current optimization efforts are

concentrated in the right direction to lower purchased care costs, and improve continuity of patient care within the facility.

Magnetic Resonance Imaging

The TARA team visit at EACH provided a tremendous look at radiology services, and how the AMEDD evaluates its life-cycle management on large item capital expense equipment. The analysis the TARA team provided, and additional workload calculations enabled EACH to receive justification for a MRI. This effort should recover approximately 45 percent of associated purchased care costs and provide an invaluable service to the patients at EACH. The overall increasing trend from FY 00 to FY 02 in MRI purchased care and its associated proportional increase in total percentage of costs is expected, due to the staffing issues and increases in in-house capabilities during the timeframe under analysis. EACH currently utilizes the MRI at the Air Force Academy, and network sources when standards of care cannot be met. Average network demand from FY 01 to FY 02 was 645 MRIs, and an average cost of \$307,588.44. This calculates to an average cost per service of \$476.88. The average demand EACH placed on the Air Force Academy from FY 01 to FY 02 was 1400 MRIs. When you calculate the network average cost into the Air Force Academy demand, the total cost on the Air Force Academy is \$667,633.81. Thus, EACH's average demand and cost between FY 01 to FY 02 were 2,045 MRIs at a cost of \$975, 222.35. This justifiably points to EACH requiring the in-house MRI capability. Although the Air Force Academy met a majority of the demand for EACH's MRI

referrals, the intangible factors greatly affected the patients. Those factors are driving to the Air Force Academy during hours of heavy traffic and inclement weather, the inability to have 24 hour availability for patient care, lack of transportation for active duty soldiers, missed duty time due to time commitments for a MRI service, and the simple fact that EACH serves a greater active duty population compared to the Air Force Academy, and the power projection platform mission. The efforts by the command and staff at EACH will provide them an essential service for patients and staff. An MRI will allow EACH to retain staff, and further recruit radiologist because of technological capabilities to enhance critical skills. EACH has lost potential radiologist hires due to its lack of a MRI, where the applicant simply choose the Air Force Academy due to its MRI capability (W. Marshall, personal communication, March 18, 2004).

In-House Services and Unavoidable Costs

After sorting the data into the three product lines, the assistance of the radiology department was utilized to determine if those services under the in-house product line were recapturable. CPT codes that were questionable, or possibly linked to emergency services, or services exceeding EACH's capability were sorted into the unavoidable product line. On average, EACH experienced 13 percent of its radiology purchased care costs attributable to unavoidable circumstances, and 50 percent to services that could be provided in-house. Thus, EACH has the potential to recapture services and possibly accept 13 percent as a benchmark for unavoidable purchased care cost.

BCA Autopsy

The research results alluded to the fact that optimization must and can happen in cardiology and radiology. The primary constraint for EACH is economic factors, which fiscally challenge budgetary operation. The worst-case scenario, or absolute worst conditions EACH could face, under the conditions of this research would be for EACH to do absolutely nothing. If this occurs, then purchased care costs would increase, and EACH would find itself in financial difficulty to fund direct care services every fiscal year. EACH is virtually at its optimal point in providing cardiology services in-house, with the exception of recapturing echocardiograph services. If EACH can recapture these services, then the best-case scenario, or the best conditions EACH could face given the research conditions, is that purchased care costs decrease. The worst-case scenario for cardiology is that echocardiographs are performed in-house and network providers are performing them in their health care surrounding, and billing EACH, due to a breakdown in internal referral management. In radiology, the best-case scenario for EACH would be the recapture of 80 percent of its radiology purchased care due to the procurement of a MRI, and strict monitoring of referred services. The worst-case scenario will be no MRI capability at EACH, and the facility being billed for services provided in-house. As part of the BCA process, this autopsy provides constraints and the situations that could go right, and wrong.

Conclusions and Recommendations

This study contains a threefold purpose: (1) to determine the optimal mix of direct and purchased care in cardiology and radiology services, (2) to identify the best optimization opportunities in cardiology and radiology product lines through the use of the BCA process, and (3) to determine how effective a multi-market approach is in cardiology and radiology services and whether its adaptation is more effective from a market perspective.

Optimal Mix of Direct and Purchased Care

As this study analyzed the overwhelming accumulated cost figures, it became an inevitable conclusion that some of the purchased care must be experienced due to limited capability at EACH. This does not mean that EACH is a victim of circumstance when it comes to purchased care, but the abilities of local network facilities to achieve economies of scale provides a financial savings to EACH.

Based on the results of this study and analysis of the data, the recommended optimal mix of direct and purchased care for cardiology services would be to maintain current direct care services, increase non-invasive direct care capabilities, and purchase the remaining cardiology product lines through the VA, and TRICARE network. EACH is at its optimal state in purchasing diagnostic, and therapeutic/ interventional cardiology services, but can achieve a possible 10 percent savings through a negotiated contract with the VA. This savings could exceed an annual average of \$12,000, and increase more as VA capacity increases within the next fiscal year. Thus, if EACH invests in

non-invasive cardiology, and utilizes the VA for potential savings, then an annual savings of \$82,000 in cardiology services can be realized.

The optimal mix for radiology services would be to provide more direct care in terms of MRI capabilities, and accept a 13 percent annual network leakage rate for unavoidable purchased care costs. This 13 percent equates to an annual average cost of \$155,110. If EACH can control network leakage to the 13 percent, it can potentially realize an average annual net savings of \$950,000.

BCA Optimization Opportunities

The results of the BCA process recommend that EACH invest in providing echocardiograph services in-house. This would facilitate the most recapture of cardiology services within the 36 month AMEDD ROI. The hiring of a 1.0 FTE contract echocardiograph technician, and agreements with BAMC for interpretation and read of echocardiographs is the primary recommendation for implementation of this outcome. This hiring action will allow the current cardiology clinic to expand its services to include all non-invasive procedures except for echocardiograph transesophageals. If EACH makes an annual investment of \$106,000, it will realize an annual savings of \$176,000, which equates to an overall net savings of \$70,000 and a 36-month ROI of \$210,000. As an alternative to providing in-house diagnostic and therapeutic/ interventional cardiology, EACH should shift 100 cases for diagnostic and therapeutic cardiology procedures in FY 05 to the Denver VA in order to capitalize on

cost savings. This workload figure can be gradually increased as the VA increases its capacity within FY 05. Although the VA will not be able to meet all the demand, this will provide the best alternative for cost reduction due to calculated net losses exceeding \$500,000, if EACH provided the services in-house. Savings experienced in diagnostic and therapeutic cardiology will leak into institutional costs, as admissions associated with workload shifting to the VA has the potential for a discount of up to 10 percent.

Radiology efforts should continue in pursuit of a MRI and the recapturing of in-house services referred to the network. EACH has put forth tremendous efforts to achieve appropriate staffing levels, and procure vital equipment to enhance patient care. The main recommendation for radiology optimization is to monitor the referred radiology services, and control network referrals back to the facility for services provided in-house. An aggressive referral management system should accomplish this, and is part of the environment instituted under the TRICARE next generation of managed care support contracts.

Effectiveness of the Multi-Market Approach

The Pikes Peak multi-market area can benefit from increasing its ability to provide echocardiograph services. This is the only area that proved to be effective in terms of a multi-market plan, while the other cardiology product lines still operated at a net loss when accumulated workload was considered. Thus, from a cardiology multi-market approach, the pooling of workload and

services provided little effectiveness in recapturing more cardiology purchased care costs in-house.

The effectiveness of a multi-market approach on radiology services remains to be seen, as many current initiatives are focused on recapturing MRI services, and controlling network leakage, with the overall net effect not being realized until possibly fiscal year 2005.

Additionally, EACH may consider the following recommendations to further optimize cardiology and radiology services:

1. Negotiate with Pikes Peak Cardiology on matching or providing a better-cost saving mechanism for referred care to their facility. Pikes Peak Cardiology is one of EACH's top providers of purchased care, and shifting workload to the VA might disrupt their future revenue streams. Thus, if they can provide a cost saving plan for EACH, then it would benefit both facilities.

2. If hiring actions for an echocardiograph technician fail to materialize, then EACH should shift workload to the VA, or establish an agreement with TRIWEST to bring the services in-house.

3. Invest more in wellness efforts to target the enrolled population at risk for cardiology services. Although this investment is not immediately realized, EACH must explore efforts to minimize the demand and consumption of future cardiology services.

4. Contract with the VA for 0.1 FTE at EACH to screen potential cardiac risk patients, in order to develop a treatment plan feasible for the VA and beneficial to the patient. This will enable the VA to decide which cases at EACH require extensive treatment, allowing the VA to absorb the most costly cases, and provide EACH the most savings.

5. Implement an effective referral management system to monitor care and set the boundaries for referred services from network providers. A strict mechanism must be implemented to send services EACH provides back to the facility. An example is non-emergent radiology services required by network providers. EACH can provide the necessary radiology services; report to the network provider, and save the purchased care costs. Network providers should not be reimbursed for non-emergent services that EACH already provides.

This study provided suggested recapture opportunities, alternative cost savings solutions, and more importantly, validated the service areas that must be purchased on the network due to EACH's inability to achieve a net operational savings in-house. The method of dissecting services into manageable product lines, and then gauging those services to current capabilities and alternative options can be very useful in optimizing other services at EACH to increase financial savings, and provide the best care possible to the community of beneficiaries served.

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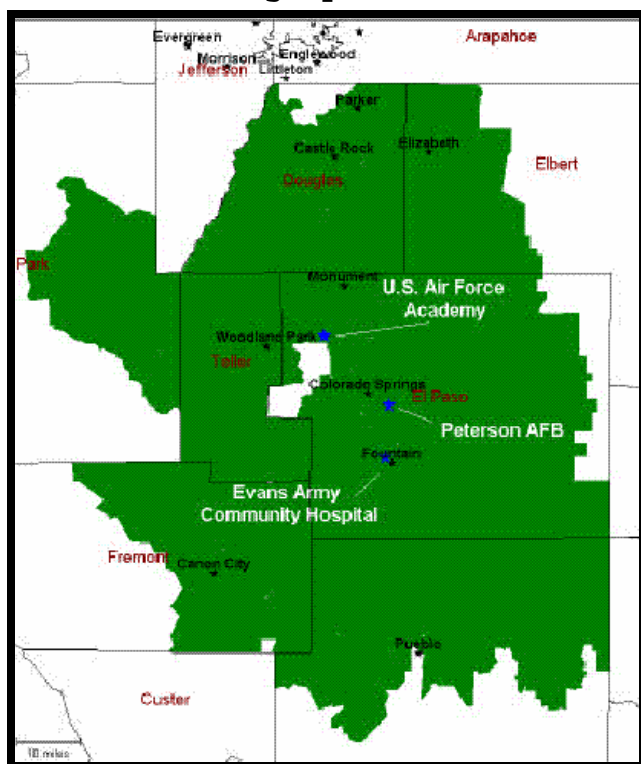
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Appendix A. Evans Army Community Hospital

Demographics and Capabilities

Evans Army Community Hospital, located at Fort Carson, Colorado, is a licensed 78-bed general medical surgical hospital, serving a beneficiary eligible population of 134,096 people. Its primary mission is "To implement an integrated health care system that ensures a healthy and medically protected force, provide fully educated, trained and deployable medical personnel and provide quality health care to all beneficiaries" (Jordan, 2003, p.2). EACH falls under the United State Army's Great Plains Regional Medical Command (GPRMC), and concurrently serves the Pikes Peak multi-market area manager at the Air Force Academy. Table 5 shows additional demographic information regarding the area EACH serves.

Table 5. Demographics



Market Overview

- Total Population: 983,795
- Eligible Population: 134,096
- EACH Eligible Population: 64,174
- Total Enrolled: 52,515
 - Main Hospital: 33,547
 - TMCs and Pueblo Depot: 18,968

Communities:

Calhan	Castle Rock
Elizabeth	Pueblo
Canon City	Colorado Springs
Fountain	Woodland Park

Special Characteristics:

High Altitude
Urban, with rural outliers
I-25 Corridor
Hazardous Cargo Passageway

Recurring Disaster Scenarios:

Flash Floods Forest Fires
Heavy winter storms Tornadoes
Mud slides

NEW THREAT: West Nile Virus

 Table 6. Services provided at EACH

Primary Care	Surgical Services	Mental Health Services
Family Practice	EENT	Psychiatry
Internal Medicine	Orthopedics	Psychology
Pediatric	Podiatry	SWS/FAP
TMC 7	PT	ASAP
TMC 10	OT	
Emergency Services	PT-Post Op	OB
	Optometry	
Medicine	Audiology	GYN
Dermatology	Ophthalmology	
Pediatric	General Surgery	Ancillary
Cardiology	GI	Pathology
Allergy	Urology	Pharmacy
Disease Management	Chiropractic	Radiology
RT		Preventive Medicine

Table 6 outlines the primary services provided at EACH. All information contained in Appendix A was extracted from the EACH Command Briefing dated November 2, 2003

Appendix B. Business Case Analysis for Non-Invasive Cardiology

Initiative Name:	<i>Echocardiograph Technician</i>	Activity POC Name & Phone #:	MAJ Harold J. Geolingo, 719-526-7233
1.0 Initiative description. Provide echocardiograph services at Evans Army Community Hospital, to include obtaining ultrasonic signals from the heart and great arteries, with two-dimensional image and/ or Doppler ultrasonic signal documentation. Interpretation and report will be complete through the re-credentialing of an internal medicine physician, or through telemedicine initiatives with Brooke Army Medical Center.			
2.0 Background - <i>EACH has no echocardiograph capabilities. It possesses the necessary equipment to conduct echocardiographs, but does not have the technician required to set-up and provide the service. Currently, all patients requiring echocardiographs are referred to the TRICARE network. Once the echocardiograph is sent to the network, then interpretation fees apply as part of the referral. EACH can utilize Brooke Army Medical Center, or a possible internal medicine physician who requires updating his credentials, to interpret the echocardiograph.</i>			
3.0 Initiative Goals & Objectives. (1) Hire an echocardiograph technician. (2) Recapture all workload being sent to the network. (3) Reduce Network referrals and costs (4) Improve continuity of care for EACH beneficiaries (5) Support TSG MEDCOM Balance Score Card			
<u>Required 36-month investment.</u> (Take from Performance and Financial Summary)			
<u>Net (after investment) return on 36-month investment.</u> (Take from Performance and Financial Summary)			
<u>Location in which the initiative will be implemented.</u> Evans Army Community Hospital			
<u>Tangible (economic) Benefit.</u> The echocardiograph technician will pay himself within three years through the recapture of services. The Return on Investment is guaranteed if the technician is hired. Overall non-invasive cardiology purchased care dollars spent by the government for echocardiograph services at EACH will be significantly reduced as a result of this initiative.			

Intangible Benefit. *Demonstrate how your Clinical Practice Guidelines, Evidenced Based Medicine process, and Patient Safety and Near Miss guidance will benefit the community served. Soldier and their families will be cared for at EACH and not within the network. Continuity of care and overall satisfaction with the hospital and its services will be clearly demonstrated. Overall patient satisfaction will be demonstrated.*

4.0 Metrics - What are the metrics used to support the initiative, including Clinical Practice Guideline metrics, Evidenced Based Medicine metrics and Patient Safety and Near Miss guidance metrics? (1) Network (Purchased Care) Cost (2) Network referrals (3) Patient Satisfaction (4) Access to Care standards

5.0 Process Design. *What are the constraints to current ways of providing these services/capabilities and how can these be reduced or eliminated? Include examples of Clinical Practice Guidelines, Evidenced Based Medicine and Patient Safety and Near Miss issues.* N/A

6.0 Link to BSC Strategy Map and BSC Measures: *Specify if applicable (1) Which Command Balanced Scorecard this project supports (2) Which Strategic Objective on the BSC Strategy Map (3) Which Score Card Measure(s) this project affects* 1) Supports MEDCOM and GPRMC Balance Scorecard. 2&3) LOWER ARMY'S MEDICALLY RELATED COST, ELIMINATING THE HASSLE FACTOR, IMPLEMENT BEST CLINICAL AND BUSINESS PRACTICES, ALIGN RESOURCE WITH REQUIREMENTS IN THE PIKES PEAK MARKET AREA, STREAMLINE ACCESS TO CARE

7.0 Implementation Plan & Benchmark Events. *Indicate key milestones, which at a minimum will include pre-implementation events (including contract negotiations, personnel recruiting/training, facility modification, and equipment acquisition), project start dates, period evaluations, contract renewals, and anticipated payback points.* 1) OCT FY04 personnel recruiting 2) Payback point SEP FY 05

8.0 Resource Sharing: *How does this project affect, or how is it affected by, Resource Sharing thresholds?* N/A

9.0 Other Command Interest Comments.

Performance & Financial Summary																																																																																																																																																																																																																																																																																																																					
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<i>Change in Workload in the MTF</i>				
	FY 05	FY 06	FY 07	FY 08
<i>Workload Worksheet for All MCSC 1.0 Activities & For All "Non-Psych" Workload for MCSC 2.0 Activities</i>				
Outpatient ADD Visits/SDS	427	427	427	427
Outpatient NADD Visits/SDS	2000	2000	2000	2000
Total CHAMPUS Visits	2427	2427	2427	2427
Outpatient AD Visits/SDS				
Total Outpatient Visits/SDS	2427	2427	2427	2427
Inpatient ADD Admissions				
Inpatient NADD Admissions				
Total CHAMPUS Admissions	0	0	0	0
Inpatient AD Admissions				
Total Admissions	0	0	0	0
<i>Workload Worksheet for MCSC 2.0 Activities (Psych Workload)</i>				
Outpatient Psych ADD Visits/SDS				
Outpatient Psych NADD Visits/SDS				
Total CHAMPUS Psych Visits	0	0	0	0
Outpatient Psych AD Visits/SDS				
Total Psych Outpatient Visits/SDS	0	0	0	0
Inpatient Psych ADD Admissions				
Inpatient Psych NADD Admissions				
Total CHAMPUS Psych Admissions	0	0	0	0
Inpatient Psych AD Admissions				
Total Psych Admissions	0	0	0	0

Change in Labor Costs (O&M, MilPers)				
	FY 04	FY 05	FY 06	FY 07
# Of Month's Personnel will be employed in FY	12	12	12	12
* Number of Provider FTEs	0	0	0	0
Total Provider Cost	\$ -	\$ -	\$ -	\$ -
* Number of Support Staff FTEs	1	1	1	1
Total Medical Technician Cost	\$ 46,000	\$ 46,000	\$ 46,000	\$ 46,000
Change in Labor Costs	\$46,000	\$46,000	\$46,000	\$46,000

Contract Personnel Please specify <fte	Please specify <fte	# of Personnel	Base Costs	Specialty Pays	Total Cost per Staff Member
Contract Physicians					\$ -
Contract Nurses					\$ -
Contract Administrators					\$ -
Contract Support Personnel		1	\$ 46,000		\$ 46,000
Total Contract Staff & Expense		1			\$ 46,000
Staffing Request					
Total Staff & Staff Costs		1			\$ 46,000
Insert total # of staff and the total cost of that staff, for each alternative below as analysis is completed.					
Provider Support Staff & Staff Expense Summary		# of Personnel			Total Cost per Staff Member
FY 04		1			46,000.00
FY 05		1			46,000.00
FY 06		1			46,000.00
FY 07		1			46,000.00

Change in Marginal (Supply) Costs				
	FY 04	FY 05	FY 06	FY 07
*Change in Outpatient Workload	2427	2427	2427	2427
Marginal cost Per Outpatient Unit	\$25.00	\$25.00	\$25.00	\$25.00
Total Outpatient Marginal Costs	(\$60,675)	(\$60,675)	(\$60,675)	(\$60,675)
*Change in Inpatient Workload	0	0	0	0
Marginal cost Per Inpatient Unit				
Total Inpatient Marginal Costs	\$0	\$0	\$0	\$0
Total Change in Marginal Cost	(\$60,675)	(\$60,675)	(\$60,675)	(\$60,675)

CHAMPUS						
COST RECAPTURE SAVINGS			FY 05	FY 06	FY 07	FY 08
PSC RECAPTURE OF OUTPATIENT WORKLOAD						
		BASELINE (Current PSC*) OUTPATIENT VISITS	0	0	0	0
		TARGET (Recapture) OUTPATIENT VISITS	2000	0	0	0
		Average Professional (Outpatient) CMAC or Outpatient PSC Cost	\$74.00	\$0.00	\$0.00	\$0.00
		TOTAL OUTPATIENT RECAPTURE SAVINGS	\$148,000	\$0	\$0	\$0
PSC RECAPTURE OF INPATIENT WORKLOAD						
		BASELINE (Current PSC) ADMISSIONS				
		TARGET (Recapture) ADMISSIONS				
		Average Inpatient Institutional CMAC or PSC Inpatient Cost				
		Inpatient Institutional Recapture Savings	\$0	\$0	\$0	\$0
		Change in MTF AD Admissions	\$0	\$0	\$0	\$0
		Negotiated Professional Fee Per Admission				
		Inpatient Professional Recapture Savings	\$0	\$0	\$0	\$0
		TOTAL INPATIENT RECAPTURE SAVINGS	\$0	\$0	\$0	\$0
RECAPTURE COST SAVINGS			\$148,000	\$0	\$0	\$0

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COST AVOIDANCE SAVINGS			FY 05	FY 06	FY 07	FY 08
PSC COST AVOIDANCE FOR OUTPATIENT WORKLOAD						
		BASELINE (Current PSC*) OUTPATIENT VISITS		2000	2000	2000
		TARGET (Cost Avoidance) OUTPATIENT VISITS		2000	2000	2000
		Average Professional (Outpatient) CMAC or Outpatient PSC Cost		\$74.00	\$74.00	\$74.00
		TOTAL OUTPATIENT COST AVOIDANCE	\$0	\$148,000	\$148,000	\$148,000
PSC RECAPTURE OF INPATIENT WORKLOAD						
		BASELINE (Current PSC) ADMISSIONS				
		TARGET (Cost Avoidance) ADMISSIONS				
		Average Inpatient Institutional CMAC or PSC Inpatient Cost				
		Inpatient Institutional Cost Avoidance Savings	\$0	\$0	\$0	\$0
		Change in MTF Admissions	\$0	\$0	\$0	\$0
		Negotiated Professional Fee Per Admission				
		Inpatient Professional Cost Avoidance Savings	\$0	\$0	\$0	\$0
		TOTAL COST AVOIDANCE INPATIENT SAVINGS	\$0	\$0	\$0	\$0
COST AVOIDANCE SAVINGS			\$0	\$148,000	\$148,000	\$148,000

SUPPLEMENTAL HEALTH CARE PROGRAM (SHCP)

COST RECAPTURE SAVINGS			FY 05	FY 06	FY 07	FY 08
PSC RECAPTURE OF OUTPATIENT WORKLOAD						
		BASELINE (Current PSC*) OUTPATIENT VISITS	0			
		TARGET (Recapture) OUTPATIENT VISITS	427			
		Average Professional (Outpatient) CMAC or Outpatient PSC Cost	\$66.00			
		TOTAL OUTPATIENT RECAPTURE SAVINGS	\$28,182	\$0	\$0	\$0
PSC RECAPTURE OF INPATIENT WORKLOAD						
		BASELINE (Current PSC) ADMISSIONS				
		TARGET (Recapture) ADMISSIONS				
		Average Inpatient Institutional CMAC or PSC Inpatient Cost				
		Inpatient Institutional Recapture Savings	\$0	\$0	\$0	\$0
		Change in MTF AD Admissions	\$0	\$0	\$0	\$0
		Negotiated Professional Fee Per Admission				
		Inpatient Professional Recapture Savings	\$0	\$0	\$0	\$0

TOTAL INPATIENT RECAPTURE SAVINGS	\$0	\$0	\$0	\$0
RECAPTURE COST SAVINGS	\$28,182	\$0	\$0	\$0
COST AVOIDANCE SAVINGS	FY 05	FY 06	FY 07	FY 08
PSC COST AVOIDANCE FOR OUTPATIENT WORKLOAD				
BASELINE (Current PSC*) OUTPATIENT VISITS		0	0	0
TARGET (Cost Avoidance) OUTPATIENT VISITS		427	427	427
Average Professional (Outpatient) CMAC or Outpatient PSC Cost		\$66.00	\$66.00	\$66.00
TOTAL OUTPATIENT COST AVOIDANCE	\$0	\$28,182	\$28,182	\$28,182
PSC RECAPTURE OF INPATIENT WORKLOAD				
BASELINE (Current PSC) ADMISSIONS				
TARGET (Cost Avoidance) ADMISSIONS				
Average Inpatient Institutional CMAC or PSC Inpatient Cost				
Inpatient Cost Avoidance Savings	\$0	\$0	\$0	\$0
Change in MTF Admissions	\$0	\$0	\$0	\$0
Negotiated Professional Fee Per Admission				
Inpatient Professional Cost Avoidance Savings	\$0	\$0	\$0	\$0
TOTAL COST AVOIDANCE INPATIENT SAVINGS	\$0	\$0	\$0	\$0
COST AVOIDANCE SAVINGS	\$0	\$28,182	\$28,182	\$28,182

Appendix C. Business Case Analysis for Diagnostic Cardiology

Initiative Name:	<i>Diagnostic Cardiology (Low-Risk Procedures)</i>	Activity POC Name & Phone #:	MAJ Harold J. Geolingo, 719-526-7233
1.0 Initiative description. Provide low-risk diagnostic cardiology services at Evans Army Community Hospital			
2.0 Background - <i>EACH has no low-risk diagnostic cardiology capabilities. Currently, all patients requiring diagnostic cardiology are referred to the TRICARE network.</i>			
3.0 Initiative Goals & Objectives. (1) Procure necessary equipment and staff (2) Recapture all workload being sent to the network. (3) Reduce Network referrals and costs (4) Improve continuity of care for EACH beneficiaries (5) Support TSG MEDCOM Balance Score Card			
Required 36-month investment. (Take from Performance and Financial Summary)			
Net (after investment) return on 36-month investment. (Take from Performance and Financial Summary)			
Location in which the initiative will be implemented. Evans Army Community Hospital			
Tangible (economic) Benefit. The diagnostic cardiology service will not pay for itself given the workload and purchased care data. The service will operate in a deficit throughout its life, and will get even bigger with upgrades to equipment software.			
Intangible Benefit. <i>Demonstrate how your Clinical Practice Guidelines, Evidenced Based Medicine process, and Patient Safety and Near Miss guidance will benefit the community served. Soldier and their families will be cared for at EACH and not within the network. Continuity of care and overall satisfaction with the hospital and its services will be clearly demonstrated. Overall patient satisfaction will be demonstrated.</i>			

4.0 Metrics - What are the metrics used to support the initiative, including Clinical Practice Guideline metrics, Evidenced Based Medicine metrics and Patient Safety and Near Miss guidance metrics? (1) Network (Purchased Care) Cost (2) Network referrals (3) Patient Satisfaction (4) Access to Care standards

5.0 Process Design. What are the constraints to current ways of providing these services/capabilities and how can these be reduced or eliminated? Include examples of Clinical Practice Guidelines, Evidenced Based Medicine and Patient Safety and Near Miss issues. N/A

6.0 Link to BSC Strategy Map and BSC Measures: Specify if applicable (1) Which Command Balanced Scorecard this project supports (2) Which Strategic Objective on the BSC Strategy Map (3) Which Score Card Measure(s) this project affects 1) Supports MEDCOM and GPRMC Balance Scorecard. 2&3) LOWER ARMY'S MEDICALLY RELATED COST, ELIMINATING THE HASSLE FACTOR, IMPLEMENT BEST CLINICAL AND BUSINESS PRACTICES, ALIGN RESOURCE WITH REQUIREMENTS IN THE PIKES PEAK MARKET AREA, STREAMLINE ACCESS TO CARE

7.0 Implementation Plan & Benchmark Events. Indicate key milestones, which at a minimum will include pre-implementation events (including contract negotiations, personnel recruiting/training, facility modification, and equipment acquisition), project start dates, period evaluations, contract renewals, and anticipated payback points. 1) OCT FY04 personnel recruiting and equipment procurement 2) Payback point not within reasonable standards.

8.0 Resource Sharing: How does this project affect, or how is it affected by, Resource Sharing thresholds? N/A

9.0 Other Command Interest Comments.

** Even if EACH took on the additional workload from the Air Force Academy, the cost savings and avoidance would still find the service operating in a deficit. Diagnostic cardiology accounts for an annual expenditure of approximately \$305,000. Given the start-up costs alone, the service would not generate enough savings or avoidance to operate with with a profit.

Appendix D. Cardiology Purchased Care Data Tables

Non-Invasive Cardiology Purchased Care Costs

FY 00 Non-Invasive Cardiology									
CPT Code	Active Duty	Dep AD	Dep Retiree	Retiree	Total \$	AD Army Not Enrolled	Total EACH \$	Total AF	Multi-Market Grand Total
93000	\$152.70	\$1,462.98	\$1,300.84	\$2,220.63	\$5,137.15	\$398.30	\$5,535.45	\$8,573.17	\$14,108.62
93005	\$226.89	\$1,500.00	\$1,527.50	\$2,718.32	\$5,972.71	\$913.19	\$6,885.90	\$10,510.32	\$17,396.22
93010	\$71.19	\$586.06	\$967.50	\$1,388.24	\$3,012.99	\$317.17	\$3,330.16	\$3,055.23	\$6,385.39
93012	\$0.00	\$209.88	\$2,010.12	\$2,838.36	\$5,058.36	\$374.44	\$5,432.80	\$4,872.12	\$10,304.92
93015	\$100.25	\$1,411.25	\$3,422.70	\$3,859.99	\$8,794.19	\$1,441.68	\$10,235.87	\$11,551.59	\$21,787.46
93016	\$0.00	\$55.08	\$27.21	\$0.00	\$82.29	\$0.00	\$82.29	\$242.85	\$325.14
93017	\$0.00	\$369.16	\$461.60	\$729.08	\$1,559.84	\$0.00	\$1,559.84	\$1,845.06	\$3,404.90
93018	\$0.00	\$90.31	\$49.78	\$55.86	\$195.95	\$0.00	\$195.95	\$400.61	\$596.56
93040	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$27.10	\$27.10
93041	\$0.00	\$67.00	\$0.00	\$66.00	\$133.00	\$0.00	\$133.00	\$247.56	\$380.56
93042	\$0.00	\$0.00	\$0.00	\$33.00	\$33.00	\$0.00	\$33.00	\$157.52	\$190.52
93224	\$0.00	\$0.00	\$297.40	\$740.04	\$1,037.44	\$146.97	\$1,184.41	\$2,088.05	\$3,272.46
93225	\$0.00	\$406.78	\$0.00	\$0.00	\$406.78	\$0.00	\$406.78	\$1,167.54	\$1,574.32
93226	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93227	\$0.00	\$0.00	\$30.88	\$33.93	\$64.81	\$41.30	\$106.11	\$168.75	\$274.86
93230	\$0.00	\$0.00	\$158.02	\$0.00	\$158.02	\$0.00	\$158.02	\$786.18	\$944.20
93231	\$0.00	\$1,260.60	\$0.00	\$0.00	\$1,260.60	\$0.00	\$1,260.60	\$0.00	\$1,260.60
93232	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93235	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$115.74	\$115.74
93236	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93268	\$0.00	\$526.90	\$2,545.59	\$0.00	\$3,072.49	\$167.00	\$3,239.49	\$2,816.59	\$6,056.08
93270	\$0.00	\$0.00	\$80.00	\$0.00	\$80.00	\$0.00	\$80.00	\$42.58	\$122.58
93271	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93272	\$0.00	\$0.00	\$77.65	\$0.00	\$77.65	\$0.00	\$77.65	\$55.30	\$132.95
93303	\$0.00	\$10,260.52	\$806.64	\$0.00	\$11,067.16	\$0.00	\$11,067.16	\$9,804.15	\$20,871.31
93304	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$306.15	\$306.15
93307	\$241.99	\$6,321.16	\$5,428.78	\$7,794.83	\$19,786.76	\$2,087.17	\$21,873.93	\$28,234.33	\$50,108.26
93308	\$0.00	\$1,527.46	\$0.00	\$98.44	\$1,625.90	\$0.00	\$1,625.90	\$2,151.71	\$3,777.61
93312	\$474.32	\$245.02	\$1,308.09	\$939.94	\$2,967.37	\$975.72	\$3,943.09	\$4,062.46	\$8,005.55
93314	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$518.00	\$518.00
93317	\$0.00	\$850.46	\$0.00	\$0.00	\$850.46	\$0.00	\$850.46	\$188.63	\$1,039.09
93318	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93320	\$348.32	\$6,379.50	\$3,557.41	\$3,611.94	\$13,897.17	\$1,329.99	\$15,227.16	\$16,933.19	\$32,160.35
93321	\$0.00	\$8.18	\$0.00	\$0.00	\$8.18	\$0.00	\$8.18	\$125.78	\$133.96
93325	\$409.37	\$7,879.98	\$3,783.07	\$3,859.77	\$15,932.19	\$1,361.27	\$17,293.46	\$19,185.44	\$36,478.90
93350	\$163.81	\$1,688.73	\$3,552.01	\$2,196.85	\$7,601.40	\$1401.78	\$9,003.18	\$10055.51	\$19,058.69
Totals	\$2,188.84	\$43,107.01	\$31,392.79	\$33,185.22	\$109,873.86	\$10,955.98	\$120,829.84	\$140,289.21	\$261,119.05
Avg	\$60.80	\$1,197.42	\$872.02	\$921.81	\$3,052.05	\$304.33	\$3,356.38	\$3,896.92	\$7,253.31

FY 01 Non-Invasive Cardiology									
CPT Code	Active Duty	Dep AD	Dep Retiree	Retiree	Total \$	AD Army Not Enrolled	Total EACH \$	Total AF	Multi-Market Grand Total
93000	\$51.27	\$1,429.99	\$1,596.95	\$2,662.36	\$5,740.57	\$183.29	\$5,923.86	\$7,872.71	\$13,796.57
93005	\$639.29	\$2,852.48	\$2,900.78	\$3,188.72	\$9,581.27	\$3,110.26	\$12,691.53	\$17,035.52	\$29,727.05
93010	\$189.02	\$658.81	\$1,057.67	\$1,484.65	\$3,390.15	\$449.13	\$3,839.28	\$4,233.40	\$8,072.68
93012	\$0.00	\$687.06	\$451.18	\$2,696.54	\$3,834.78	\$0.00	\$3,834.78	\$8,110.87	\$11,945.65
93015	\$100.62	\$1,422.89	\$3,406.56	\$5,336.01	\$10,266.08	\$627.72	\$10,893.80	\$16,665.60	\$27,559.40
93016	\$0.00	\$0.00	\$26.67	\$103.13	\$129.80	\$50.40	\$180.20	\$130.03	\$310.23
93017	\$166.13	\$842.51	\$0.00	\$1,590.34	\$2,598.98	\$834.28	\$3,433.26	\$2,981.81	\$6,415.07
93018	\$0.00	\$0.00	\$118.79	\$207.56	\$326.35	\$62.33	\$388.68	\$214.74	\$603.42
93040	\$13.23	\$0.00	\$39.69	\$26.46	\$79.38	\$0.00	\$79.38	\$27.77	\$107.15
93041	\$0.00	\$197.25	\$5.19	\$166.29	\$368.73	\$0.00	\$368.73	\$492.73	\$861.46
93042	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93224	\$0.00	\$466.79	\$745.87	\$754.90	\$1,967.56	\$151.55	\$2,119.11	\$2,897.08	\$5,016.19
93225	\$0.00	\$435.38	\$484.11	\$0.00	\$919.49	\$0.00	\$919.49	\$2,152.26	\$3,071.75
93226	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$289.00	\$289.00
93227	\$0.00	\$60.89	\$31.88	\$0.00	\$92.77	\$0.00	\$92.77	\$129.30	\$222.07
93230	\$0.00	\$477.45	\$480.84	\$0.00	\$958.29	\$0.00	\$958.29	\$1,142.44	\$2,100.73

93231	\$0.00	\$60.24	\$0.00	\$0.00	\$60.24	\$0.00	\$60.24	\$172.00	\$232.24
93232	\$0.00	\$85.26	\$0.00	\$0.00	\$85.26	\$0.00	\$85.26	\$120.40	\$205.66
93235	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93236	\$0.00	\$432.00	\$0.00	\$0.00	\$432.00	\$0.00	\$432.00	\$487.38	\$919.38
93268	\$0.00	\$953.15	\$1,561.56	\$1,473.12	\$3,987.83	\$780.78	\$4,768.61	\$1,517.34	\$6,285.95
93270	\$0.00	\$0.00	\$83.66	\$0.00	\$83.66	\$0.00	\$83.66	\$280.72	\$364.38
93271	\$0.00	\$0.00	\$190.05	\$0.00	\$190.05	\$0.00	\$190.05	\$238.14	\$428.19
93272	\$0.00	\$27.65	\$0.00	\$0.00	\$27.65	\$0.00	\$27.65	\$57.65	\$85.30
93303	\$216.18	\$10,043.20	\$1,520.18	\$148.58	\$11,928.14	\$0.00	\$11,928.14	\$8,378.62	\$20,306.76
93304	\$44.42	\$311.66	\$0.00	\$0.00	\$356.08	\$0.00	\$356.08	\$604.01	\$960.09
93307	\$912.39	\$11,033.21	\$8,752.21	\$12,993.53	\$33,691.34	\$1,628.66	\$35,320.00	\$49,080.62	\$84,400.62
93308	\$0.00	\$724.27	\$364.37	\$90.84	\$1,179.48	\$0.00	\$1,179.48	\$1,212.52	\$2,392.00
93312	\$943.77	\$100.42	\$999.68	\$990.17	\$3,034.04	\$235.37	\$3,269.41	\$6,297.41	\$9,566.82
93314	\$0.00	\$0.00	\$92.00	\$0.00	\$92.00	\$0.00	\$92.00	\$0.00	\$92.00
93317	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$186.10	\$186.10
93318	\$0.00	\$0.00	\$0.00	\$240.00	\$240.00	\$0.00	\$240.00	\$0.00	\$240.00
93320	\$654.73	\$8,804.92	\$6,054.80	\$6,580.04	\$22,094.49	\$621.05	\$22,715.54	\$29,598.15	\$52,313.69
93321	\$57.06	\$240.53	\$71.88	\$9.29	\$378.76	\$0.00	\$378.76	\$213.77	\$592.53
93325	\$557.50	\$9,980.08	\$5,712.72	\$6,813.97	\$23,064.27	\$637.04	\$23,701.31	\$34,397.73	\$58,099.04
93350	\$139.64	\$1,261.82	\$3,132.83	\$4,004.09	\$8,538.38	792.62	\$9,331.00	13744.76	\$23,075.76
Totals	\$4,685.25	\$53,589.91	\$39,882.12	\$51,560.59	\$149,717.87	\$10,164.48	\$159,882.35	\$210,962.58	\$370,844.93
Avg	\$130.15	\$1,488.61	\$1,107.84	\$1,432.24	\$4,158.83	\$282.35	\$4,441.18	\$5,860.07	\$10,301.25

FY 02 Non-Invasive Cardiology									
CPT Code	Active Duty	Dep AD	Dep Retiree	Retiree	Total \$	AD Army Not Enrolled	Total EACH \$	Total AF	Multi-Market Grand Total
93000	\$537.02	\$1,637.73	\$2,491.99	\$3,107.87	\$7,774.61	\$542.89	\$8,317.50	\$10,377.07	\$18,694.57
93005	\$98.46	\$414.64	\$761.32	\$740.24	\$2,014.66	\$421.87	\$2,436.53	\$2,813.73	\$5,250.26
93010	\$302.57	\$705.26	\$1,061.64	\$1,296.25	\$3,365.72	\$442.00	\$3,807.72	\$4,173.98	\$7,981.70
93012	\$0.00	\$85.00	\$642.00	\$1,471.72	\$2,198.72	\$442.28	\$2,641.00	\$2,433.01	\$5,074.01
93015	\$1,387.32	\$1,427.79	\$3,979.45	\$6,793.56	\$13,588.12	\$2,671.38	\$16,259.50	\$23,227.78	\$39,487.28
93016	\$0.00	\$0.00	\$21.17	\$43.59	\$64.76	\$20.77	\$85.53	\$361.67	\$447.20
93017	\$0.00	\$66.24	\$50.17	\$305.64	\$422.05	\$66.24	\$488.29	\$861.20	\$1,349.49
93018	\$0.00	\$35.93	\$56.98	\$149.16	\$242.07	\$16.72	\$258.79	\$396.39	\$655.18
93040	\$11.95	\$35.85	\$51.64	\$14.54	\$113.98	\$0.00	\$113.98	\$37.13	\$151.11
93041	\$5.57	\$114.81	\$133.54	\$333.29	\$587.21	\$5.57	\$592.78	\$1,025.95	\$1,618.73
93042	\$0.00	\$8.69	\$0.00	\$0.00	\$8.69	\$0.00	\$8.69	\$0.00	\$8.69
93224	\$408.24	\$1,119.58	\$1,269.11	\$1,679.37	\$4,476.30	\$133.09	\$4,609.39	\$2,678.34	\$7,287.73
93225	\$0.00	\$137.73	\$0.00	\$91.59	\$229.32	\$93.23	\$322.55	\$219.48	\$542.03
93226	\$0.00	\$0.00	\$0.00	\$100.80	\$100.80	\$0.00	\$100.80	\$0.00	\$100.80
93227	\$0.00	\$136.50	\$26.69	\$0.00	\$163.19	\$0.00	\$163.19	\$52.31	\$215.50
93230	\$161.41	\$0.00	\$289.06	\$305.94	\$756.41	\$144.53	\$900.94	\$1,221.17	\$2,122.11
93231	\$54.44	\$0.00	\$0.00	\$169.12	\$223.56	\$0.00	\$223.56	\$0.00	\$223.56
93232	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93233	\$24.29	\$28.69	\$0.00	\$0.00	\$52.98	\$29.01	\$81.99	\$77.32	\$159.31
93235	\$223.31	\$118.19	\$118.19	\$0.00	\$459.69	\$0.00	\$459.69	\$210.24	\$669.93
93236	\$0.00	\$102.46	\$0.00	\$0.00	\$102.46	\$0.00	\$102.46	\$0.00	\$102.46
93268	\$155.83	\$283.62	\$0.00	\$297.64	\$737.09	\$297.64	\$1,034.73	\$2,016.35	\$3,051.08
93270	\$0.00	\$40.50	\$0.00	\$0.00	\$40.50	\$44.34	\$84.84	\$173.68	\$258.52
93271	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93272	\$0.00	\$23.96	\$0.00	\$0.00	\$23.96	\$27.30	\$51.26	\$132.19	\$183.45
93278	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$54.16	\$54.16
93303	\$59.66	\$7,821.44	\$1,838.26	\$0.00	\$9,719.36	\$0.00	\$9,719.36	\$10,525.56	\$20,244.92
93304	\$0.00	\$1,210.39	\$0.00	\$0.00	\$1,210.39	\$0.00	\$1,210.39	\$423.02	\$1,633.41
93307	\$1,312.61	\$8,222.69	\$13,186.38	\$12,515.83	\$35,237.51	\$2,199.84	\$37,437.35	\$47,083.89	\$84,521.24
93308	\$0.00	\$6,289.94	\$62.59	\$0.00	\$6,352.53	\$0.00	\$6,352.53	\$1,064.37	\$7,416.90
93312	\$249.92	\$497.47	\$349.54	\$235.60	\$1,332.53	\$225.65	\$1,558.18	\$6,686.84	\$8,245.02
93314	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93315	\$1,760.77	\$0.00	\$0.00	\$0.00	\$1,760.77	\$0.00	\$1,760.77	\$545.35	\$2,306.12
93317	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
93318	\$0.00	\$0.00	\$0.00	\$1,233.05	\$1,233.05	\$0.00	\$1,233.05	\$240.00	\$1,473.05
93320	\$1,561.05	\$6,966.03	\$7,852.59	\$8,022.95	\$24,402.62	\$2,880.04	\$27,282.66	\$35,446.03	\$62,728.69
93321	\$0.00	\$738.43	\$0.00	\$8.36	\$746.79	\$0.00	\$746.79	\$173.80	\$920.59
93325	\$2,061.61	\$10,972.86	\$8,777.97	\$8,951.62	\$30,764.06	\$2,953.15	\$33,717.21	\$42,595.24	\$76,312.45
93350	\$1,485.03	\$1,513.44	\$3,167.30	\$5,454.47	\$11,620.24	3805.61	\$15,425.85	33491.02	\$48,916.87

Totals	\$11,861.06	\$50,755.86	\$46,187.58	\$53,322.20	\$162,126.70	\$17,463.15	\$179,589.85	\$230,818.27	\$410,408.12
Avg	\$304.13	\$1,301.43	\$1,184.30	\$1,367.24	\$4,157.09	\$447.77	\$4,604.87	\$5,918.42	\$10,523.29

*Non-Invasive Cardiology Demand for Purchased Care Services***FY 00 Non-Invasive Cardiology Services**

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
93000	6	57	51	87	14	215	271	486
93005	2	17	16	27	9	71	101	172
93010	7	56	93	133	30	319	291	610
93012	0	16	116	193	28	353	286	639
93015	1	14	35	38	14	102	112	214
93016	0	2	1	0	0	3	9	12
93017	0	1	1	2	0	4	5	9
93018	0	3	2	2	0	7	15	22
93040	0	0	0	0	0	0	2	2
93041	0	2	0	1	0	3	4	7
93042	0	0	0	4	0	4	19	23
93224	0	0	2	5	1	8	14	22
93225	0	1	0	0	0	1	3	4
93226	0	0	0	0	0	0	0	0
93227	0	0	1	1	1	3	5	8
93230	0	0	1	0	0	1	5	6
93231	0	3	0	0	0	3	0	3
93232	0	0	0	0	0	0	0	0
93233	0	0	0	0	0	0	0	0
93235	0	0	0	0	0	0	1	1
93236	0	0	0	0	0	0	0	0
93268	0	1	7	0	1	9	9	18
93270	0	0	8	0	0	8	1	9
93271	0	0	0	0	0	0	0	0
93272	0	0	6	0	0	6	2	8
93278	0	0	0	0	0	0	0	0
93303	0	62	4	0	0	66	63	129
93304	0	0	0	0	0	0	7	7
93307	2	42	43	61	19	167	191	358
93308	0	13	0	1	0	14	22	36
93312	2	2	7	7	4	22	15	37
93314	0	0	0	0	0	0	5	5
93315	0	0	0	0	0	0	0	0
93317	0	4	0	0	0	4	1	5
93318	0	0	0	0	0	0	0	0
93320	5	104	60	65	23	257	265	522
93321	0	1	0	0	0	1	14	15
93325	5	109	54	58	19	245	280	525
93350	1	11	23	16	9	60	71	131
Totals	31	521	531	701	172	1,956	2,089	4,045

FY 01 Non-Invasive Services

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
93000	2	54	62	102	7	227	299	526
93005	7	31	31	36	30	135	168	303
93010	18	64	102	141	43	368	408	776
93012	0	26	33	179	0	238	444	682
93015	1	14	31	50	6	102	161	263
93016	0	0	1	4	2	7	5	12
93017	1	2	0	4	2	9	9	18
93018	0	0	5	9	3	17	10	27
93040	1	0	3	2	0	6	2	8
93041	0	2	1	17	0	20	14	34
93042	0	0	0	0	0	0	0	0
93224	0	3	5	5	1	14	19	33
93225	0	1	2	0	0	3	5	8

93226	0	0	0	0	0	0	1	1
93227	0	2	1	0	0	3	4	7
93230	0	3	3	0	0	6	7	13
93231	0	1	0	0	0	1	1	2
93232	0	1	0	0	0	1	11	12
93233	0	0	0	0	0	0	0	0
93235	0	0	0	0	0	0	0	0
93236	0	2	0	0	0	2	4	6
93268	0	2	2	2	1	7	2	9
93270	0	0	1	0	0	1	2	3
93271	0	0	1	0	0	1	1	2
93272	0	1	0	0	0	1	2	3
93278	0	0	0	0	0	0	0	0
93303	3	58	12	2	0	75	49	124
93304	1	4	0	0	0	5	9	14
93307	9	53	57	84	10	213	290	503
93308	0	15	3	3	0	21	15	36
93312	4	1	4	5	2	16	18	34
93314	0	0	1	0	0	1	0	1
93315	0	0	0	0	0	0	0	0
93317	0	0	0	0	0	0	2	2
93318	0	0	0	1	0	1	0	1
93320	15	112	82	93	12	314	387	701
93321	2	18	3	1	0	24	15	39
93325	11	128	68	68	8	283	354	637
93350	1	10	20	27	7	65	93	158
Totals	76	608	534	835	134	2,187	2,811	4,998

FY 02 Non-Invasive Services

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
93000	23	68	103	129	23	346	434	780
93005	6	26	34	45	26	137	158	295
93010	34	77	111	143	48	413	449	862
93012	0	1	7	65	5	78	82	160
93015	15	16	44	74	29	178	250	428
93016	0	0	1	2	1	4	15	19
93017	0	1	1	5	1	8	13	21
93018	0	2	3	8	1	14	21	35
93040	1	3	4	1	0	9	3	12
93041	1	21	34	61	1	118	185	303
93042	0	1	0	0	0	1	0	1
93224	3	8	9	12	1	33	19	52
93225	0	3	0	2	2	7	5	12
93226	0	0	0	1	0	1	0	1
93227	0	5	1	0	0	6	2	8
93230	1	0	2	2	1	6	8	14
93231	1	0	0	3	0	4	0	4
93232	0	0	0	0	0	0	0	0
93233	1	1	0	0	1	3	3	6
93235	2	1	1	0	0	4	2	6
93236	0	1	0	0	0	1	0	1
93268	1	2	0	2	2	7	13	20
93270	0	1	0	0	1	2	4	6
93271	0	0	0	0	0	0	0	0
93272	0	1	0	0	1	2	5	7
93278	0	0	0	0	0	0	1	1
93303	1	52	10	0	0	63	72	135
93304	0	12	0	0	0	12	7	19
93307	14	41	93	94	18	260	352	612
93308	0	59	1	0	0	60	11	71
93312	1	4	2	2	1	10	14	24
93314	0	0	0	0	0	0	0	0
93315	2	0	0	0	0	2	2	4
93317	0	0	0	0	0	0	0	0
93318	0	0	0	1	0	1	1	2

93320	27	101	118	125	41	412	568	980
93321	0	40	0	1	0	41	11	52
93325	22	151	88	98	32	391	512	903
93350	12	12	21	42	27	114	195	309
Totals	168	711	688	918	263	2,748	3,417	6,165

Therapeutic Cardiology Purchased Care Costs

FY 00

CPT Code	AD Cost	Dep AD Costs	Dep Ret Costs	Retiree Costs	AD Not Enr Costs	Total Cost EACH	Total AF	Multi-Market Total \$\$
92950	\$0.00	\$0.00	0	\$384.18	\$258.72	\$642.90	\$797.76	\$1,440.66
92960	\$0.00	\$0.00	298.82	\$1,093.71	\$0.00	\$1,392.53	\$853.86	\$2,246.39
92971	\$0.00	\$0.00	729.2	\$0.00	\$0.00	\$729.20	\$0.00	\$729.20
92980	\$0.00	\$929.46	5660.84	\$14,293.92	\$929.46	\$21,813.68	\$48,245.57	\$70,059.25
92981	\$0.00	\$0.00	0	\$261.21	\$0.00	\$261.21	\$522.42	\$783.63
92982	\$0.00	\$726.21	0	\$687.92	\$0.00	\$1,414.13	\$12,066.23	\$13,480.36
92984	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$263.66	\$263.66
92995	\$0.00	\$0.00	0	\$1,000.29	\$0.00	\$1,000.29	\$4,114.05	\$5,114.34
92996	\$0.00	\$0.00	0	\$211.10	\$0.00	\$211.10	\$0.00	\$211.10
Totals	\$0.00	\$1,655.67	\$6,688.86	\$17,932.33	\$1,188.18	\$27,465.04	\$66,863.55	\$94,328.59

FY 01

CPT Code	AD Cost	Dep AD Costs	Dep Ret Costs	Retiree Costs	AD Not Enr Costs	Total Cost EACH	Total AF	Multi-Market Total \$\$
92950	\$0.00	\$0.00	0	\$1,148.95	\$0.00	\$1,148.95	\$192.77	\$1,341.72
92960	\$0.00	\$0.00	1134.27	\$152.94	\$0.00	\$1,287.21	\$1,821.49	\$3,108.70
92971	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$3,175.08	\$3,175.08
92979	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$104.45	\$104.45
92980	\$0.00	\$848.55	5337.04	\$27,409.36	\$0.00	\$33,594.95	\$35,950.27	\$69,545.22
92981	\$0.00	\$0.00	0	\$2,027.47	\$0.00	\$2,027.47	\$1,898.13	\$3,925.60
92982	\$0.00	\$655.16	0	\$6,500.76	\$0.00	\$7,155.92	\$9,849.43	\$17,005.35
92984	\$0.00	\$0.00	0	\$453.84	\$0.00	\$453.84	\$226.92	\$680.76
92995	\$0.00	\$0.00	0	\$4,236.09	\$0.00	\$4,236.09	\$728.19	\$4,964.28
92996	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$204.82	\$204.82
Totals	\$0.00	\$1,503.71	\$6,471.31	\$41,929.41	\$0.00	\$49,904.43	\$54,151.55	\$104,055.98

FY 02

CPT Code	AD Cost	Dep AD Costs	Dep Ret Costs	Retiree Costs	AD Not Enr Costs	Total Cost EACH	Total AF	Multi-Market Total \$\$
92950	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$1,156.53	\$1,156.53
92960	\$0.00	\$0.00	152.94	\$148.01	\$0.00	\$300.95	\$6,098.85	\$6,399.80
92971	\$0.00	\$0.00	0	\$4,413.00	\$0.00	\$4,413.00	\$2,831.50	\$7,244.50
92975	\$0.00	\$0.00	0	\$7,239.32	\$0.00	\$7,239.32	\$1,775.81	\$9,015.13
92978	\$0.00	\$91.79	0	\$1,402.03	\$0.00	\$1,493.82	\$339.92	\$1,833.74
92979	\$0.00	\$0.00	0	\$221.15	\$0.00	\$221.15	\$66.80	\$287.95
92980	\$0.00	\$0.00	13539.11	\$29,332.24	\$3,725.16	\$46,596.51	\$52,043.63	\$98,640.14
92981	\$0.00	\$0.00	0	\$1,189.80	\$217.91	\$1,407.71	\$2,352.49	\$3,760.20
92982	\$0.00	\$0.00	522.04	\$12,799.36	\$0.00	\$13,321.40	\$11,701.37	\$25,022.77
92984	\$0.00	\$0.00	0	\$204.86	\$0.00	\$204.86	\$4,154.39	\$4,359.25
92993	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$488.18	\$488.18
92995	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$620.84	\$620.84
92996	\$0.00	\$0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Totals	\$0.00	\$91.79	\$14,214.09	\$56,949.77	\$3,943.07	\$75,198.72	\$83,630.31	\$158,829.03

Therapeutic Cardiology Demand for Purchased Care Services

FY 00

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
92950	0	0	0	1	14	15	8	23
92960	0	0	2	4	0	6	7	13
92971	0	0	8	0	0	8	0	8
92980	0	1	6	15	1	23	34	57
92981	0	0	0	1	0	1	2	3
92982	0	1	0	1	0	2	7	9
92984	0	0	0	0	0	0	1	1
92995	0	0	0	1	0	1	2	3
92996	0	0	0	1	0	1	0	1
Totals	0	2	16	24	15	57	61	118

FY 01

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
92950	0	0	0	2	0	2	1	3
92960	0	0	3	1	0	4	5	9
92971	0	0	0	0	0	0	31	31
92979	0	0	0	0	0	0	1	1
92980	0	1	6	25	0	32	38	70
92981	0	0	0	5	0	5	8	13
92982	0	1	0	6	0	7	7	14
92984	0	0	0	2	0	2	1	3
92995	0	0	0	2	0	2	1	3
92996	0	0	0	0	0	0	1	1
Totals	0	2	9	43	0	54	94	148

FY 02

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
92950	0	0	0	0	0	0	4	4
92960	0	0	1	1	0	2	16	18
92971	0	0	0	49	0	49	30	79
92975	0	0	0	4	0	4	1	5
92978	0	1	0	10	0	11	4	15
92979	0	0	0	3	0	3	1	4
92980	0	0	11	27	5	43	42	85
92981	0	0	0	6	1	7	5	12
92982	0	0	1	6	0	7	10	17
92984	0	0	0	1	0	1	2	3
92993	0	0	0	0	0	0	1	1
92995	0	0	0	0	0	0	1	1
92996	0	0	0	0	0	0	0	0
Totals	0	1	13	107	6	127	117	244

Diagnostic Cardiology Purchased Care Costs

FY 00

CPT Code	AD Cost	Dep AD Costs	Dep Ret Costs	Retiree Costs	AD Not Enr Costs	Total Cost EACH	Total AF	Multi-Market Total \$\$
93501	\$0.00	\$380.48	\$0.00	\$2,211.07	\$0.00	\$2,591.55	\$366.24	\$2,957.79
93503	\$0.00	\$0.00	\$0.00	\$0.00	\$94.00	\$94.00	\$503.70	\$597.70
93505	\$0.00	\$530.20	\$0.00	\$0.00	\$0.00	\$530.20	\$220.24	\$750.44
93508	\$0.00	\$0.00	\$1,325.29	\$2,650.56	\$0.00	\$3,975.85	\$6,504.80	\$10,480.65
93510	\$0.00	\$1,443.82	\$10,677.71	\$35,737.44	\$4,923.52	\$52,782.49	\$79,342.08	\$132,124.57
93526	\$352.96	\$1,238.20	\$5,845.93	\$12,643.43	\$4,523.92	\$24,604.44	\$10,490.04	\$35,094.48

93529	\$0.00	\$0.00	\$0.00	\$303.00	\$0.00	\$303.00	\$0.00	\$303.00
93536	\$0.00	\$304.05	\$0.00	\$0.00	\$0.00	\$304.05	\$627.30	\$931.35
93539	\$0.00	\$0.00	\$84.38	\$478.90	\$0.00	\$563.28	\$529.69	\$1,092.97
93540	\$0.00	\$0.00	\$86.63	\$569.14	\$0.00	\$655.77	\$640.17	\$1,295.94
93541	\$0.00	\$0.00	\$0.00	\$50.52	\$0.00	\$50.52	\$0.00	\$50.52
93543	\$48.34	\$207.58	\$700.90	\$1,710.04	\$206.54	\$2,873.40	\$4,232.62	\$7,106.02
93544	\$0.00	\$115.05	\$116.23	\$303.74	\$62.35	\$597.37	\$506.24	\$1,103.61
93545	\$79.17	\$597.25	\$2,453.47	\$6,228.31	\$932.44	\$10,290.64	\$14,346.41	\$24,637.05
93555	\$37.28	\$233.48	\$1,632.09	\$3,947.82	\$863.06	\$6,713.73	\$8,226.01	\$14,939.74
93556	\$41.13	\$578.54	\$3,798.11	\$11,102.18	\$2,009.46	\$17,529.42	\$21,220.76	\$38,750.18
93571	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$153.04	\$153.04
93572	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$150.00	\$150.00
Totals	\$558.88	\$5,628.65	\$26,720.74	\$77,936.15	\$13,615.29	\$124,459.71	\$148,059.34	\$272,519.05

FY 01

CPT Code	AD Cost	Dep AD Costs	Dep Ret Costs	Retiree Costs	AD Not Enr Costs	Total Cost EACH	Total AF	Multi-Market Total \$\$
93501	\$0.00	\$0.00	\$0.00	\$170.63	\$0.00	\$170.63	\$2,493.66	\$2,664.29
93503	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$72.88	\$72.88
93505	\$303.36	\$0.00	\$0.00	\$4,028.13	\$0.00	\$4,331.49	\$1,078.29	\$5,409.78
93508	\$0.00	\$0.00	\$659.50	\$1,519.21	\$0.00	\$2,178.71	\$3,314.32	\$5,493.03
93510	\$962.77	\$2,940.76	\$17,027.31	\$21,968.72	\$1,892.36	\$44,791.92	\$73,364.74	\$118,156.66
93526	\$329.54	\$0.00	\$4,700.90	\$6,977.26	\$2,744.38	\$14,752.08	\$17,463.32	\$32,215.40
93527	\$0.00	\$0.00	\$405.17	\$0.00	\$0.00	\$405.17	\$0.00	\$405.17
93530	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$247.52	\$247.52
93533	\$0.00	\$329.50	\$0.00	\$0.00	\$0.00	\$329.50	\$0.00	\$329.50
93536	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$582.05	\$582.05
93539	\$0.00	\$0.00	\$177.85	\$468.14	\$0.00	\$645.99	\$960.91	\$1,606.90
93540	\$0.00	\$0.00	\$183.47	\$657.99	\$0.00	\$841.46	\$838.00	\$1,679.46
93541	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47.42	\$47.42
93542	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$31.95	\$31.95
93543	\$124.85	\$124.69	\$1,484.41	\$1,890.28	\$131.12	\$3,755.35	\$5,235.55	\$8,990.90
93544	\$92.30	\$45.64	\$92.30	\$240.01	\$0.00	\$470.25	\$800.13	\$1,270.38
93545	\$272.09	\$463.72	\$5,024.20	\$5,221.48	\$282.39	\$11,263.88	\$14,354.09	\$25,617.97
93555	\$119.83	\$159.34	\$3,574.18	\$2,079.98	\$339.78	\$6,273.11	\$9,168.42	\$15,441.53
93556	\$284.77	\$724.47	\$5,630.03	\$6,364.52	\$1,011.73	\$14,015.52	\$20,407.48	\$34,423.00
Totals	\$2,489.51	\$4,788.12	\$38,959.32	\$51,586.35	\$6,401.76	\$104,225.06	\$150,460.73	\$254,685.79

FY 02

CPT Code	AD Cost	Dep AD Costs	Dep Ret Costs	Retiree Costs	AD Not Enr Costs	Total Cost EACH	Total AF	Multi-Market Total \$\$
93501	\$0.00	\$339.38	\$2,148.95	\$3,579.82	\$0.00	\$6,068.15	\$339.38	\$6,407.53
93503	\$0.00	\$0.00	\$0.00	\$145.76	\$0.00	\$145.76	\$61.02	\$206.78
93505	\$230.06	\$460.12	\$0.00	\$2,145.56	\$0.00	\$2,835.74	\$205.05	\$3,040.79
93508	\$195.19	\$217.03	\$330.11	\$8,139.47	\$0.00	\$8,881.80	\$9,413.84	\$18,295.64
93510	\$1,860.03	\$459.40	\$13,502.75	\$24,694.91	\$4,330.16	\$44,847.25	\$58,643.93	\$103,491.18
93526	\$570.36	\$940.64	\$8,016.87	\$4,264.95	\$329.54	\$14,122.36	\$20,686.84	\$34,809.20
93527	\$0.00	\$3,488.40	\$405.17	\$0.00	\$0.00	\$3,893.57	\$405.17	\$4,298.74
93530	\$0.00	\$7,361.10	\$0.00	\$0.00	\$0.00	\$7,361.10	\$216.07	\$7,577.17
93531	\$0.00	\$4,400.87	\$3,016.64	\$4,909.91	\$0.00	\$12,327.42	\$8,196.74	\$20,524.16
93533	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$344.62	\$344.62
93536	\$0.00	\$0.00	\$0.00	\$305.49	\$0.00	\$305.49	\$0.00	\$305.49
93539	\$0.00	\$0.00	\$187.95	\$594.91	\$0.00	\$782.86	\$857.83	\$1,640.69
93540	\$0.00	\$0.00	\$152.04	\$563.89	\$0.00	\$715.93	\$828.34	\$1,544.27
93541	\$0.00	\$40.43	\$221.76	\$0.00	\$0.00	\$262.19	\$214.83	\$477.02
93542	\$0.00	\$153.77	\$0.00	\$0.00	\$0.00	\$153.77	\$222.50	\$376.27
93543	\$147.71	\$245.29	\$2,999.42	\$2,148.67	\$603.28	\$6,144.37	\$7,878.17	\$14,022.54
93544	\$39.52	\$144.85	\$295.14	\$429.23	\$46.15	\$954.89	\$764.58	\$1,719.47
93545	\$241.74	\$318.48	\$5,039.29	\$4,986.27	\$850.12	\$11,435.90	\$14,978.98	\$26,414.88
93555	\$154.87	\$577.96	\$3,845.22	\$4,237.43	\$349.93	\$9,165.41	\$11,255.10	\$20,420.51
93556	\$577.71	\$299.71	\$4,953.58	\$9,438.63	\$1,179.01	\$16,448.64	\$22,175.83	\$38,624.47
93571	\$0.00	\$89.67	\$0.00	\$0.00	\$0.00	\$89.67	\$84.61	\$174.28
93572	\$0.00	\$74.01	\$0.00	\$0.00	\$0.00	\$74.01	\$0.00	\$74.01
Totals	\$4,017.19	\$19,611.11	\$45,114.89	\$70,584.90	\$7,688.19	\$147,016.28	\$157,773.43	\$304,789.71

*Diagnostic Cardiology Demand for Purchased Care Services***FY 00**

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
93501	0	2	0	4	0	6	2	8
93503	0	0	0	0	1	1	5	6
93505	0	2	0	0	0	2	1	3
93508	0	0	7	12	0	19	28	47
93510	0	5	18	54	10	87	118	205
93526	1	2	9	13	5	30	15	45
93529	0	0	0	1	0	1	0	1
93536	0	1	0	0	0	1	2	3
93539	0	0	2	8	0	10	9	19
93540	0	0	2	10	0	12	11	23
93541	0	0	0	1	0	1	0	1
93543	1	4	14	32	4	55	69	124
93544	0	2	2	5	1	10	8	18
93545	1	7	30	68	11	117	152	269
93555	1	4	18	39	8	70	79	149
93556	1	9	33	79	15	137	158	295
93571	0	0	0	0	0	0	2	2
93572	0	0	0	0	0	0	1	1
Totals	5	38	135	326	55	559	660	1,219

FY 01

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
93501	0	0	0	1	0	1	4	5
93503	0	0	0	0	0	0	1	1
93505	1	0	0	10	0	11	4	15
93508	0	0	3	7	0	10	15	25
93510	3	5	23	44	3	78	111	189
93526	1	0	9	15	3	28	27	55
93527	0	0	1	0	0	1	0	1
93530	0	0	0	0	0	0	1	1
93533	0	1	0	0	0	1	0	1
93536	0	0	0	0	0	0	2	2
93539	0	0	4	11	0	15	15	30
93540	0	0	4	13	0	17	12	29
93541	0	0	0	0	0	0	1	1
93542	0	0	0	0	0	0	1	1
93543	3	3	24	38	3	71	81	152
93544	2	1	2	5	0	10	11	21
93545	4	5	36	65	4	114	146	260
93555	3	4	23	36	4	70	87	157
93556	4	6	35	63	6	114	148	262
Totals	21	25	164	308	23	541	667	1,208

FY 02

CPT Code	AD Services	Dep AD Services	Dep Ret Serv	Retiree Services	ADNE Serv	EACH Ser	Total AF Services	MM Serv
93501	0	2	2	6	0	10	2	12
93503	0	0	0	1	0	1	1	2
93505	1	2	0	8	0	11	1	12
93508	1	1	2	12	0	16	10	26
93510	3	2	24	47	10	86	115	201
93526	2	3	12	10	1	28	31	59
93527	0	3	1	0	0	4	1	5
93530	0	2	0	0	0	2	1	3
93531	0	4	1	1	0	6	3	9
93533	0	0	0	0	0	0	1	1
93536	0	0	0	1	0	1	0	1
93539	0	0	5	10	0	15	11	26

93540	0	0	4	9	0	13	10	23
93541	0	1	2	0	0	3	1	4
93542	0	3	0	0	0	3	3	6
93543	4	5	35	37	8	89	109	198
93544	1	3	3	6	1	14	7	21
93545	4	5	37	63	10	119	156	275
93555	4	7	36	40	7	94	111	205
93556	6	7	37	67	10	127	154	281
93571	0	1	0	0	0	1	1	2
93572	0	1	0	0	0	1	0	1
Totals	26	52	201	318	47	644	729	1,373

Appendix E. Radiology Top 50 Current Procedural Terminology (CPT)
Codes for Purchased Care (Enrolled Beneficiaries)

CPT	Description	FY 00	FY 01	FY 02	Total
70553	Magnetic resonance imaging, brain	\$121,581.66	\$106,502.93	\$116,730.06	\$344,814.65
70450	Computed tomography, head or brain	\$54,672.12	\$90,223.07	\$55,574.40	\$200,469.59
76805	Ultrasound, pregnant uterus, real time image	\$75,913.20	\$67,364.90	\$16,489.55	\$159,767.65
72148	Magnetic resonance imaging, spinal canal	\$44,370.88	\$40,230.36	\$42,904.14	\$127,505.38
72193	Computed tomography, pelvis	\$38,503.36	\$55,044.24	\$31,356.59	\$124,904.19
74170	Computed tomography, abdomen	\$42,056.84	\$53,967.62	\$26,666.71	\$122,691.17
71020	Radiologic examination, chest	\$38,351.04	\$52,210.94	\$19,088.95	\$109,650.93
74160	Computed tomography, abdomen	\$31,919.74	\$42,438.00	\$21,873.31	\$96,231.05
73721	Magnetic resonance imaging, any joint lower ext	\$25,941.31	\$18,090.86	\$39,744.25	\$83,776.42
72158	Magnetic resonance imaging, lumbar	\$20,363.84	\$21,001.22	\$39,718.01	\$81,083.07
72141	Magnetic resonance imaging, spinal canal	\$26,512.76	\$22,328.60	\$21,764.25	\$70,605.61
71260	Computed tomography, thorax	\$18,369.14	\$27,224.33	\$18,229.71	\$63,823.18
70551	Magnetic resonance imaging, bran	\$29,722.61	\$10,772.35	\$15,578.93	\$56,073.89
71010	Radiologic examination, chest	\$18,142.13	\$23,137.98	\$12,533.06	\$53,813.17
78810	Tumor imaging, positron emission tomography	\$4,579.80	\$20,184.54	\$24,058.47	\$48,822.81
76700	Ultrasound, abdominal, B-scan	\$23,686.90	\$15,860.69	\$8,131.73	\$47,679.32
76830	Ultrasound,transvaginal	\$10,498.81	\$14,918.07	\$13,596.67	\$39,013.55
73221	Magnetic resonance imaging, any joint	\$16,914.27	\$8,884.93	\$12,685.74	\$38,484.94
76092	Screening mammography, bilateral	\$675.78	\$952.11	\$15,238.15	\$16,866.04
78990	Provision of diagnostic radiophamaceutical	\$4,138.64	\$897.56	\$9,081.21	\$14,117.41
72156	Magnetic resonance imaging, spinal canal	\$8,099.96	\$8,259.23	\$14,091.56	\$30,450.75
76856	Ultrasound pelvic, B-scan	\$14,080.20	\$12,008.72	\$6,246.67	\$32,335.59
74150	Computed tomography, abdomen	\$6,679.93	\$14,015.12	\$13,226.64	\$33,921.69
76818	Fetal biophysical profile, with non-stress testing	\$7,330.79	\$19,050.35	\$6,284.81	\$32,665.95
72192	Computed tomography, pelvis	\$8,269.86	\$10,697.57	\$13,059.83	\$32,027.26
72050	Radiologic examination, spine	\$11,184.37	\$17,070.38	\$5,602.47	\$33,857.22
74183	Magnetic resonance imaging, abdomen	\$0.00	\$3,555.15	\$14,584.55	\$18,139.70
76499	Unlisted diagnostic radiographi procedure	\$18,438.42	\$5,549.58	\$5,363.06	\$29,351.06
75716	Angiography, extremity, bilateral	\$10,373.60	\$13,559.11	\$5,183.47	\$29,116.18
75625	Aortography, abdominal	\$9,724.52	\$14,167.45	\$4,817.59	\$28,709.56
70486	Computed tomography, maillofacial area	\$3,557.74	\$6,569.08	\$7,624.79	\$17,751.61
77427	Radiation treatment management	\$16,409.76	\$9,002.01	\$1,881.12	\$27,292.89
79900	Provision of therapeutic radiopharmaceuticals	\$0.00	\$6,856.41	\$6,625.87	\$13,482.28
72157	Magnetic resonance imaging, thoracic	\$8,008.36	\$6,468.82	\$4,333.30	\$18,810.48
76770	Ultrasound, retroperitoneal	\$9,671.11	\$7,142.32	\$3,025.88	\$19,839.31
71275	Computed tomographic aniography, chest	\$0.00	\$6,045.90	\$10,526.46	\$16,572.36
72197	Magnetic resonance imaging, pelvis	\$0.00	\$2,249.73	\$19,159.43	\$21,409.16
74247	Radiologic examination, gastrointestinal	\$12,966.75	\$1,391.81	\$3,956.11	\$18,314.67
75894	Transcatheter therapy, embolization	\$6,106.18	\$14,773.96	\$1,061.97	\$21,942.11
72020	Radiologic examination, spine	\$8,209.94	\$10,448.22	\$1,932.49	\$20,590.65
72146	Magnetic resonance imaging, spinal canal	\$5,301.69	\$4,256.36	\$6,494.65	\$16,052.70
70470	Computed tomography, head or brain	\$3,741.09	\$12,574.95	\$2,053.36	\$18,369.40
78465	Myocardial perfusion imaging, multi-study	\$2,493.42	\$12,975.79	\$2,053.36	\$17,522.57
73720	Magnetic resonance imaging, lower extremity	\$1,291.40	\$9,694.00	\$5,093.46	\$16,078.86
71250	Computed tomography, thorax	\$6,739.52	\$5,038.71	\$4,942.43	\$16,720.66
37204	Transcatheter occlusion	\$5,419.94	\$4,051.26	\$7,486.46	\$16,957.66
76815	Ultrasound pregnant uterus	\$6,367.63	\$7,223.00	\$3,597.65	\$17,188.28
75710	Angiography, extremity, unilateral	\$2,119.54	\$4,251.14	\$6,046.96	\$12,417.64
72295	Diskography, lumbar	\$1,893.40	\$5,860.38	\$6,776.17	\$14,529.95

78306	Bone and/ or joint imaging	\$6,645.66	\$5,710.34	\$3,342.02	\$15,698.02
Totals		\$848,039.61	\$952,752.15	\$757,518.48	\$2,558,310.24