

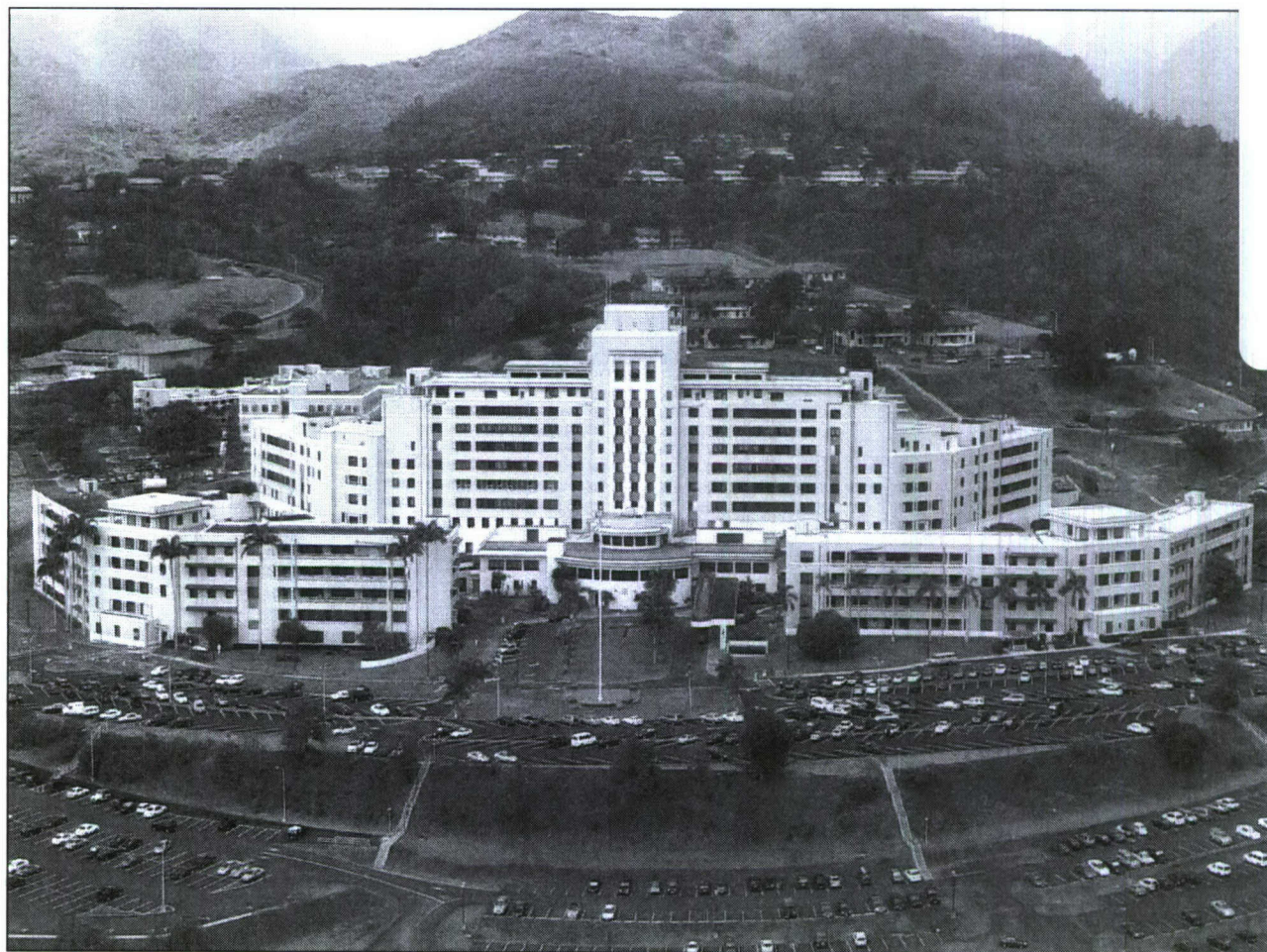
Tripler Army Medical Center

"Service to our Nation Through High Quality Healthcare"



A Business Case Analysis

Establishment of a Sub-Acute Ward for Tripler Army Medical Center



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Graduate Management Project

Presented To

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In Partial Fulfillment of

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By

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Disclaimer

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Abstract

This business case examines the likely costs and benefits of establishing of a sub-acute ward, designed to decrease the cost of treating long-stay patients. The recommendation is to establish a sub-acute ward on a current surgical ward by October 1, 2009, then move the patients to an EUL building when available. Three options were evaluated: (1) current ward space, (2) enhanced use lease (EUL) building, or (3) business as usual (BAU). The BAU option returned a net present value (NPV) of negative \$41.8M with a return on investment (ROI) of negative 99.40 percent. The ward option returned a NPV of negative \$23.4M. The EUL option has a NPV of negative \$23.8M. Both options have an ROI of negative 54.8 percent.

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Business Case Analysis: Establishment of a Sub-Acute Ward for Tripler Army Medical Center

Executive Summary

This business case examines the likely costs and benefits that follow from a proposed establishment of a sub-acute ward at Tripler Army Medical Center (TAMC). The sub-acute ward is designed to decrease the cost of treating long-stay patients that are currently cared for on the acute care wards. This proposal calls for several major actions including adding clinical space for the ward through enhanced use leasing (EUL) or the shifting of current clinical space on the surgical ward. This analysis covers the estimated business consequences of these actions as they impact TAMC and the Veteran's Administration Pacific Islands Health Care System (VAPICS) during the current and future fiscal years.

This case is designed to provide members of the TAMC Executive Committee with the necessary financial projections, metrics, contingency assessments, and risks associated with each of three alternatives: movement of current ward space, enhanced use leasing and business as usual. TAMC's strategic plan was considered and some strategic objectives were linked to this business case. The two main objectives are to increase patient safety and to provide the highest quality healthcare.

After adjusting the discount rate for risk, adjusting for inflation and projecting over a five-year period, the most likely case scenario (MCS), business as usual (BAU) option returned a net present value (NPV) of negative \$41.8M with a return on investment (ROI) of negative 99.40 percent. The MCS ward option has a NPV of negative \$23.4M with a return on investment (ROI) of negative 54.8 percent over five years. The Enhanced Use Leasing (EUL) option has a NPV of negative \$23.8M with a ROI of negative 54.8 percent over five years.

The major assumptions underlying these expected results include but are not limited to the following: all open bed days can be filled by beneficiaries for the best case scenario (BCS), there will be space available on one of the surgery wards, labor will be available, there will be excess space available in the EUL building, and potential Private Sector Care (PSC) cost is a good estimate of actual PSC cost. Based on more favorable financial results and projections, the recommendation is to establish a sub-acute ward on one of the current surgical product line wards by October 1, 2009. But, taking confounders such as proximity of ancillary services, time of construction, labor, increasing LOS, maintaining scope of practice and continued placement issues, the recommendation is to follow up with the movement of the sub-acute ward to the EUL building when it becomes available.

A. Introduction

A.1 Background and Literature Review

Background

The purpose of this Business Case Analysis (BCA) is to determine whether instituting a sub-acute ward at Tripler Army Medical Center would be a financially viable option in dealing with the growing population of long-stay, sub-acute patients. Currently, many patients that are upgraded from an acute status by their physicians, and need some form of nursing home care, are being retained in the facility for increasing lengths of time due to lack of placement opportunities in Hawaii. Treating sub-acute patients in an acute care setting causes many problems within the healthcare continuum. The patients are no longer receiving the most appropriate level of care. Healthcare providers that are more focused on acute problems may not address long-term issues, such as rehabilitation, to the same extent that a long-term care facility may. If the acute care beds are filled, then acute patients may be sent to the network for care. The cost of maintaining an acute bed is far more expensive than maintaining a sub-acute bed.

There are a number of reasons that these issues are more difficult to resolve at TAMC. In order to understand the health care environment in which TAMC operates, it is important to appreciate the local environment in which it functions. The summary findings made by the Hawaii Medical Service Association (HMSA) Foundation established that health resources, particularly the availability of health care service providers, nurses, acute care facilities and long-term care facilities are inadequate in several areas of Hawaii according to federal guidelines. Rural areas of the state are most affected by the unavailability of health care resources in the counties of Hawaii, Maui, and Kauai. On Oahu, many areas are designated inadequate: Kalihi-Palama, Kalihi Valley, Koolau Loa, Waikiki, Waimanalo, and Waianae. Further contributing to

the maldistribution is the aging Hawaiian population and the joint venture (JV) agreement between TAMC and the VAPICS.

Hawaii ranks 10th, among states, in physicians per capita. Unfortunately, this statistic overshadows the maldistribution of physicians throughout the state. While Oahu has more physicians per capita than the national average, the rural counties of Hawaii, Kauai, and Maui have less. Furthermore, the rural counties have far fewer specialists available for care for residents than Oahu (HMSA Foundation, 2006).

While the number of Registered Nurses (RN) in Hawaii has increased in recent years, only about 70 percent are employed in nursing. Oahu has the highest concentration of RN; Maui and Hawaii counties the lowest. Hawaii ranks 46th among all states in employed nurses per capita. (HMSA Foundation, 2006). According to the U.S. Department of Health and Human Services, the projected number of licensed RN will be 1,808,000 full time equivalent (FTE) RN workforce and 2,824,900 projected demand for FTE licensed RN by the year 2020 (U.S. Department of Health and Human Services, 2007) Hawaii's nursing shortage is expected to deteriorate. Hawaii has 14,240 active RN that provide care in hospitals, long-term care facilities, physician offices, home care, hospices and community health programs. Hawaii experienced a shortage of 1,518 RN in 2005. That number is expected to grow to 2,267 RN by 2010. Approximately 80 percent of Hawaii's current RN workforce is expected to retire by 2026. Concurrently, Hawaii's population is aging and will increase the demand for nursing home care. Access to care and quality of care are jeopardized by the nursing shortage. Some healthcare providers may ultimately limit or discontinue services. Physicians may also continue to provide services but with fewer RN, potentially affecting patient safety (Hawaii State Center for Nursing Factsheet, 2006).

Hawaii's acute care bed supply is 2.0 beds per 1,000 residents, which is fewer than the 2.6 beds per 1,000 residents for the nation overall. Hawaii's supply of acute care beds per capita slightly declined between 1990 and 2003 due to the faster growth rate of Hawaii's population compared to acute care beds. Hawaii ranks 33rd among all states, in the number of available beds per capita. The number of discharges per 1,000 population has remained stable since 1995, with Hawaii's acute care hospitalization rates consistently below United States (U.S.) averages. Occupancy rates (percent of beds utilized) are higher in Hawaii compared to the nation, due in large part to Hawaii's lower capacity. Statewide, approximately 72 percent of acute beds are utilized. In comparison, the occupancy rate at the national level is 65 percent. In the Hawaiian community, the top five service lines for hospitalization between 1995 and 2004 were maternity, newborn services, general surgery, cardiology, and pulmonology. Collectively, these areas accounted for 52 percent of all inpatient cases and 44 percent of all charges. The top two reasons for hospitalization, maternity and newborn services, experienced 2.1 percent and 2.7 percent fewer discharges in 2004 compared to 1995. In contrast, cardiology and pulmonology related discharges, most commonly including elderly patients, increased by 31 and 11 percent respectively between 1995 and 2004 (HMSA Foundation, 2006).

Most important to consider is Hawaii's long-term care. Hawaii's long-term care admission rate increased from 25.1 per 1,000 population aged 65 and older in 1990 to 44.1 per 1,000 population for the same group in 2003. Significant differences existed between counties. Among Hawaii's counties, occupancy rates range between 90 and 95 percent, exceeding the state's target occupancy rate of 90 percent. Long-term care beds consist of skilled nursing, intermediate care, and mixed-use beds. The supply of long-term beds in Hawaii has been

relatively constant for the past several years. In 2003, the number of beds totaled 4,193. Richard Meiers, the President of the Healthcare Association of Hawaii stated:

The waitlist problem for our hospitals has been a significant issue for many years. In 1990 we had over 300 patients in acute care facilities waiting for nursing home beds. Over the last 17 years we have been able to reduce that figure so that today there are 163 patients in our hospitals waiting for long-term care beds and 53 patients waiting for community care. There are many reasons for this, ranging from not enough nursing home beds to nursing homes not wanting to accept the patients because of poor reimbursement. When patients occupy acute care beds, when they shouldn't, it is a waste of health care resources and most importantly, it is not best for the patient. (R. Meiers, personal email, October 14, 2006)

Hospitals have patients for which they are no longer being reimbursed. Nursing homes are full and feel many patients in the hospital are too sick to accept, for the amount of reimbursement received. The healthcare community is working steadily, trying to find ways to expand capacity, and provide more options to pay for it. For example, the state initiated, in 2003, a "going-home project," allowing hospitalized Medicaid patients to take their Medicaid money to a less costly home or to community-based care. It made a significant difference, and 409 residents took advantage of the opportunity. The state is exploring how to use managed care to encourage home and community-based care for the aged, blind and disabled. Hawaii will have 4,521 long-term care beds with the completion of two projects planned on Oahu and the Big Island. These include a 33-bed facility in Waikiki by Honolulu Neighborhood Housing Services and a 95-bed State Veterans Nursing Home in Hilo. The other beds are located as follows: Kauai, 334, Maui, 497, Lanai, 14, Molokai, 22, Big Island, 729, and Central Oahu,

1,948. The administration is seeking a waiver extension to provide managed care to about 38,000 clients who are aged, blind or disabled. Some are eligible for Medicare as well as Medicaid assistance. More than 80 percent of nursing home costs, on neighbor islands especially, are from Medicaid reimbursements. Free-standing nursing homes are losing \$9.25 per patient a day, and hospital-based nursing homes are losing \$24 per patient a day. Nursing homes are also concerned about acquiring labor. Seventy percent of the cost of nursing home care is for labor. Highly skilled professional nurses and social workers are required for nursing homes to operate (Altonn, 2005).

Nursing homes are relatively unattractive places to work for a variety of reasons: patient mix, low compensation, and opportunities for increased responsibility or promotion are not as abundant as in some other medical facilities. Therefore, nursing homes experience an imbalanced difficulty in hiring and retaining full-time licensed staff. This creates a greater dependence on the use of contract licensed staff. The lower the supply of licensed nurses in the local market and the greater the competition for that inadequate supply from hospitals and other nursing homes, the more probable those facilities will use contract licensed nurses. The Nursing Home Reform Act, also referred to as the Omnibus Budget Reconciliation Act of 1987 (OBRA), established the current federal standard for staffing. Each nursing home must provide 24 hour licensed nursing services that are sufficient to meet the nursing needs of its residents. The use of a registered professional nurse for at least eight consecutive hours a day, seven days a week is mandatory (Department of Health Services' Licensing and Certification Program, 2007).

Population structure and dynamics have a direct bearing on both the health status of the population and the ability of the health care system to meet population needs. The increasing proportion of elderly requires evaluation of the ability of existing health care resources to meet

the elderly's greater needs for services. Overall, the elderly population was hospitalized more than the rest of the population and females were hospitalized less than men in their age group (with the exception of childbearing age women). The first baby boomers are going to reach age 65 in six years. The isle population is aging 2.5 times faster than the national average because residents are living longer and Hawaii attracts retirees. By 2011 every fourth person in the state will be 65 or older. Proposals have been made to extend the three-year waiting period for people to apply for Medicaid after transferring assets to heirs or others. Hawaii is also looking for ways to manage Medicaid dollars more efficiently. The state response is going to be to limit eligibility and turn the system over to the private sector to reduce cost. Privatization of the system can be beneficial if incentives are created to develop more home and community-based services. In 2000 the state population over age 85 was 17,983. By 2020 it will number 38,867. The population over age 70 will jump to 185,000 in 2020 from 119,000 in 2000. Yet, rural Hawaii has fewer than 18 beds per 1,000 population over age 65, compared with an average of 62 beds per 1,000 population in rural areas across the mainland. Urban Hawaii has 23 beds per 1,000 senior population, while the U.S. urban average is 47 beds (HMSA Foundation, 2006).

TAMC serves a large amount of Veteran Administration beneficiaries (VAB). These patients tend to have longer lengths of stay than other beneficiaries, average 7.4 for VABs versus 3.8 for TAMC beneficiaries. Data collected from 2004 through 2006 indicates that 60 percent of sub-acute patients are VABs. Establishing lower cost alternatives to acute care beds would benefit both TAMC and the VAPICS. This would improve patient care by matching appropriate care to appropriate need and decrease labor and supply costs. Between March 2004 and October 2006, 142 patients were designated as being in a sub-acute status and being cared for in an acute bed. Those 142 medical and surgical patients totaled 5,023 acute care bed days in the Military

Treatment Facility (MTF). Of those 5,023 acute care bed days, 2,430 days were spent in a sub-acute status. Forty-eight percent of the total bed days for those patients were spent in inappropriate care. At any given time, five to eight percent of inpatients are in a sub-acute status.

TAMC and the VAPICS have a sharing agreement. The VAPICS covers a geographic service area that spans 4.6 million square miles, and includes the Hawaiian Islands, Guam, and American Samoa. The Spark M. Matsunaga Ambulatory Care Center is located on TAMC property in Oahu, and community based outpatient clinics are located in Hilo, Kona, Maui, Kauai, and Guam. Plans are underway for building a Community Based Outpatient Clinic (CBOC) in American Samoa. Facility modifications for the E-Wing Administrative offices and the construction of a parking structure, a Center for Aging (CFA) and the Ambulatory Care Clinic (ACC) began in 1995. The parking facility and CFA were dedicated and opened in 1997. In 1999 and 2000; the E-Wing administrative offices and ACC were dedicated and opened.

TAMC was designated in July of 1991 as a Joint Venture (JV) site. The benefits of this designation are that the JV supports Graduate Medical Education (GME), and it supports veteran inpatient acute care, outpatient medical specialty care and ancillary services. The JV precludes any need for a separate VAPICS inpatient facility and has significant cost savings over civilian care. The JV supports the Presidential Management Agenda initiative on VAPICS/Department of Defense (DoD) sharing, Presidential Task Force recommendations, and the VAPICS/DoD Joint Strategic Plan.

The initial agreement was signed in March of 1992 and a relationship with the VAPICS has continued to evolve. The current JV agreement, signed in December 2002, consists of a master sharing agreement with 27 separate annexes and a reimbursement methodology. The

current agreement will continue through December 2007. The DoD/VAPICS JV's current agreement includes the list of services shown in Table 1.

Table 1

VAPICS JV services

Services

Clinical services including inpatient medical, surgical, psychiatry and outpatient specialty clinic services

Neuropsychology testing

Ancillary support (laboratory (including autopsy & morgue), pharmacy & radiology)

Hospitalist and ophthalmology support

Emergency services

Oral surgery

Joint policies/committees

Health Education and Training

CFA meals

Housekeeping

Security

Medical maintenance

Agreement revision procedures

Joint separation physicals

Clinical investigations

Post Traumatic Stress Disorder (PTSD) residential treatment program

TAMC provides primary and tertiary care for active duty, retirees, and their dependents and referred veterans throughout the Pacific basin. According to MEPRS data, the average day at TAMC results in 36 admissions, 136 beds occupied, 7 births, 2,229 clinic visits, 28 ambulatory procedures, 4,913 prescriptions being filled and 3,337 laboratory tests. VAPICS provides primary and mental health care, limited specialty care, home based primary care, long-term care, and inpatient psychiatric care to veterans in Hawaii, Guam, the Commonwealth of Northern Marianas Islands (Saipan, Tinian, Rota), and American Samoa. According to VAPICS, an average day at VAPICS averages 651 clinic visits, 55 occupied beds at the CFA, and 14 occupied beds on ward 3B2, their inpatient psychiatric ward.

TAMC provides 1,300 discharges and 15,000 outpatient visits annually to VABs. Shared services include a VAPICS internist, nephrologist, ophthalmologist and gastroenterologist to provide support to their respective specialty services. VAPICS has over 400 psychiatry discharges, maintains an average daily census (ADC) of 100 percent in its' 60 bed long-term care facility, and conducts over 163,347 outpatient visits annually.

The mission statement of TAMC is: "Service to our nation through high quality healthcare". The Vision statement is: "A premier tertiary military health and education center providing safe, high quality care and service to maximize the well-being of all we serve" (TAMC Mission and Vision, 2007). In keeping with the spirit of TAMC's mission and values, TAMC is dedicated to finding the best way to treat all of their patients, regardless of status. The community network available to TAMC beneficiaries is insufficient. Therefore, TAMC must find ingenious ways to take care of DoD and VAPICS beneficiaries.

Literature Review

There is an increasing desire to find alternatives to acute care for patients that no longer require that level of treatment. The term “intermediate care” is defined by Melis & Rikkert (2004) as:

The broadest definition is the one shared with the Royal College of Physicians of London, according to which intermediate care is delivered by those health services that do not require the resources of a general hospital but are beyond the scope of the traditional primary care team. (p. 360)

Definitions from the database Medline narrow intermediate care in the direction of nursing home care. For example, in Medline “intermediate care facilities” are institutions that provide health related care and services to individuals who do not require the degree of care which hospitals or skilled nursing facilities provide, but require care and services above the level of room and board. This probably results from the existence of intermediate care facilities, which closely resemble nursing homes. Further difficulty arises because individual authors also use the term intermediate care when describing a less advanced type of intensive care medicine (Melis & Rikkert, 2004).

The Australian healthcare system implemented a new case mix classification system for sub-acute and non-acute care. Sub-acute care comprises palliative care, rehabilitation medicine, psychogeriatrics, and geriatric evaluation and management. Non-acute care includes nursing home, convalescent and planned respite care. The new case mix classification system, which includes hospital as well as community care, reflects the goal of management, a change in functional status or improvement in quality of life, rather than the underlying patient diagnosis (Lee, Eagar & Smith, 1998). In order to deal with the plethora of definitions, a formal process to

develop a consensus of the key elements of intermediate care or sub-acute care in a nursing-led unit must be achieved.

The two most important reasons to aim toward intermediate care is to enhance the quality of care given to the patient and to decrease the resources expended by the facility on patients that do not require them. Matching the needs of the patients to the proper resources is key to quality patient care and good business practices (Richardson, Griffiths, Wilson-Barnett, Spilsbury & Bateup, 2001). The need for intermediate care has been cited in many studies. These patients do not require and would not benefit from the full spectrum of care available on an acute care ward. There is also a great need to evaluate alternatives to determine that it meets the needs of the patients and is feasible by the medical facility (Griffiths, Edwards, Forbes, Harris & Ritchie, 2006).

The civilian organizations that have implemented nursing-led units have produced very similar patient outcomes and financial results. In a randomized controlled trial of a post acute intermediate care unit, patients in the nursing-led unit received significantly fewer minor medical investigations and, after controlling for length of stay, significantly fewer major reviews, tests or drug changes. The nursing-led units seemed to be a safe alternative to conventional medical management (Steiner, Walsh, Pickering, Wiles, Ward & Brooking, 2001). The nursing-led unit functions as a form of intermediate care, producing patients that may have higher levels of function and well-being. However, it cannot be determined if this is simply the product of a longer average length of stay. More patients were discharged home and not to an institution after about 3 months. Fewer were readmitted back into hospital soon after discharge, but they stayed in the hospital longer. The number of deaths during the stay in the hospital and three to six months after discharge was similar between the units (Griffiths et al., 2006).

In a study by Griffiths, Harris, Richardson, Hallet, Heard, & Wilson-Barnett (2001) substituting nursing-led inpatient units for typical acute care hospital wards found that the length of inpatient stay was significantly increased for the nursing-led patient group. The daily cost of care was lower on the nursing unit; however the mean total cost was higher, although the difference was not statistically significant. Since length of stay is the primary cost driver, the nursing-led model may be more costly. Cost savings will be dependent on how long reductions in post discharge resources are maintained (Richardson et al., 2001)

In the study by Griffiths et al. (2001), treatment in the nursing-led unit was determined to be a substitute for both secondary and primary care. However, further study is needed to determine whether patients are more prepared for discharge, resulting in lowered primary care costs and re-admission costs. It is still not known whether nursing-led inpatients units save money (Griffiths, et al., 2006). A full accounting of a nursing-led units' place in the continuum of care and the costs associated with acute hospitals managing post-acute patients is needed if nurse-led units are to become effective (Steiner et al., 2001). Many studies suggest that the nursing-led unit is more expensive than usual care, although there are cost saving after discharge. It seems unlikely that these cost savings can be maintained for sufficiently long enough to be cost effective (Griffiths et al., 2006).

After analyzing the literature available, it is imperative that TAMC perform its own analysis of the need and cost associated with the establishment of a sub-acute ward.

A.2 Subject of Case

This business case examines the likely costs and benefits that follow from a proposed establishment of a sub-acute ward at TAMC. The sub-acute ward is designed to decrease the cost of treating long-stay patients that are currently cared for on the acute care wards. This

proposal calls for several major actions including adding clinical space for the ward through enhanced use leasing or the shifting of current clinical space on the surgical ward. This analysis covers the estimated business consequences of these actions, as they impact TAMC and the VAPICS during the current and future fiscal years. A list of acronyms can be found in Appendix A.

A.3 Purpose of Case

This case is designed to provide members of the TAMC's Executive Committee with the necessary financial projections, metrics, contingency assessments, and risks associated with each of three alternatives: movement of current ward, enhanced use leasing space and business as usual.

B. Methods and Assumptions

B.1 Data and Scenarios

Data

Many surveys have been conducted to determine the number of days in inappropriate care, but have resulted in largely varying outcomes. The prevailing belief is that this inappropriate use exceeds 20 percent (Campbell, 2001). Sub-acute patient data has been collected from the Chief of Utilization Management at TAMC. This data was analyzed using SPSS version 11.5. The data covered patients that were hospitalized from 2004 through 2006. Most, but not all of the patients were recorded. In 2004, sub-acute patients that were hospitalized for less than 20 days were not recorded. Some weekly reports were not conducted due to insufficient staffing. This data set is meant to be used as a sample for statistical purposes and not a population. The data collected in FY 2006 was more complete and has been used for financial and workload projection purposes. Table 2 shows the sample breakdown by year.

Table 2

Sample Data

	Frequency	Percent	Cumulative Percent
2004	27	19.00	19.00
2005	66	46.50	65.50
2006	49	34.50	100.00
Total	142	100.00	

Note. $n = 142$.

An analysis of the frequency of length of stay was conducted. Table 3 reflects that the most common length of stay for a sub-acute patient was one day by 12.5 percent of the patients. However, the longest length of stay was as extended as 162 days.

Table 3

Number of Days Sub-acute Frequency

	Frequency	Percent	Valid Percent	Cumulative Percent
1	17	12.00	12.00	12.00
2	15	10.60	10.60	22.50
3	10	7.00	7.00	29.60
4	8	5.60	5.60	35.20
5	6	4.20	4.20	39.40
6	3	2.10	2.10	41.50
7	5	3.50	3.50	45.10
8	7	4.90	4.90	50.00

9	3	2.10	2.10	52.10
10	4	2.80	2.80	54.90
11	3	2.10	2.10	57.00
12	2	1.40	1.40	58.50
13	5	3.50	3.50	62.00
14	4	2.80	2.80	64.80
15	2	1.40	1.40	66.20
16	5	3.50	3.50	69.70
17	3	2.10	2.10	71.80
18	2	1.40	1.40	73.20
19	1	.70	.70	73.90
20	2	1.40	1.40	75.40
21	2	1.40	1.40	76.80
22	2	1.40	1.40	78.20
23	2	1.40	1.40	79.60
24	3	2.10	2.10	81.70
28	1	.70	.70	82.40
29	2	1.40	1.40	83.80
30	2	1.40	1.40	85.20
31	2	1.40	1.40	86.60
32	1	.70	.70	87.30
35	1	.70	.70	88.00
36	3	2.10	2.10	90.10

41	1	.70	.70	90.80
42	1	.70	.70	91.50
45	1	.70	.70	92.30
54	2	1.40	1.40	93.70
62	1	.70	.70	94.40
73	1	.70	.70	95.10
74	1	.70	.70	95.80
75	1	.70	.70	96.50
77	1	.70	.70	97.20
95	1	.70	.70	97.90
104	1	.70	.70	98.60
136	1	.70	.70	99.30
162	1	.70	.70	100.00
Total	142	100.00	100.00	

Note. $n = 142$.

Descriptive statistics were determined and are shown in Table 4. This table shows the mean length of stay for sub-acute patients to be 17.11 with a standard deviation of 24.70.

Table 4

Descriptive Statistics

	DAYSSUB
N	142.00
Mean	17.11
Median	8.50
Mode	1.00
Std. Deviation	24.70
Skewness	3.20
Std. Error of Skewness	.20
Std. Error of Kurtosis	.40
Minimum	1.00
Maximum	162.00

Note. $n = 142$.

Table 5 provides the frequency of sub-acute patients by patient category. The most prevalent sub-acute patient was a VAB, or K61, at 61.30 percent. Appendix B describes each of the patient categories.

Table 5

Sub-acute Patient Frequency by Patient Category

	Frequency	Percent	Cumulative Percent
A11	1	.70	.70
A31	9	6.30	7.00
A41	4	2.80	9.90
A43	2	1.40	11.30
A45	1	.70	12.00
A47	5	3.50	15.50
A48	1	.70	16.20
F11	2	1.40	17.60
F31	11	7.70	25.40
F43	3	2.10	27.50
K61	87	61.30	88.70
K68	1	.70	89.40
K92	1	.70	90.10
M11	1	.70	90.80
M31	3	2.10	93.00
M43	2	1.40	94.40
N31	2	1.40	95.80
N41	2	1.40	97.20
N43	2	1.40	98.60
N47	2	1.40	100.00

Total	142	100.00
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Note. $n = 142$.

An analysis was conducted to determine which ward was being utilized most frequently by the sub-acute patients. Table 6 shows the breakdown of the sub-acute patients by ward.

Table 6

Sub-acute Patients by Ward

	Frequency	Percent	Cumulative Percent
5C2	67	47.20	47.20
6B1	6	4.20	51.40
6B2	11	7.70	59.20
6C2	53	37.30	96.50
ICU-A	1	.70	97.20
ICU-B	1	.70	97.90
Progress	3	2.00	100.00
Total	142	100.00	

Note. $n = 142$.

The average sub-acute census per day is 3.78. The most number of sub-acute patients that were admitted to TAMC, at one time is eight. The patients on the psychiatric units were excluded from all calculations. These patients require a higher level of surveillance than do other medical and surgical patients. A four-person and a two-person room were determined to be the most appropriate bed capacity to accommodate TAMC's sub-acute patient load. The number of days, when more than six patients were admitted to the hospital simultaneously, never

exceeded 27 days during the entire year. Two, four-person rooms would accommodate all patients, but may be difficult to acquire from the medicine wards due to patient acuity, gender separation and Methicillin-resistant *Staphylococcus aureus* (MSRA) patients that require isolation rooms.

Scenarios

Three options will be taken into considerations. The first of these options is to establish a sub-acute, nursing-led ward on one of the surgical wards. This option would require the movement of current clinical space. Option two is to use an EUL company to design and build a structure in which TAMC would be able to utilize space. Option three is to maintain the status quo or BAU. This would require all patients that are currently in a sub-acute status to remain in acute beds until a placement or discharge can be made.

Option one requires the movement of current clinical space. During an interview with the Department of Medicine's Chief Nurse, LTC Anne Corulli stated that the most appropriate space to utilize for this project would be one of the surgical wards. The medicine wards were considered as options for space, but due to patient complexity and the need for private rooms due to MSRA patients, those wards have less available space than do the surgical wards. Table 7 illustrates the bed utilization rates for the past year. Surgical wards were determined to have lower utilization than the medicine wards.

Table 7

Bed Utilization for October 1, 2005 through September 30, 2006

Medical/ Surgical	Ward	Total Staffed Beds	Average Staffed Beds	Total Census	Average Census	Percent Utilization
Medical	ICU-A	1387	4	3911	4	100%
Medical	ICU-B	2868	8	5090	5	62%
Medical	PROG	2918	8	6446	6	75%
Medical	SSU	2757	8	2190	4	50%
Medical	MED	6679	18	15629	14	78%
Medical	TEL	8204	22	17470	16	73%
Surgical	ORTH	5920	16	11505	11	69%
Surgical	SUR	5884	16	11504	11	69%

Note: The SUR ward (6B1) is the suggested ward.

Option 2 is to use enhanced use leasing (EUL). A private EUL company can design and construct a building to be used by the DoD. There is currently a plan for an EUL building on TAMC property that will have excess space available and could be used for a project such as a sub-acute ward. Due to changes in Title 10 USC 2667, which was established in FY 2000, EUL can be used, and lease terms can be up to 50 years.

Potential opportunities for EUL is restoration of historic buildings, central utility plant including wind and gas, medical clinics or hospitals, lodging, hotel and apartments, golf courses, offices, labs and training centers. Various reasons to explore using EUL is that many companies have experience with the DoD, military security experience, construction on military installation

experience, remote location construction experience and all liability is assumed by the EUL company.

Option 3 requires maintaining the status quo or BAU. In this option, private sector care (PSC) is used as a cost to the facility. These dollars are actually spent by the Tricare contractor and not directly by TAMC. There is a lack of raw data to establish the actual number of patients diverted from TAMC due to sub-acute patients occupying acute care beds. Therefore, the scenarios are based on varying percentages of potential PSC cost.

B.2 Scope of the Case

Time

This business case covers a five-year period. The timing of cash outflows are the same for the ward, EUL and BAU scenarios, 2010 through 2014.

Organizations

This business case includes expected business performance improvements primarily for the care of the beneficiaries of TAMC and the VAPICS. Cost impacts for this analysis will span the following areas: human resources (labor), supplies, equipment, revenues, and cost savings.

B.3 Financial Metrics

Net Present Value (NPV)

The cash flow value was discounted at two percent and was the default selection for the BCA tool. Inflation rates were adopted from the 2007 Medical Command Funding Guidance Letter. When the NPV is the same, other considerations must be taken into account.

Simple Return on Investment (ROI) and Cash Flows

The simple ROI is calculated by dividing gains by costs. The ROI is negative for all scenarios. Therefore, the least negative ROI is considered the most favorable. It is worth noting

that the projected ROI is reduced over time due to the unequal inflation of expenses verses benefits.

B.4 Benefits

The identified financial benefits to establishing a sub-acute ward are increases in revenue for additional Relative Weighted Products (RWP) generated from workload, additional revenue from reimbursement from the VAPICS, decreased Private Sector Care (PSC) cost, decreased MEPRS costs for sub-acute beds, and increased third party collections (TPC). The identified non-financial benefits to establishing a sub-acute ward is increased customer satisfaction, continuity of care, greater employees satisfaction, and matching level of care with level of need.

B.5 Cost Impacts Under the Three Options

Cost impacts are assigned to each option in Table 8.

Table 8

Cost Impacts by Option

Resources	Ward Option	Business as Usual	Enhanced Use Leasing
Equipment			X
Labor	X	X	X
MEPR Charges	X	X	X
Private Sector Care		X	

B.6 Major Assumptions

- Best Case Scenario
 - All open bed days can be filled by beneficiaries
 - All beds will be filled with 11 percent of patient population being VABs

- Ward Option
 - There will be space available on one of the surgery wards.
 - The RN will be shared with the ward.
 - Labor will be available in GS.
- EUL Option
 - There will be excess space available in the EUL building.
 - Labor will be available in GS.
- All Scenarios
 - The CMS rates will continue to be the VAPICS reimbursement method.
 - The CMS rates are a good average for the amount to be recovered for OHI.
 - All recaptured patients will have the average length of stay (ALOS).
 - Six percent of TAMC beneficiaries have other health insurance (OHI).
 - MEPRS rates will stay constant through all courses of action
 - 45 percent of OHI billed is collected (TAMC average over FY05 and FY06).
 - Data quality for 2004 is incomplete.
 - Inflation rates will remain constant.
 - Potential PSC cost is a good estimate of actual PSC cost.

C. Business Impacts

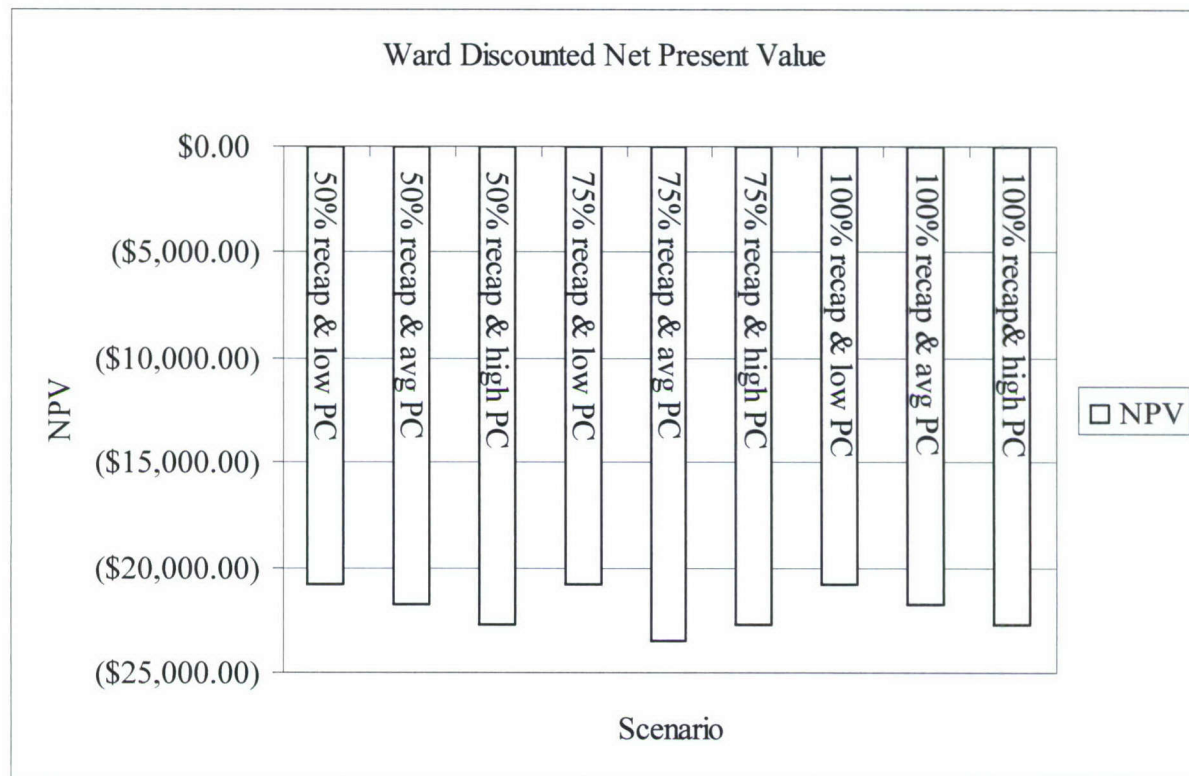
C. 1. Overall Results

The EUL and Ward options were considered using nine individual scenarios. The Business as Usual option was considered using three scenarios. Two key aspects of the scenarios were manipulated in order to assess various degrees of benefits and costs. The benefit used in this analysis is the recapture rate. This rate affects reimbursement and the cost savings for

network care. 100 percent recapture is defined as the ability to fill all sub-acute bed days with acute care patients using the average length of stay. The cost used is personnel costs. High personnel costs are defined as using 13.5 CNA full time equivalents (FTE), average is using 9 CNA FTEs and low is using 4.5 CNA FTEs. All scenarios must require the use of a minimum of one LPN.

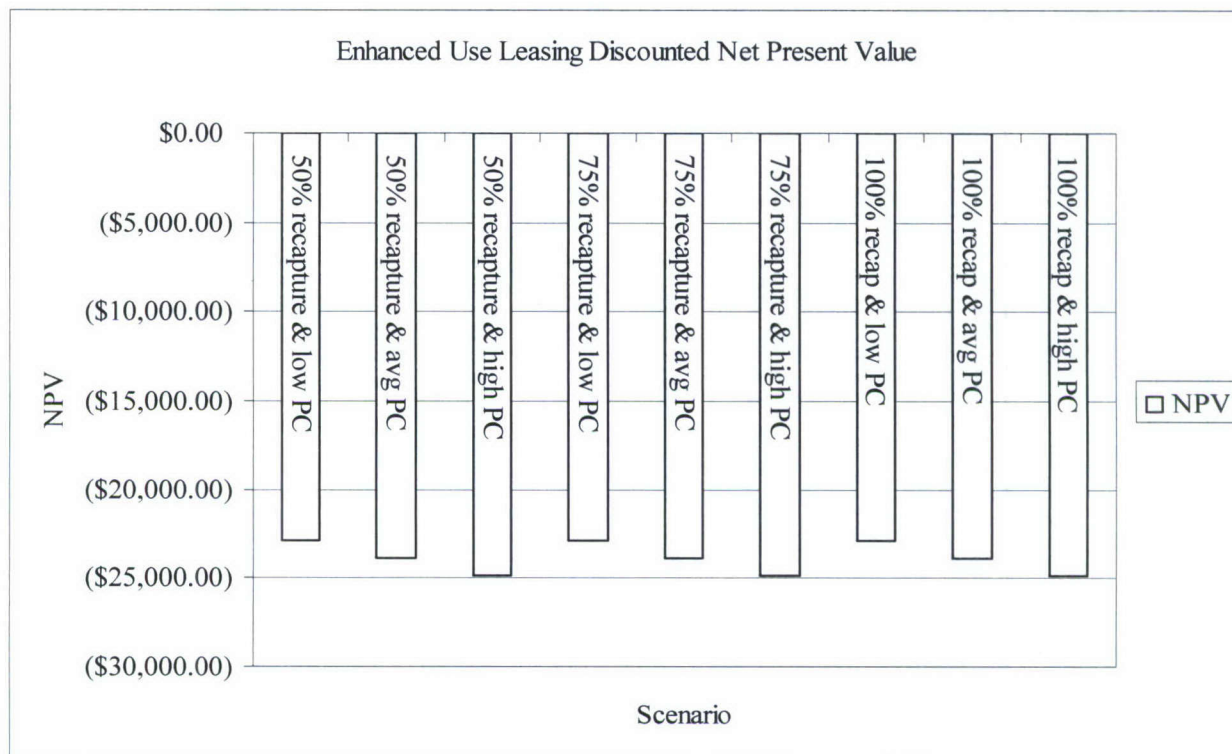
The BAU option uses private sector care (PSC) cost to define three scenarios. PSC cost is defined as the amount of funds used to pay PSC cost for beneficiaries that can potentially not be cared for in the facility and have to be sent out to the community health care network due to unavailable beds. Figures 1, 2, and 3 define the NPV for all scenarios. The best case scenario (BCS), most likely case scenario (MCS), and worst case scenario (WCS) are operationally defined as follows. The BCSs for the ward and EUL options are defined as having 100 percent recapture and low personnel costs. MCSs are defined as having 75 percent recapture and average personnel costs. The WCSs are defined as having 50 percent recapture and high personnel costs. The BCS for the BAU option requires only 50 percent PSC cost. MCS requires 75 percent PSC cost and the WCS requires 100 percent PSC cost.

Figure 1. Ward option discounted net present value.



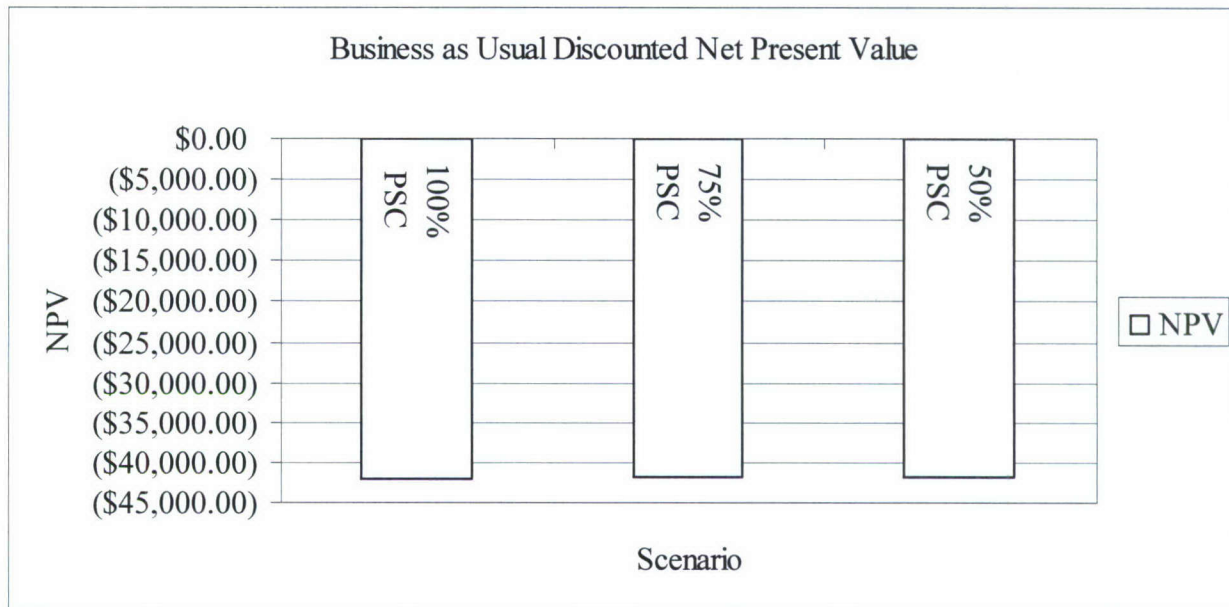
Scenario		NPV
WCS	50% recap/low PC	(\$20,806.00)
	50% recap/avg PC	(\$21,781.40)
	50% recap/high PC	(\$22,756.80)
MCS	75% recap/low PC	(\$20,806.00)
	75% recap/avg PC	(\$23,442.90)
	75% recap/high PC	(\$22,756.80)
BCS	100% recap/low PC	(\$20,806.00)
	100% recap/avg PC	(\$21,781.40)
	100% recap/high PC	(\$22,756.80)

Figure 2. Enhanced use leasing option discounted net present value.



Scenario		NPV
WCS	50% recap/low PC	(\$22,873.60)
	50% recap/avg PC	(\$23,849.00)
	50% recap/high PC	(\$24,824.40)
MCS	75% recap/low PC	(\$22,873.60)
	75% recap/avg PC	(\$23,849.00)
	75% recap/high PC	(\$24,824.40)
BCS	100% recap/low PC	(\$22,873.60)
	100% recap/avg PC	(\$23,849.00)
	100% recap/high PC	(\$24,824.40)

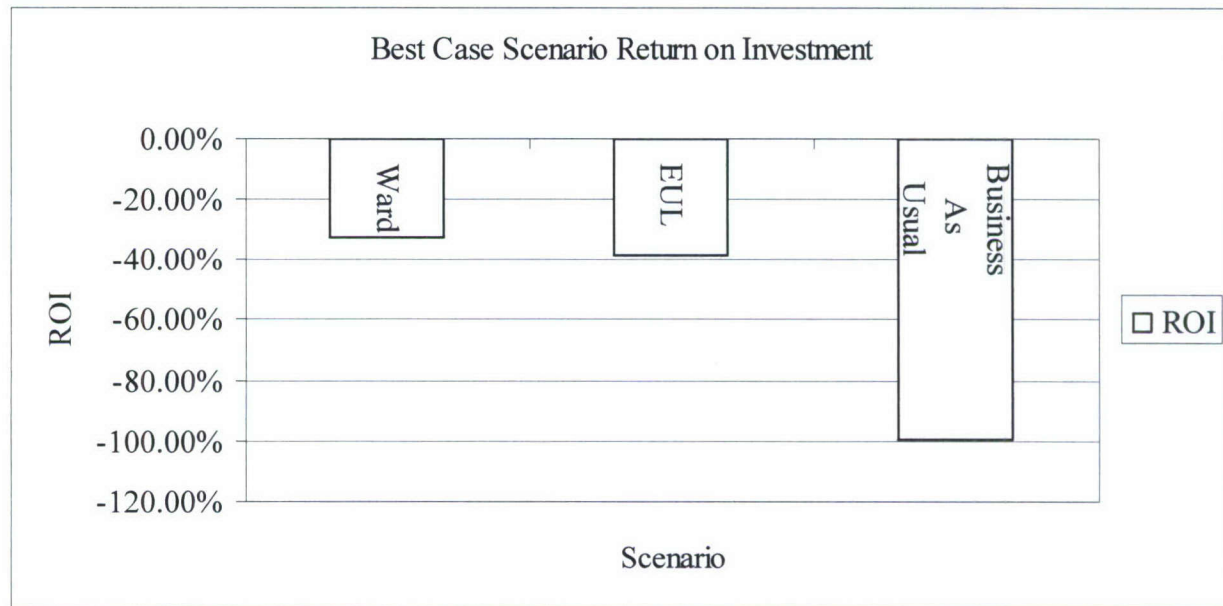
Figure 3. Business as usual option discounted net present value.



Scenario		NPV
WCS	100% PSC Cost	(\$41,957.00)
MCS	75% PSC Cost	(\$41,848.70)
BCS	50% PSC Cost	(\$41,740.20)

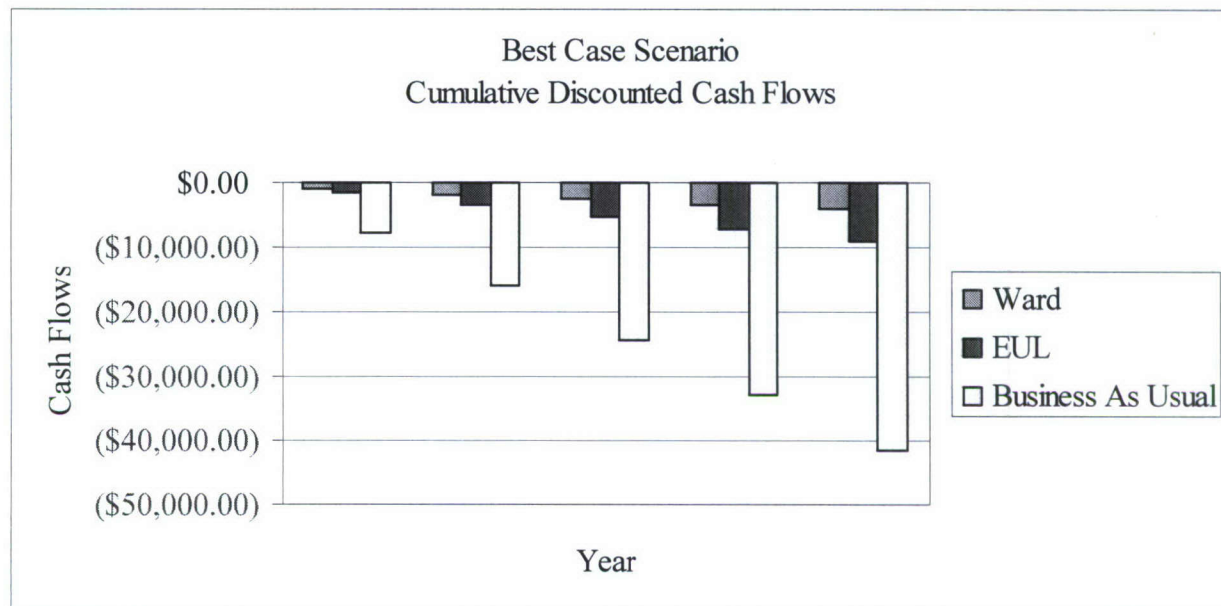
Figures 4 through 9 define the Simple ROI and discounted cash flows for the BCS, MCS, and WCS.

Figure 4. Best case scenario simple return on investment.



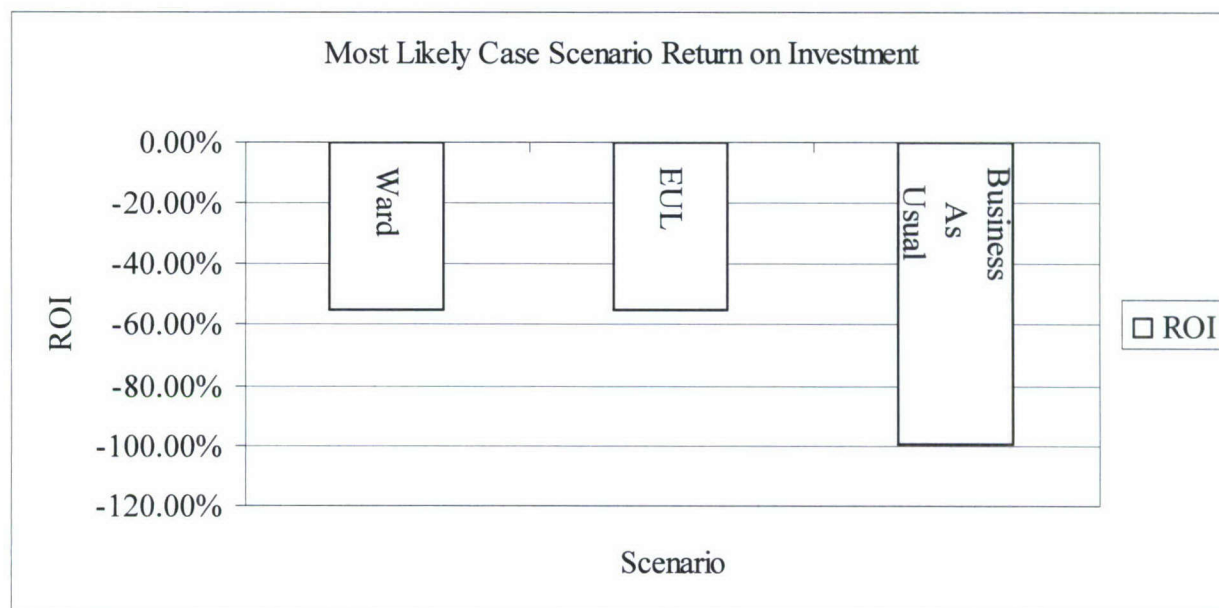
Best Case Scenario	ROI
Ward	-32.20%
EUL	-38.30%
BAU	-99.40%

Figure 5. Best case scenario cumulative discounted cash flows.



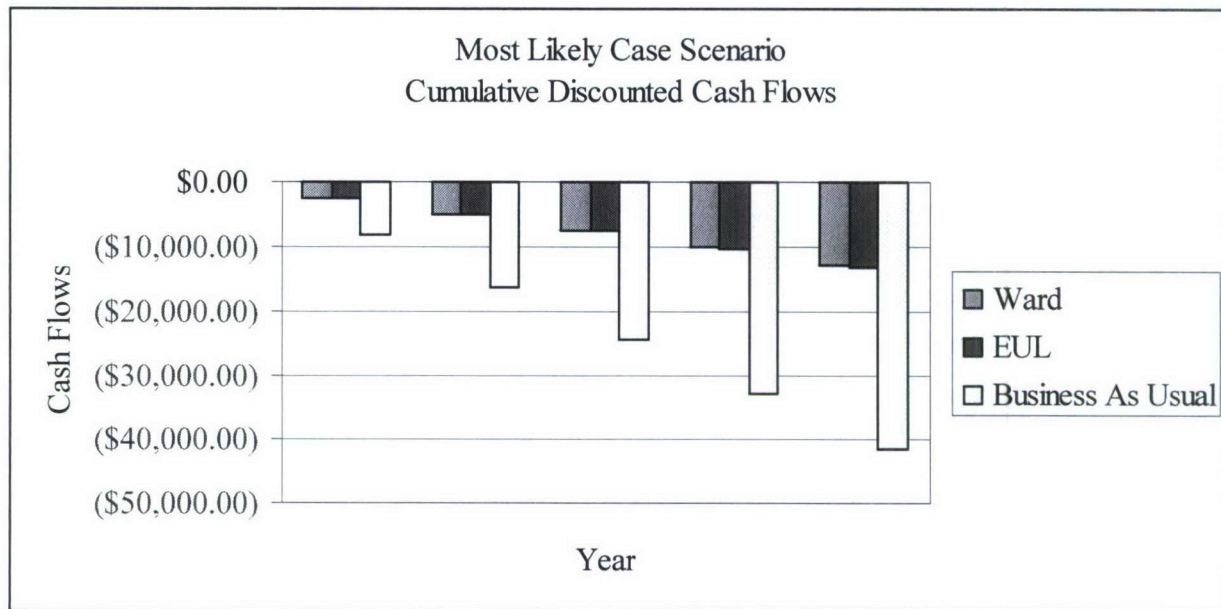
	2010	2011	2012	2013	2014
Ward	(\$911.50)	(\$1,787.16)	(\$2,628.22)	(\$3,435.52)	(\$4,210.24)
EUL	(\$1,665.30)	(\$3,355.80)	(\$5,159.30)	(\$7,081.20)	(\$9,127.20)
BAU	(\$7,961.10)	(\$16,088.60)	(\$24,385.80)	(\$32,856.40)	(\$41,501.00)

Figure 6. Most likely case scenario return on investment.



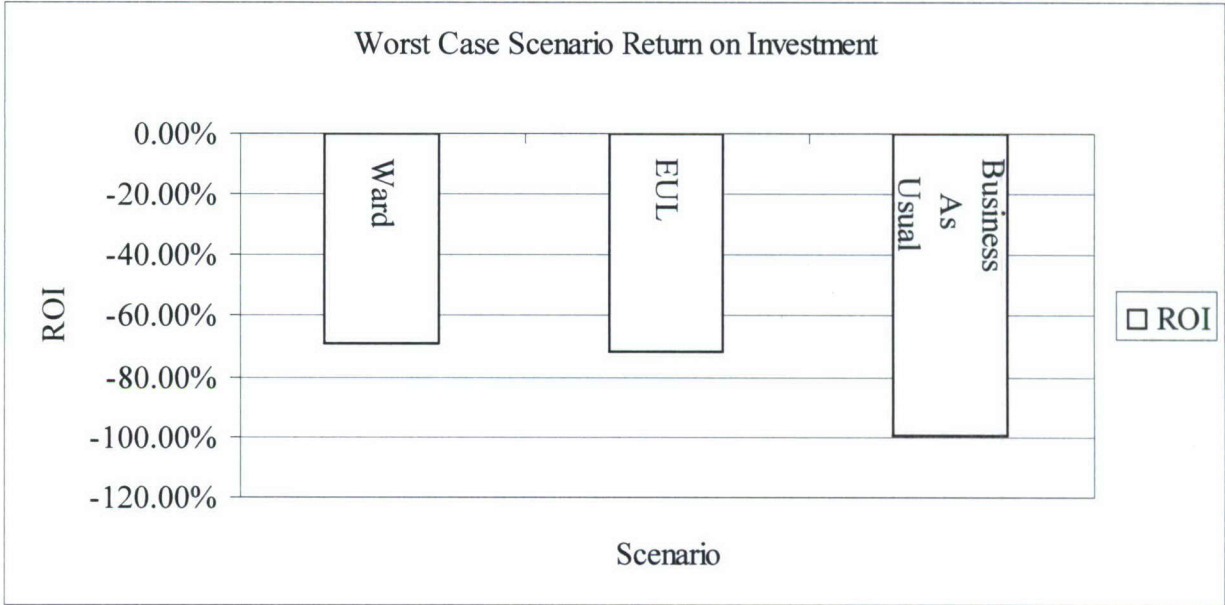
Most Likely Case Scenario	ROI
Ward	-54.80%
EUL	-54.80%
BAU	-99.40%

Figure 7. Most likely case scenario cumulative discounted cash flows.



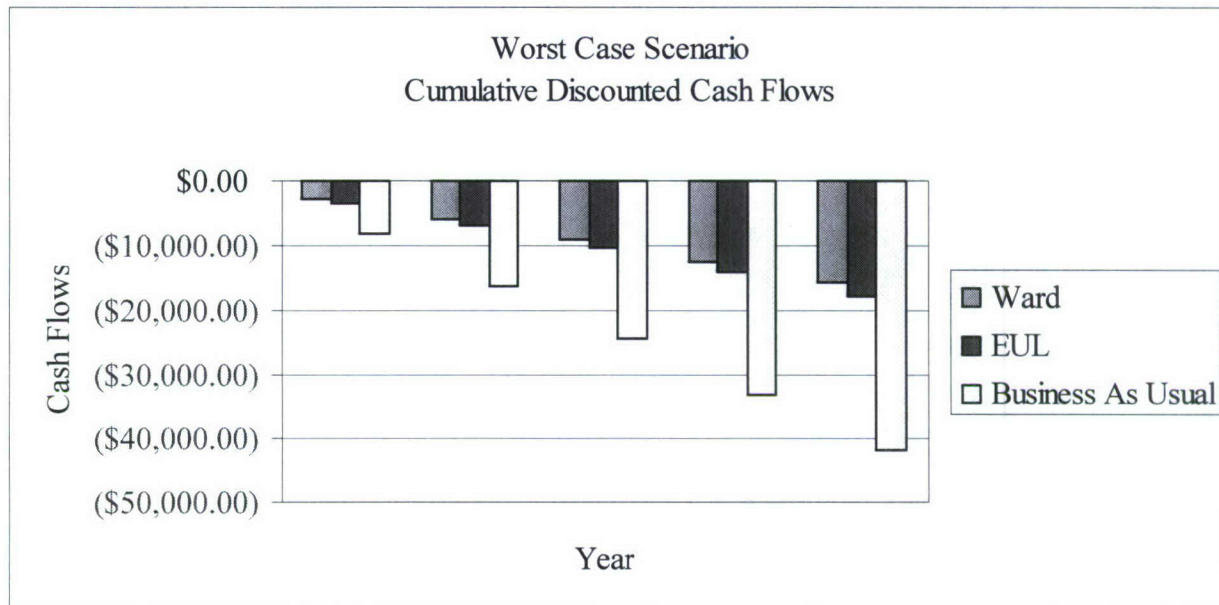
	2010	2011	2012	2013	2014
Ward	(\$2,412.00)	(\$4,904.30)	(\$7,469.50)	(\$10,118.30)	(\$12,849.20)
EUL	(\$2,524.70)	(\$5,043.00)	(\$7,638.90)	(\$10,314.10)	(\$13,070.00)
BAU	(\$7,982.80)	(\$16,131.90)	(\$24,450.90)	(\$32,943.20)	(\$41,612.50)

Figure 8. Worst case scenario return on investment.



Worst Case Scenario	ROI
Ward	-69.00%
EUL	-71.60%
BAU	-99.40%

Figure 9. Worst case scenario cumulative discounted cash flows.



	2010	2011	2012	2013	2014
Ward	(\$2,964.90)	(\$6,015.50)	(\$9,152.70)	(\$12,378.50)	(\$15,694.30)
EUL	(\$3,460.10)	(\$6,915.50)	(\$10,449.70)	(\$14,064.60)	(\$17,761.90)
BAU	(\$8,004.40)	(\$16,175.20)	(\$24,515.80)	(\$33,029.80)	(\$41,720.80)

C. 2. Benefits

The benefits for this business case analysis are described in the following section.

Projected work load increases are calculated using Relative Weighted Products (RWP) projected workload increases. Potential revenue and billing is calculated using the total potential recapture of patients. The total medicine product line potential recapture is 320.39 patients. Eleven percent of total RWPs in 2006 were generated by VABs. Therefore, 11 percent was applied to the total potential VAPICS reimbursement. VABs calculated for reimbursement was 35.20 and 285.19 for other types of patients. Total potential recapture of patients for the surgical product line is 75. VAB total is 8.25 and 66.75 for other types of patients. The National Adjusted Operating Standardized amount (Table 1A, page 48166 of Federal Register, Volume 71, Number 160, published 18 August 2006) for reimbursements per weighted diagnostic related group (DRG) is \$5,557.506843. A 2.10 percent inflation rate was used in future year calculations. This amount will be referred to as the CMS rate. Table 9 shows all inflation rates associated with this analysis. The average medical product line DRG rate billed to the VAPICS in 2006 was 1.10556501. The average surgical product line DRG rate billed to VAPICS was 2.66526338. Revenue was also calculated using the average RWP reimbursement rate for the Performance Based Assessment Model (PBAM) methodology. The average RWP reimbursement rate in 2007 will be \$7,727.34. The percentage of that rate that is realized is only 61 percent. A 4.13 percent inflationary rate is associated with future calculations.

Benefits for the MCS ward option totaled approximately \$1.9M per year. Benefits were derived from facility revenue and cost savings. Costs totaled approximately \$3.2M per year. Total costs were derived from personnel costs and supply costs. Benefits for the MCS EUL option totaled approximately \$2M per year. Benefits were derived from facility revenue and cost

savings. Costs totaled approximately \$4.2M per year. Total costs were derived from personnel costs and supply costs. Benefits for the MCS BAU option totaled approximately \$44K per year. Benefits were derived from facility revenue. Costs totaled approximately \$6.8M per year. Total costs were derived from supply costs.

Table 9

Inflation Rates

Pay Type	Inflation Rate
Civilian Pay	2.43%
Pharmacy	9.00%
In House Care (IHC) Non-Pay, Non-	
Pharmacy	4.13%
Non IHC Non-Pay, Non-Pharmacy	2.10%

Note. Fiscal Year (FY) 2007 U.S. Army Medical Command (MEDCOM) Funding Guidance dated 22 January 2007.

The TAMC business office stated that Third Party Collections (TPC) data is not captured by patient category and the average amount billed. The CMS rates were used in this analysis. The average medical product line DRG rate billed to VAPICS (being used as a sample) in 2006 was 1.10556501. The average surgery product line DRG rate billed to VAPICS was 2.665263348. The average of the two is 1.885414179. \$10,478.2022 is the average CMS rate billed for TPC that is used in this analysis. A 2.10 percent inflation rate is associated with future calculations. 148 total potential Active Duty Dependant (ADD) medical and surgical patients and 32 total potential Non Active Duty Dependent (NADD) medical and surgical patients were

multiplied by the average rate billed. Six percent of the total ADD and NADD population have OHI and only 45 percent of the amount billed is collected.

Cost savings is the savings on workload that is currently being performed in the community. This workload is assumed to stay in the community without the implementation of the ward or EUL options. Table 10 shows the potential cost per RWP based on the average rate paid by TAMC in FY 2006.

Table 10

Potential cost per RWP

	2010	2011	2012	2013	2014
RWPs Private Sector	462	462	462	462	462
Avg. PSC Cost p/ RWP	\$187.52	\$191.46	\$195.48	\$199.59	\$203.78
Total Decreased Cost	\$86,634.24	\$88,455.78	\$90,313.35	\$92,209.93	\$94,146.36

Note: Inflation rate is equal to 2.10 percent.

C. 3. Costs

Equipment costs are detailed in Table 11 for the EUL option. No equipment needs have been identified for the ward option or the business as usual option.

Table 11

Equipment Needed for the EUL Option

Equipment	Description	2006 Cost	Quantity
Bed	Hillrom Advanta	\$7,848.83	6
Tele-transmitter		\$1,600.00	6
Cable		\$120.00	6
Vital Signs			
Machine	Welch Allyn 52000 Series	\$2,194.00	6
In Wall Suction Regulator	Chemtron Model No 22-15-1108	\$300.00	6
In Wall Oxygen Regulator	Chemtron Oxygen Flowmeter Model #34-01	\$80.00	6
Total		\$12,142.83	6

Note. Inflation rate is equal to 4.13 percent.

The WCS labor costs are detailed in Table 12 and 13. Each labor cost scenario represents the most inexpensive labor. General Schedule (GS) employees are more inexpensive for Licensed Practical Nurse (LPN), Certified Nursing Assistants (CNA) and Registered Nurse (RN) positions when inflation rates are taken into consideration. A 4.13 percent inflation rate is associated with contract personnel and a 2.43 percent inflation rate is associated with GS personnel.

Table 12

Labor Costs for Ward Option

Type	GS	Step	#	FTE	Total	Base Salary	COLA	Benefits	2007 Cost Salary Each
CNA	4	5	3	4.5	13.5	\$25,523.00	\$6,380.75	\$8,103.55	\$40,007.30
LPN	5	5	1	4.5	4.5	\$31,915.00	\$7,978.75	\$10,133.01	\$50,026.76
Total									\$90,034.06

Note: 25 percent Cost of Living Allowance (COLA) rate was used as well as a 31.75 percent benefits. All labor costs are based on GS Step 5. Special pay is in effect for LPN and RN positions. GS is used for CNA, LPN and RN. A 2.43 percent inflation rate is used.

Table 13

Labor Costs for Enhanced Use Leasing Option

Type	GS	Step	#	FTE	Total	Base Salary	COLA	Benefits	2007 Cost Salary Each
CNA	4	5	3	4.5	13.5	\$25,523.00	\$6,380.75	\$8,103.55	\$40,007.30
LPN	5	5	1	4.5	4.5	\$31,915.00	\$7,978.75	\$10,133.01	\$50,026.76
RN	9	5	1	4.5	4.5	\$58,543.00	\$14,635.75	\$18,587.40	\$91,766.15
Total									\$181,800.21

Note: 25 percent Cost of Living Allowance (COLA) rate was used as well as a 31.75 percent benefits. All labor costs are based on GS Step 5. Special pay is in effect for LPN and RN positions. GS is used for CNA, LPN and RN. A 2.43 percent inflation rate is used.

MEPRS charges were calculated by eliminating all charges that would not be associated with sub-acute patient care. The list of MEPRS codes that were used is shown in Appendix C.

The ward and EUL options have an average cost per medicine bed day of \$1,187, determined using 4th level MEPRS code for medicine beds and selecting appropriate level MEPRS charges.

RN labor charges were counted in the ward option because this option requires resource sharing

of the RN position with the surgical ward. The EUL option does not include RN MEPRS charges because an RN will need to be hired and is calculated in the labor costs. 1,996 days is the number of potential bed days that could be filled for the Department of Medicine. \$1,820 is the average cost per bed day determined using 4th level MEPRS code for surgery beds using select MEPRS charges. 435 days is the potential amount of days that could be filled for the Department of Surgery. All bed days utilized by patients that would not be suitable for a sub-acute ward were not used in the calculations (i.e. pediatrics, psychiatry). A 4.13 percent inflation rate was used for future calculations.

BAU MEPRS charges were calculated the following way: \$2,482.00 is the average cost per bed day determined using 4th level MEPRS Code for medicine beds using standard MEPRS charges for 2006. 1,996 days is the number of days that sub-acute patients filled those beds in the Department of Medicine. \$4,185.00 is the average cost per bed day determined using 4th level MEPRS code for surgery beds using standard MEPRS charges for 2006. 435 days is number of days that sub-acute patients were filling beds on surgery wards.

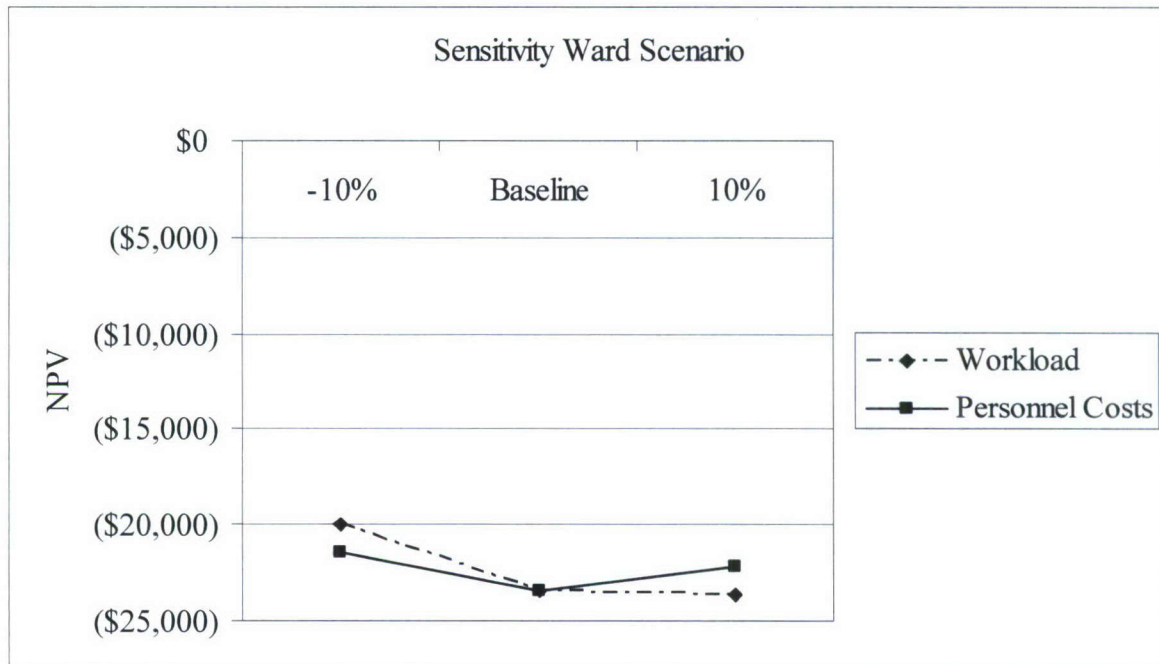
D. Sensitivities, Risks, and Contingencies

D. 1. Sensitivities

Sensitivity analysis answers the question of what happens to predicted results if the assumptions change. The two assumptions that have the strongest influence on the outcome of this business case analysis are personnel costs and additional revenue from workload. A sensitivity analysis was conducted using the MCS for the ward and EUL options. NPV sensitivities to personnel costs (labor) and percent of recaptured workload were analyzed. All other assumptions were held constant and the personnel costs and workloads were changed to their lowest reasonable value to see what happened to the predicted results. Figures 10 and 11

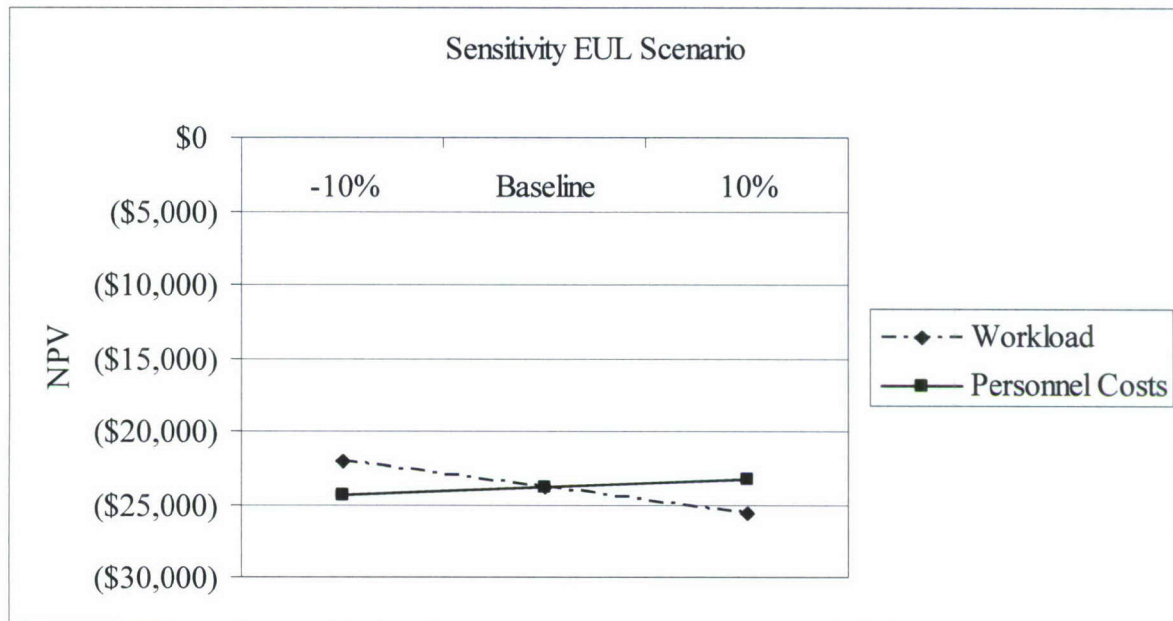
illustrate the results of the sensitivity analysis. Both ward and EUL options are most sensitive to the recapture of workload which affects revenue. This approach to sensitivity analysis has some limitations. In the real world many assumptions are going to change together. Some assumptions are correlated.

Figure 10. Ward Scenario Sensitivity Analysis.



	Workload	Personnel Costs
-10%	(\$19,946)	(\$21,439)
Baseline	(\$23,443)	(\$23,443)
10%	(\$23,617)	(\$22,124)

Figure 11. Enhanced Use Leasing Sensitivity Analysis.



	Workload	Personnel Costs
-10%	(\$22,013)	(\$24,390)
Baseline	(\$23,849)	(\$23,849)
10%	(\$25,685)	(\$23,308)

D. 2. Risks

The possibility of other than the predicted results is of great concern when looking at this business case analysis. A MCS estimate of net cash flow and other financial metrics, such as NPV and ROI has been calculated in order to see the most realistic outcome.

D. 3. Contingencies

The following contingencies are recommended in order to ensure successful implementation and realization of the business objectives that provide the motivation for this proposal: continue long-term placement priorities, downgraded patients should utilize the sub-acute wards whenever possible, emphasis on reimbursement and timely billing will increase revenue and scope of practice on the sub-acute ward should be strictly adhered to in order to keep supply costs low. Command emphasis is key to the successful implementation of the sub-acute ward.

E. Recommendations and Conclusions

The results of the business case analysis showed that a combination of the ward option and the EUL option is the best way for TAMC and the VAPICS to care for sub-acute patients that are awaiting transfer or placement. All options returned significantly negative ROIs and cash flows. The ward option, however, depicts the least negative discounted cash flow, but the same NPV as the EUL option.

Although the ward option does show slightly more favorable monetary outcomes, the margin of error in a business case such as this requires more discussion on the best course of action. There are many confounders to consider, what other hospitals have done, proximity of ancillary services, time of construction, labor, equipment acquisition, increasing LOS, maintaining scope of practice, quality, and continued priority of placement to long term care.

Various local hospitals have encountered the same issues and are researching ways to tackle them. Though no published figures are available, Kaiser Hospital migrated half of their sub-acute beds back to acute care beds. Because their sub-acute patients had close proximity to the acute hospital services, Kaiser found that their cost per bed day was nearly two times the average long-term bed day cost for other facilities. They are currently researching a breakdown in cost, but estimate many extra charges are from over using ancillary services such as lab and x-ray. The building that the sub-acute patients use is connected to the main hospital by a bridge. Kaiser is currently conducting a BCA to determine the best course of action. The ward option for TAMC would require patients to be housed directly in the hospital where ancillary services would be highly accessible and therefore may be over utilized. This change in cost per bed day may overshadow the small cost differential between the EUL and ward options.

A long term care hospital in Honolulu, Maluhia, has recently outsourced their pharmacy and completely shut down lab and x-ray services inside their hospital. Maluhia executives state that it has decreased the cost per bed day and has not affected the quality of patient care.

Another consideration has to be the length of time that is required to implement the options. The ward option could be implemented more quickly and without delays. The EUL option requires the construction of the new building and possible construction delays before it can be implemented. If the time frame of the EUL option is significantly delayed, the cost differential between the ward and EUL options would be more significant as the delays increase.

For further consideration would be the challenge of finding labor to execute the extra beds. The EUL option requires one more RN because of its distance from the hospital proper. Another confounder is the equipment required for the EUL building. If the equipment inflation costs are greater than expected, the differential may be slightly skewed.

In order to ensure benefits and costs, the scope of practice within the sub-acute ward must not transform. If sub-acute patients are maintained in the facility for longer lengths of stay because they will be cared for in now “appropriate levels of care”, that will render this endeavor useless. Transfers and nursing home placements must remain a priority for these patients in order to ensure cost calculations.

One final consideration should be quality. The sub-acute patients are typically longer term and having a separate building may increase patient satisfaction. Housing sub-acute patients on acute wards does not take their individual needs into consideration. The patients may be in need of accommodations more appropriate for long term care such as an activity room. These considerations would be easier to accommodate if the new building could be specifically designed.

After taking all of these issues into consideration, the recommendation is to set up a sub-acute ward on one of the current surgical wards, and as the EUL building becomes available, the ward should be moved into the outlying building. The risks associated with increased costs are much greater for the ward option. Therefore, a combination of the ward and EUL option may be the best business case decision for sub-acute care.

Appendix A
Abbreviations

Abbreviation	Meaning
ACC	Acute Care Clinic
ADC	Average Daily Census
ADD	Active Duty Dependents
ALOS	Average Length of Stay
BAU	Business As Usual
BCS	Best Case Scenario
CBOC	Community Based Outpatient Clinic
CFA	Center For Aging
CMS	Centers for Medicare and Medicaid Services
CNA	Certified Nursing Assistant
COLA	Cost of Living Allowance
DoD	Department of Defense
DRG	Diagnostic Related Group
EUL	Enhanced Use Leasing
FTE	Full Time Equivalents
FY	Fiscal Year
GS	General Schedule
HCFA	Health Care Financing Administration
HMSA	Hawaii Medical Service Association
JV	Joint Venture

LPN	Licensed Practical Nurse
MCS	Most Likely Case Scenario
MEPRS	Medical Expense Performance and Reporting System
MSRA	Methicillin-resistant <i>Staphylococcus aureus</i>
MTF	Military Treatment Facility
NADD	Non-Active Duty Dependents
NPV	Net Present Value
OBRA	Omnibus Budget Reconciliation Act
OHI	Other Health Insurance
PBAM	Performance Based Assessment Model
PC	Personnel Cost
PSC	Private Sector Care
PTSD	Post Traumatic Stress Disorder
Recap	Recapture
RN	Registered Nurse
RWP	Relative Weighted Product
TAMC	Tripler Army Medical Center
TPC	Third Party Collections
US	United States
USC	United States Code
VAPICS	Veteran's Administration Pacific Islands Health Care System
VAB	Veteran's Administration Beneficiary
WCS	Worst Case Scenario

Appendix B

Patient Categories

Patient Category	Description
A11	USA ACTIVE DUTY ENLISTED
A31	USA RET LOS ENLISTED
A41	USA FAM MBR AD
A43	USA FAM MBR RET
A45	USA FAM MBR DECEASED RETIRED
A47	USA FAM MBR DECEASED RETIRED
A48	USA UNREMARIED FRM SPOUSE
F11	USAF ACTIVE DUTY
F31	USAF RET LOS OFFICER
F43	USAF FAM MBR RET
K61	VETERANS ADMIN BENEFICIARY
K68	PAC ISLAND NAT: MARSHALL ISLANDS
K92	CIVILIAN EMERGENCY CARE
M11	USMC ACTIVE DUTY
M31	USMC RET LOS
M43	USMC FAM MBR RET
N31	USN RET LOS
N41	USN FAM MBR AD
N43	USN FAM MBR RET
N47	USN FAM MBR DECEASED RETIRED

Appendix C

MEPR Charges

MEPRS Code	Type of Expense
AEXA	Ward 6B2 Registered Nurse
DAAA	Tripler Pharmacy
EAAA	Inpatient Equipment Depreciation
EBAA	Command
EBBA	Special Staff
EBBB	Quality Services Division
EBC2	JACHO Activity and Meetings
EBC3	Clinical Management
EBC4	Other Administration
EBCA	Admin Services
EBCB	Resource Management Division
EBCC	Resource Management Division
EBCD	Personnel Division
EBCE	Hospital Treasurer
EBCJ	Committee Meetings
EBDA	Chief, Dept of Medicine
EBDB	Chief, Dept of Surgery
EBDI	Department of Nursing
EBDJ	Chief, Medical Nursing
EBDK	Chief, Surgical Nursing

EBEA	Graduate Medical Education
EBFA	Department Of Health Education and Training
EBFG	Staff Medical Library
EBFH	Medical Phase II Teaching
EBFI	Local Unofficial Teaching
EBFJ	Nursing Courses Teaching
EBGA	Peace-time Exercises
EBHA	Third Party Collection
EBJA	Information Management Division
EDAA	Facility Management
EDAF	Plant Management
EDBA	Utilities
EDCA	Maintenance of Real Property
EDDA	Minor Facility Repairs
EDEA	Other Engineer Support
EDIA	Police Protection
EDIF	Global War On Terrorism Police Protection
EDKA	Other Military Treatment Facility Support Services
EDKB	Laundry
EEAA	Logistics
EFAA	House-keeping
EGAA	Med Equip Maintenance
EHAA	Laundry

EIAA	Food Service
EJAA	Inpatient Administration
ELAA	Managed Care Division

Appendix D

Business Case Analysis Tool for Ward Most Likely Case Scenario Summary

Case Name: Sub Acute Ward Site Name: Tripler Army Medical Center		Business Case Analysis										Submit Date: 31-Mar-07 75% receipt	
Summary													
Select Analysis by Service Type		Total Project		Dollars in \$1,000s (\$000)								Return to Main Menu	
ANNUAL BENEFITS		FY10	FY11	FY12	FY13	FY14							
Facility/MTF Savings/Revenue		\$2,049.6	\$2,092.7	\$2,136.6	\$2,181.5	\$2,227.3							
Purchased Care Savings		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0							
Other Non-Specified Savings		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0							
Cost Avoidance		\$65.0	\$66.3	\$67.7	\$69.2	\$70.6							
Total Benefit/Savings		\$2,114.6	\$2,159.0	\$2,204.3	\$2,250.6	\$2,297.9							
COST													
OPERATING EXPENSE ITEMS													
Personnel - GS & Contract		(\$1,005.2)	(\$1,031.2)	(\$1,058.0)	(\$1,085.6)	(\$1,113.6)							
Non-Capital Lease/Rental/Maintenance		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0							
Supplies		(\$3,521.4)	(\$3,666.9)	(\$3,818.3)	(\$3,976.0)	(\$4,140.2)							
Other		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0							
CAPITAL ASSETS PURCHASED													
Equipment (Lease & Purchase)		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0							
Facilities		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0							
Total Cost		(\$4,526.6)	(\$4,698.1)	(\$4,876.3)	(\$5,061.6)	(\$5,253.8)							
Net Yearly Cash Flow		(\$2,412.0)	(\$2,539.1)	(\$2,672.0)	(\$2,811.0)	(\$2,956.9)							
Net Cumulative Cash Flow		(\$2,412.0)	(\$4,951.1)	(\$7,623.0)	(\$10,434.0)	(\$13,389.9)							
Investment Requirements													
Select Fund Type		\$4,526.6	\$4,698.1	\$0.0	\$0.0	\$0.0							
Net Investment		\$0.0	\$0.0	\$4,876.3	\$5,061.6	\$5,253.8							
Analysis													
Select Fund Type Period Only													
Analysis Period Start Date:		1-Oct-09											
Select Fund Type Funding End Date:		1-Oct-11											
Months of Funding Requested:		24											
Net Cash Flow:		(4,951.1)											
NPV Cash Flow Discounted at 2.0%		(4,901.3)											
Total Funding Requested Less Facility Savings/Revenue:		5,062.4											
Total Amount of Projected Savings/Benefits:		4,273.6											
Simple ROI: (Net Benefit / Investment)		-53.7%											
Year Project reaches Self-Sustainability Status		> 10 years											
Projected Payback Period in Years (Break-even)		10.0											
Projected Payback Date		29-Sep-19											
Total Project - CASH FLOW SUMMARY													
Cash inflows (outflows)		Year 1 2010	Year 2 2011	Year 3 2012	Year 4 2013	Year 5 2014							
Annual benefit impacts		2,114.6	2,159.0	2,204.3	2,250.6	2,297.9							
Annual expense item impacts		(4,526.6)	(4,698.1)	(4,876.3)	(5,061.6)	(5,253.8)							
Net operating inflow (outflow)		(2,412.0)	(2,539.1)	(2,672.0)	(2,811.0)	(2,956.9)							
Asset purchase		0.0	0.0	0.0	0.0	0.0							
Net CASH FLOW		(2,412.0)	(2,539.1)	(2,672.0)	(2,811.0)	(2,956.9)							
Cumulative Net Cash Flow		(2,412.0)	(4,951.1)	(7,623.0)	(10,434.0)	(13,389.9)							
Discounted Cash Flow - NPV at 2.0%		(2,412.0)	(2,489.3)	(2,568.2)	(2,648.8)	(2,730.8)							
Cumulative Discounted Case Flow		(2,412.0)	(4,901.3)	(7,469.5)	(10,118.3)	(12,849.2)							

Sub Acute Ward Tripler Army Medical Center

Performance & Financial Summary - Total Project

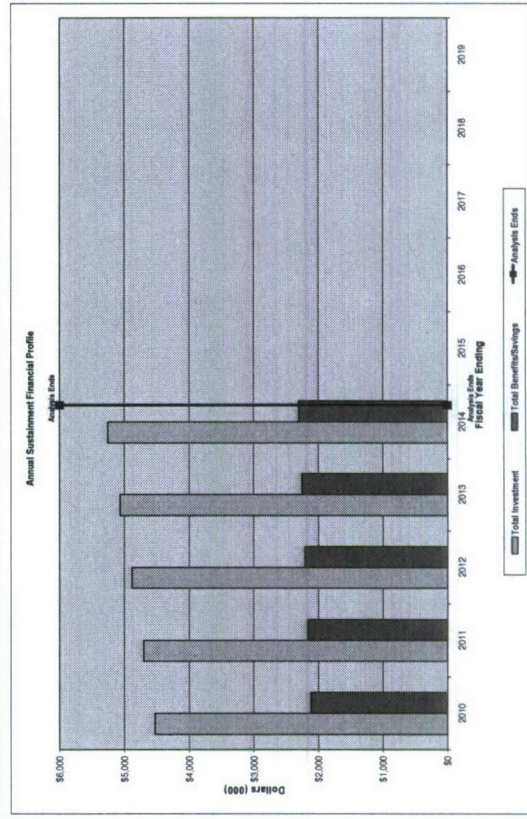
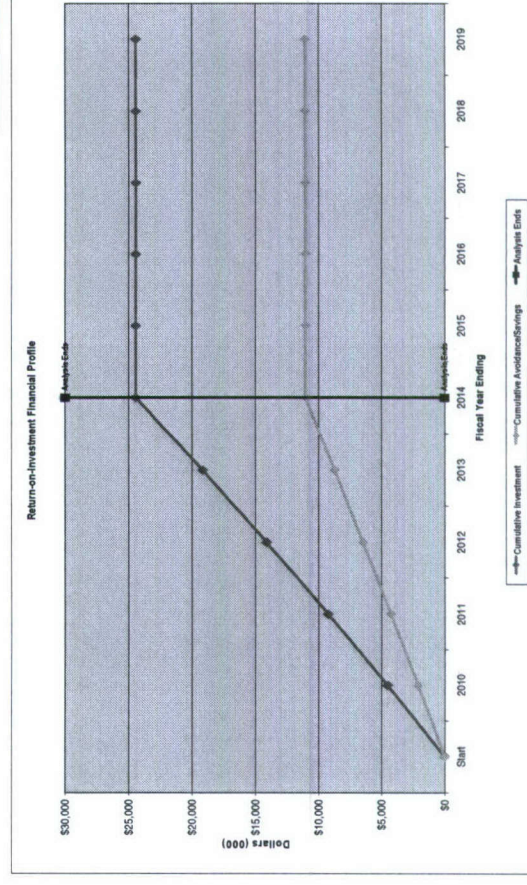
		Recapture Targets (Revised)				
		2010	2011	2012	2013	2014
Metric 1 Title	30-Mo Total	83	83	83	83	83
	AD	137	137	137	137	137
	ADD	44	44	44	44	44
	NADO	30	30	30	30	30
	Over 65	53	53	53	53	53
	Other	0	0	0	0	0
Sub-Total		348	348	348	348	348
Metric 2 Title	AD	0	0	0	0	0
	ADD	0	0	0	0	0
	NADO	0	0	0	0	0
	Over 65	0	0	0	0	0
	Other	0	0	0	0	0
	Sub-Total	0	0	0	0	0
Metric 3 Title	AD	0	0	0	0	0
	ADD	0	0	0	0	0
	NADO	0	0	0	0	0
	Over 65	0	0	0	0	0
	Other	0	0	0	0	0
	Sub-Total	0	0	0	0	0

ENTER Projected Start Date
Payback Period (Breakeven)
Projected Payback Used

10.0 Years or 25-36p-19 Months

		Net Savings & Loss Calculations (\$000)				
		2010	2011	2012	2013	2014
Benefits	Net Present Value (NPV)	1,926.2	1,701.2	1,754.0	1,685.5	1,115.8
	Total Project	0.0	0.0	0.0	0.0	0.0
	Cumulative	9,521.4	5,546.9	3,819.0	3,949.0	4,147.2
	NPV	0.0	0.0	0.0	0.0	0.0
	(\$12,849.2)	4,536.6	4,568.1	4,819.0	5,681.8	5,243.8
	Other	0.0	0.0	0.0	0.0	0.0
Costs	Sub-Total OP Expense	0.0	0.0	0.0	0.0	0.0
	Capital Assets	0.0	0.0	0.0	0.0	0.0
	Equipment (Lease & Purchase)	0.0	0.0	0.0	0.0	0.0
	Facilities	0.0	0.0	0.0	0.0	0.0
	Sub-Total Capital Asset	0.0	0.0	0.0	0.0	0.0
	Total Investment	2,536.6	4,568.1	4,819.0	5,681.8	5,243.8
Savings	Net Savings	2,090.6	2,002.7	2,186.6	2,181.5	2,227.3
	Facility/IT Savings/Revenue	0.0	0.0	0.0	0.0	0.0
	Medical Savings	0.0	0.0	0.0	0.0	0.0
	Other New Saved Savings	0.0	0.0	0.0	0.0	0.0
	Cost Avoidance	65.0	66.3	67.7	69.2	70.8
	Total Savings	2,155.6	2,169.0	2,254.3	2,250.7	2,298.1
Net Savings or (Loss)		(2,536.6)	(4,568.1)	(2,632.4)	(3,500.3)	(3,045.7)
Total Funding Requirement - Facility Savings/Revenue		2,477.8	2,605.4	2,750.7	2,865.1	3,026.5
Total Funding Requirement - Facility Savings/Revenue		12,688.4	12,867.7	13,027.7	13,187.7	13,347.7
Cumulative Investment		4,536.6	9,224.7	14,101.0	19,102.8	24,418.4
Cumulative Avoidance/Savings		2,155.6	4,273.6	6,430.9	8,728.6	11,026.5
Cumulative Net Savings or (Loss)		(2,421.0)	(4,951.1)	(7,670.1)	(10,374.2)	(13,391.9)
Total Expenses		0.0	0.0	0.0	0.0	0.0
Total Savings		2,155.6	4,273.6	6,430.9	8,728.6	11,026.5
Total Investment		2,536.6	4,568.1	4,819.0	5,681.8	5,243.8
Total Savings/Investment		(481.0)	(2,294.5)	(1,388.1)	(1,953.2)	(1,217.3)

Describe this project:



Appendix E

Business Case Analysis Tool for Enhanced Use Leasing Option Most Likely Case Scenario

Summary

Business Case Analysis

Case Name: Sub Acute Ward Site Name: Tripler Army Medical Center		Submit Date: 31-Mar-07 75% receipt	
Summary			
Select Analysis by Service Type Total Project		Dollars in \$1,000s (\$000) Return to Main Menu	
	Total Project		
	FY10	FY11	FY12
ANNUAL BENEFITS			
Facility/MTF Savings/Revenue	\$2,066.6	\$2,130.4	\$2,220.8
Purchased Care Savings	\$0.0	\$0.0	\$0.0
Other Non-Specified Savings	\$0.0	\$0.0	\$0.0
Cost Avoidance	\$65.0	\$66.3	\$67.7
Total Benefits/Savings	\$2,151.6	\$2,196.8	\$2,290.0
COST			
OPERATING EXPENSE ITEMS			
Personnel - GS & Contract	(\$1,072.5)	(\$1,098.5)	(\$1,125.4)
Non-Capital Lease/Rental/Maintenance	\$0.0	\$0.0	\$0.0
Supplies	(\$3,521.4)	(\$3,666.9)	(\$3,818.3)
Other	\$0.0	\$0.0	\$0.0
CAPITAL ASSETS PURCHASED			
Equipment (Lease & Purchase)	(\$42.3)	\$0.0	\$0.0
Facilities	\$0.0	\$0.0	\$0.0
Total Cost	(\$4,676.2)	(\$4,765.4)	(\$5,129.0)
Net Yearly Cash Flow	(\$2,524.7)	(\$2,568.7)	(\$2,839.0)
Net Cumulative Cash Flow	(\$2,524.7)	(\$5,093.3)	(\$7,932.3)
Investment Requirements			
Select Fund Type	\$4,676.2	\$4,765.4	\$0.0
Net Investment	\$0.0	\$4,943.7	\$5,129.0
Analysis			
Select Fund Type Period Only			
Analysis Period Start Date:	1-Oct-09		
Select Fund Type Funding End Date:	1-Oct-11		
Months of Funding Requested:	24		
Net Cash Flow:	(5,093.3)		
NPV Cash Flow Discounted at 2.0%:	(5,043.0)		
Total Funding Requested Less Facility Savings/Revenue:	5,224.6		
Simple ROI: (Net Benefit / Investment)	4,348.3		
Year Project reaches Self-Sustainment Status	> 10 years		
Projected Payback Period in Years (Breakeven)	10.0		
Projected Payback Date	29-Sep-19		
Total Project - CASH FLOW SUMMARY			
Cash inflows (outflows)	Year 1 Sep 2010	Year 2 Sep 2011	Year 3 Sep 2012
Annual benefit impacts	2,151.6	2,196.8	2,242.9
Annual expense item impacts	(4,594.0)	(4,765.4)	(4,943.7)
Net operating inflow (outflow)	(2,442.4)	(2,568.7)	(2,700.8)
Asset purchase	(82.3)	0.0	0.0
Net CASH FLOW	(2,524.7)	(2,568.7)	(2,700.8)
Cumulative Net Cash Flow	(2,524.7)	(5,093.3)	(7,794.1)
Discounted Cash Flow - NPV at 2.0%	(2,524.7)	(2,518.3)	(2,495.9)
Cumulative Discounted Case Flow	(2,524.7)	(5,043.0)	(7,638.9)
	Year 4 Sep 2013	Year 5 Sep 2014	
	2,290.0	2,338.1	
	(5,129.0)	(5,321.2)	
	(2,839.0)	(2,983.1)	
	0.0	0.0	
	(2,839.0)	(2,983.1)	
	(10,633.1)	(13,616.2)	
	(2,839.0)	(2,983.1)	
	(10,314.1)	(13,070.0)	
Total Select Fund Type Requirements			
	FY10	FY11	FY12
Capital Asset	\$82.3	\$0.0	\$0.0
O&M	\$4,594.0	\$4,765.4	\$0.0
Total Investment	\$4,676.2	\$4,765.4	\$0.0
Less Facility Savings/Revenue	\$2,066.6	\$2,130.4	\$0.0
Adjusted Net Investment Requirement	\$2,589.6	\$2,635.0	\$0.0

Sub Acute Ward Tripler Army Medical Center

Performance & Financial Summary - Total Project

Select Analysis by Service Type										Total Project	
Net Savings & Loss Calculations (2000)										Non-Inflated	
Fiscal Year											
Net Present Value (NPV)											
Operating Expenses											
Total Project											
Cumulative											
NPV											
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Appendix F

Business Case Analysis Tool for Business as Usual Most Likely Case Scenario Summary

Case Name: Sub Acute Ward Site Name: Tripler Army Medical Center		Submit Date: 31-Mar-07 Business at	
Business Case Analysis			
Summary			
Select Analysis by Service Type		Total Project	
ANNUAL BENEFITS		FY10	FY11
Facility/MTF Savings/Revenue	\$47.2	\$48.1	\$51.2
Purchased Care Savings	\$0.0	\$0.0	\$0.0
Other Non-Specified Savings	\$0.0	\$0.0	\$0.0
Cost Avoidance	\$0.0	\$0.0	\$0.0
Total Benefit/Savings	\$47.2	\$48.1	\$51.2
COST		FY12	FY13
OPERATING EXPENSE ITEMS			
Personnel - GS & Contract	\$0.0	\$0.0	\$0.0
Non-Capital Lease/Rental/Maintenance	\$0.0	\$0.0	\$0.0
Supplies	(\$7,965.0)	(\$8,293.9)	(\$8,993.1)
Other	(\$65.0)	(\$66.3)	(\$69.2)
CAPITAL ASSETS PURCHASED			
Equipment (Lease & Purchase)	\$0.0	\$0.0	\$0.0
Facilities	\$0.0	\$0.0	\$0.0
Total Cost	(\$8,029.9)	(\$8,360.3)	(\$9,062.3)
Net Yearly Cash Flow	(\$7,982.8)	(\$8,312.1)	(\$8,655.0)
Net Cumulative Cash Flow	(\$7,982.8)	(\$16,294.9)	(\$33,962.1)
Investment Requirements			
Select Fund Type	\$8,029.9	\$8,360.3	\$0.0
Net Investment	\$0.0	\$0.0	\$9,435.2
Analysis			
Select Fund Type Period Only			
Analysis Period Start Date:	1-Oct-09		
Select Fund Type Funding End Date:	1-Oct-11		
Months of Funding Requested:	24		
Net Cash Flow:	(16,294.9)		
NPV Cash Flow Discounted at 2.0%	(16,131.9)		
Total Funding Requested Less Facility Savings/Revenue:	16,294.9		
Total Amount of Projected Savings/Benefits:	95.3		
Simple ROI (Net Benefit / Investment)	-99.4%		
Year Project reaches Self-Sustainment Status	> 10 years		
Projected Payback Period in Years (Breakeven)	10.0		
Projected Payback Date	29-Sep-19		
Total Project - CASH FLOW SUMMARY			
Cash inflows (outflows)	Year 1 Sep 2010	Year 2 Sep 2011	Year 3 Sep 2012
Annual benefit impacts	47.2	48.1	49.2
Annual expense item impacts	(8,029.9)	(8,360.3)	(8,704.2)
Net operating inflow (outflow)	(7,982.8)	(8,312.1)	(8,655.0)
Asset purchase	0.0	0.0	0.0
Net CASH FLOW	(7,982.8)	(8,312.1)	(8,655.0)
Cumulative Net Cash Flow	(7,982.8)	(16,294.9)	(24,949.9)
Discounted Cash Flow - NPV at 2.0%	(7,982.8)	(8,149.1)	(8,492.3)
Cumulative Discounted Case Flow	(7,982.8)	(16,131.9)	(24,450.9)
Total Select Fund Type Requirements			
	FY10	FY11	FY12
Capital Asset	\$0.0	\$0.0	\$0.0
O&M	\$8,029.9	\$8,360.3	\$0.0
Total Investment	\$8,029.9	\$8,360.3	\$0.0
Less Facility Savings/Revenue	\$47.2	\$48.1	\$51.2
Adjusted Net Investment Requirement	\$7,982.8	\$8,312.1	\$0.0
Total			
	FY10	FY11	FY12
Capital Asset	\$0.0	\$0.0	\$0.0
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Total			
	FY10	FY11	FY12
Capital Asset	\$0.0	\$0.0	\$0.0
O&M	\$8,029.9	\$8,	

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