

Business Plan for the Creation of a National Center
of Excellence for Alcohol Septal Ablation at
Ben Taub General Hospital

A Graduate Management Project Submitted for
the Degree of Master in Health Administration

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Abstract

This project provides a business plan for establishing an international center of excellence for alcohol septal ablation at Ben Taub General Hospital. Alcohol septal ablation is a new treatment for hypertrophic obstructive cardiomyopathy, which impacts approximately one in every five hundred individuals. The procedure involves the injection of ethanol alcohol into the left ventricle creating a "controlled" heart attack. This business plan provides a market analysis, volume forecast, staffing projections, and financial analysis. The five-year cumulative return on this project is approximately \$5.4 million. Concluding analysis reveals the center of excellence can achieve profitability at the end of the first year of operations.

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Business Plan for the Creation of a National Center
of Excellence for Alcohol Septal Ablation at
Ben Taub General Hospital

Chapter 1

Introduction

This project is designed to perform a thorough business plan and review for the potential development of a national referral center and center of excellence for alcohol septal ablation as a treatment for hypertrophic obstructive cardiomyopathy within the Cardiology Department of Ben Taub General Hospital (BTGH). A background of Ben Taub General Hospital and the cardiology department is included. After the background material is a discussion of the conditions prompting the study, statement of the question, and a literature review focusing on hypertrophic obstructive cardiomyopathy and the associated treatment options. This will be followed by the definition of the purpose of the project.

The methods and procedures section provides specific details on formulation of a business plan and discusses the specific plan format chosen for this project. This is followed by the actual business plan itself, which consists of eight sections. The project narrative concludes with a discussion of the prescribed plan, a conclusion, and recommendations.

Ben Taub General Hospital Background

BTGH is a tertiary care academic medical center located in Houston's Texas Medical Center. At 588 licensed beds, BTGH is the largest hospital in the Harris County Hospital District

(HCHD). Other components of HCHD include: eleven neighborhood clinics; Thomas Street clinic, which provides approximately 60 percent of Houston's AIDS care; and two additional hospitals (Ben Taub General Hospital, 2002).

Affiliated with the Baylor College of Medicine, BTGH is one of approximately 400 academic teaching hospitals in the United States. BTGH supports approximately 340 medical residents and 40 fellows within the academic year. Baylor faculty, fellows, residents, and medical students provide all of the medical care within BTGH (Ben Taub General Hospital, 2002).

The vision of the HCHD is to "build a healthier community and be America's best healthcare system." The HCHD mission is to continually strive to "improve our community's health by delivering high-quality health care to Harris County residents and by training the next generation of health professionals" (Harris County Hospital District, 2002).

The HCHD provides the entire spectrum of medical care for eligible beneficiaries. An eligible beneficiary is defined as anyone who was a resident of Harris County for at least one day in a calendar year. BTGH is one of Houston's two level one trauma centers and provides for all short-term acute medical needs excluding severe burns and organ transplants. BTGH has approximately 43 thousand admissions a year of which 86 percent are unplanned emergency or urgent patients (newborn deliveries are about a fourth of this). BTGH delivers almost six thousand babies per year (Information Management Systems & Inc, 2002).

BTGH is a world-renowned trauma center. The hospital's emergency center is actually six emergency rooms (medicine, trauma/surgery, pediatric, psychiatry, obstetrics/gynecology, and urgent care) operating side-by-side. Providing over 100 thousand emergency visits a year, the BTGH emergency center supplies a vital trauma capability for the over 4 million Houston area residents. Additionally, BTGH operates 96 intensive care unit beds of various types, an in-patient and emergency psychiatry ward, and a ten-bed critical wound/surgical ICU step-down unit (Ben Taub General Hospital, 2002).

Approximately 50 percent of the HCHD budget is provided by Harris County property taxes. The remaining budget is made up with insurance, private pay patients, Medicaid disproportionate share payments, state tobacco settlement money, and a small amount of research/grant funding. BTGH receives zero reimbursement for roughly 60 percent of the care it provides due to low or no income patients. The HCHD is the leading area provider of indigent community care (Ben Taub General Hospital, 2002).

Ben Taub General Hospital Cardiology Department

BTGH operates 155 specialty clinics. It also has a state-of-the-art coronary catheterization laboratory (Ben Taub General Hospital 2002). The director of the BTGH coronary catheterization laboratory is Nasser M. Lakkis, M.D. Dr. Lakkis is board certified in internal medicine, cardiovascular disease, and interventional cardiology. He also is one of the first physicians in the United States to utilize injections of ethanol

alcohol into the septal arteries as a treatment for hypertrophic obstructive cardiomyopathy (Baylor College of Medicine, 1998). This procedure is known as alcohol septal ablation. Nationally regarded in cardiology circles, Dr. Lakkis is recognized as "one of the two best specialists on this procedure (alcohol septal ablation) in the United States" (T. Cunningham, personal communication, March 22, 2002). Dr. Lakkis will perform alcohol septal ablations for BTGH beneficiaries and outside of the county full pay patients under the proposed center of excellence.

Conditions Which Prompted the Study

BTGH exists in a very unique environment. The Texas Medical Center campus, of which BTGH is a part, provides an unequalled concentration of medical resources, treatment, and advancement. The 42 not-for-profit member institutions consist of 13 general hospitals, 2 specialty hospitals, 2 medical schools, 4 nursing schools, and other institutions that are dedicated to the highest standard of patient care, research, and education. This reflects the largest concentration of medical resources on one campus in the world (Ben Taub General Hospital, 2002). This distinctive setting provides an environment for the delivery of care to Houston area residents, as well as, to patients from all over the world who are seeking advanced medical treatment. BTGH also has access to extremely gifted and respected physicians who are Baylor College of Medicine faculty members. These faculty members are often on the cutting edge of new technology and medical advancements while providing high

quality care to HCHD beneficiaries. Finally, as a county hospital with a mandate to serve the area's no-pay population, BTGH traditionally has a very poor reimbursement rate. Ultimately, BTGH exists in an environment where it has access to world-renowned facilities and internationally respected medical faculty without the benefit of a strong payer base to provide financial support.

However, it is possible under the above circumstances to attract paying patients for a much-needed economic boost. As an academic medical center, BTGH has the ability to create centers of excellence in certain areas of medicine. These centers of excellence have the potential to draw paying patients from both inside and outside the Houston area. Depending on the nature of the specialty treatment, the catchment area of potential patients can cross borders and oceans, drawing international referrals to BTGH. Besides being prime candidates for treatment, these "outside" paying patients provide a solid revenue stream to help BTGH's financial bottom line. Additionally, international referrals bring the research recognition and facility notoriety that often accompany unique, cutting-edge treatments.

Initial estimated hospital charges for an alcohol septal ablation procedure are approximately 23 thousand dollars. This figure does not include additional professional fee billings for Baylor College of Medicine physicians. Under the current HCHD and Baylor College of Medicine agreement, professional fees are billed separately by Baylor and not considered revenue for HCHD.

All referrals from outside BTGH's beneficiary population should provide guaranteed reimbursements since payment is covered before surgery.

It is imperative at this point to revisit the mission of BTGH, which is to train the next generation of health professionals while delivering high-quality health care to Harris County residents. Any center of excellence initiative would have to be certain not to compromise the ability of BTGH to provide care for county residents and the indigent population of Houston.

BTGH and HCHD would be well served to take advantage of any possibility that increases reimbursements while simultaneously advancing available medical treatments. Alcohol septal ablation as a treatment for hypertrophic obstructive cardiomyopathy might be just such an opportunity. The treatment is efficacious, the potential financial payments beneficial, and the international recognition positive. It is deemed that further study of this matter is warranted.

Statement of the Question

BTGH has an opportunity to create a national referral center and center of excellence for alcohol septal ablation in the treatment of hypertrophic obstructive cardiomyopathy. At the same time, the organization must hold true to its obligation to the residents of the county as the last line of care for the indigent population. This research project will prepare a business plan that will include examination to determine the impact of such a center on current and projected patient care as

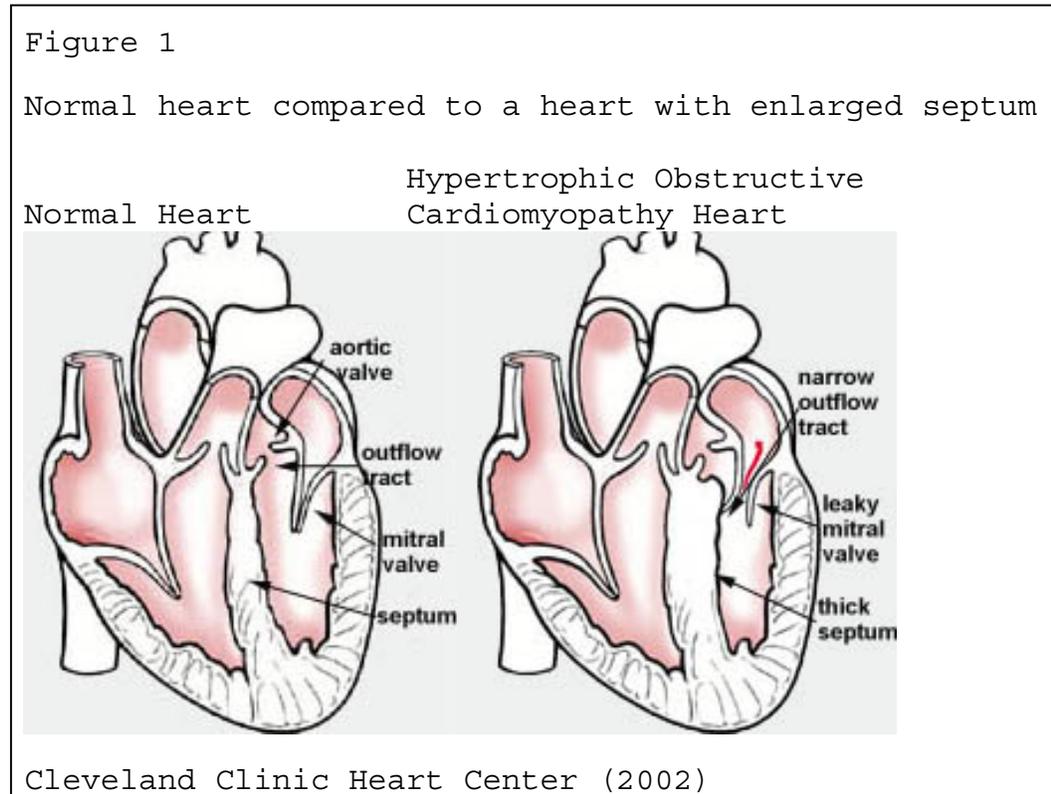
well as the potential financial implications of the undertaking. Capabilities will be assessed to evaluate if BTGH can simultaneously accomplish its mission as a county hospital while offering alcohol septal ablation on an international referral basis to provide cutting edge medical treatment and financial benefits for HCHD.

Literature Review

This section will provide a detailed review of hypertrophic obstructive cardiomyopathy, symptoms of the disease, accepted and available treatments, and the proposed treatment known as alcohol septal ablation. It will also briefly discuss the business plan template chosen for the project.

Hypertrophic obstructive cardiomyopathy is the second most common form of heart muscle disease. Hypertrophic obstructive cardiomyopathy causes the growth and arrangement of muscle fibers to be abnormal leading to thickened walls within the heart (Quigley, 1999). The wall between the chambers of the heart (septum) can thicken to the point that the flow of blood through the lower left chamber (left ventricle) is blocked. Additionally, the thickened wall may push on the heart valve between the two left heart chambers resulting in leakage. Thickened walls also prevent the heart muscle from stretching as much as it should when filling with blood (Rizzio, 1999). Figure 1 illustrates the enlarged septum by comparing a normal heart side-by-side with a heart muscle suffering from hypertrophic obstructive cardiomyopathy.

Symptoms of hypertrophic obstructive cardiomyopathy include shortness of breath (at rest and at exertion), chest pain, dizziness, fainting, and irregular heart rhythms. Ranging from



mild to severe, symptoms vary extremely among patients with some experiencing no symptoms at all. Conversely, a small number of patients are at risk of sudden cardiac death from the disease (Smith, 2002). Excess fatigue is also considered a possible warning sign of hypertrophic obstructive cardiomyopathy (Cleveland Clinic Heart Center, 2002).

Diagnosis is based on the patient's symptoms, physical examination, and tests that detect abnormalities within the heart. An electrocardiogram records electrical changes in the heart and may detect abnormalities in the heartbeat caused by

hypertrophic obstructive cardiomyopathy (Rizzio, 1999). However, with the variability of symptoms, hypertrophic obstructive cardiomyopathy is best diagnosed with the use of echocardiography, which is basically an ultrasound of the heart (Smith, 2002).

As mentioned above, one of the symptoms of the disease is sudden cardiac death. The American Heart Association reports that 36 percent of sudden death in young athletes results from hypertrophic obstructive cardiomyopathy (Rizzio 1999). Additionally, Quigley (1999) contends that about 2 to 3 percent of hypertrophic obstructive cardiomyopathy patients die each year when their heart suddenly stops beating. Over ten years, this risk of sudden death can jump as high as 20 percent without treatment (Quigley).

However, a large number of hypertrophic obstructive cardiomyopathy patients are at an overall low risk. According to the Cleveland Clinic Heart Center (2002), patients with mild cases of the disease should receive regular follow-up care and can feel reassured that they will probably live a normal symptom-free lifestyle. Dr Lakkis reports that only about one in five hypertrophic obstructive cardiomyopathy sufferers will ever become symptomatic (N. Lakkis, personal communication, December 17, 2002).

The first step in treatment of the disease is immediate lifestyle changes, specifically improved diet with lower sodium intake and a prescribed exercise regimen under a physician's

supervision. Beyond that, treatment options have traditionally been restricted to medications, pacemakers, and open-heart surgery.

Various drugs are used in the battle against hypertrophic obstructive cardiomyopathy. Some possibilities include beta-blockers, calcium channel blockers, antiarrhythmic medications, and diuretics (National Heart, Lung, & and Blood Institute, 1997). Beta-blockers can ease symptoms by slowing the pumping action of the heart muscle. Calcium channel blockers relax the heart and reduce the overall blood pressure in it. The other two medications (antiarrhythmics and diuretics) can also ease the symptoms of heart failure. It is estimated that roughly 50 percent of symptomatic hypertrophic obstructive cardiomyopathy patients receive ample relief through combinations of the above drug therapies (N. Lakkis, personal communication, December 17, 2002). Those patients that do not respond and continue to suffer advance symptoms or who suffer intolerable side effects from the medication are candidates to move towards more aggressive treatment options.

Pacemakers are often used to alter the pattern and reduce the force of the heart's contractions in patients who do not respond with less invasive treatments. This method of treatment can decrease the degree of obstruction and in turn relieve symptoms. However, pacemakers must be closely monitored to ensure electrical impulses are adjusted properly. The reality is that some patients improve with pacemakers and some do not. The Cleveland Clinic Heart Center reports that the cause of this

varied success is unknown at this time (2002). Patients that do have a pacemaker inserted with no relief most always progress to surgical options (National Heart, Lung, & and Blood Institute, 1997).

Surgical intervention involves the complicated removal of a portion of the thickened septum in a procedure called septal myomectomy. This method reduces symptoms in about 70 percent of patients. The downside is surgery death of one to three percent of hypertrophic obstructive cardiomyopathy patients (Quigley, 1999).

The reality is that none of the above methods offer complete symptom removal without unwanted side effects or restricted lifestyle. Medication intervention and the placement of a pacemaker only serve to mitigate symptoms not correct the cause. A septal myectomy has proven successful in correcting hypertrophic obstructive cardiomyopathy, but it is a very complex open-heart surgical procedure. The surgery is also extremely expensive at around an estimated sixty thousand dollars for hospital charges alone. A septal myectomy also involves intense recuperation and rehabilitation over many months before the patient is able to return to normal life (N. Lakkis, personal communication, July 30, 2002). The relatively new procedure of alcohol septal ablation is a valuable addition to the treatment possibilities for hypertrophic obstructive cardiomyopathy.

Alcohol septal ablation was first performed in Europe in 1994 and subsequently brought to the United States in 1997 by

Dr. William Spencer (previously with the Baylor College of Medicine) (Smith, 2002). Dr Spencer taught the procedure to Dr. Lakkis in the same year. Dr. Spencer and Dr. Lakkis, as pioneers of the procedure within the United States, have performed over 300 operations (Martinez, 2002). Currently, only a handful of cardiology centers offer this treatment. The procedure involves injecting 100% absolute alcohol into an arterial branch that feeds the enlarged septum. Alcohol is directly toxic to the heart muscle cells and kills them in a controlled heart attack. This causes the thickened portion of the heart muscle to be reduced and replaced with scar tissue (Smith). The small, localized heart attack relieves the life-threatening obstruction within the left ventricle according to Dr. Lakkis (Martinez).

From a patient's perspective, alcohol septal ablation provides a front row seat to witness a heart attack first hand, controlled as it may be. ABC News reported the following story in June 2001 (McKenzie). At age 71, Consuelo Moore couldn't walk up a flight of stairs. Her doctors wanted her to undergo open-heart surgery to correct the enlarged septum within her heart. However, this patient was fearful of such an intensive surgery. She also didn't want the lengthy rehabilitation necessary after such a procedure. She chose instead to have an alcohol septal ablation performed by Dr. Spencer at the Baylor Heart Clinic in Houston. Moore, who was awake for the entire procedure, watched as doctors located the correct artery and injected alcohol into her heart. According to Moore, the heart

attack felt like "a brick on my chest" (McKenzie). After five minutes, doctors measured the pressure in Moore's heart and discovered, as expected, that her blood was flowing more freely. Two years later, this patient is enjoying an active, healthy lifestyle (McKenzie).

It is estimated that one in 500 Americans suffer from the disease (Martinez, 2002) although only roughly one in 2500 are symptomatic (N. Lakkis, personal communication, July 30, 2002). Currently, approximately seventy percent are treated with medication. The remaining thirty percent are generally treated surgically (N. Lakkis, personal communication, July 30, 2002). As stated previously, medication therapy can be problematic and surgery is extremely risky and costly. It is becoming increasingly evident that alcohol septal ablation offers a better alternative to the above traditional treatments. The president of the American Heart Association, Dr. Valentin Fuster, reported he expected the frequency of alcohol septal ablations to continue to increase in the years to come (McKenzie, 2001).

To date, Dr Lakkis has performed over 30 alcohol septal ablation procedures at BTGH (averaging one to two a month) with a success rate of 98 percent (Martinez, 2002). The initial project goal according to Dr. Lakkis is to provide the surgical capability and patient base for 40 to 50 hypertrophic obstructive cardiomyopathy patients a year for alcohol septal ablation treatment (N. Lakkis, personal communication, July 30, 2002).

Equally important as a thorough background on the clinical procedure is the selection of a business plan model to provide structure and guidance to the project. Many different models, each with their own merits, are available when performing a comprehensive business plan. Arista Associates states that a business planning process should include an assessment of the current situation, drafting of objectives, gathering data and inputs, and a discussion on objective accomplishment (PSI Arista, 2002). The planning framework chosen for this project is provided by PSI Arista and will be discussed in detail in the methods and procedures section of this paper. A conceptual model adapted from this framework is included at Appendix A. The PSI Arista model was chosen over other possibilities for two primary reasons. First, the PSI Arista model is the preferred framework for BTGH business plans (T. Cunningham, personal communication, December 12, 2002). Additionally, the PSI Arista model is the business plan reference recommended by the American College of Healthcare Executives (American College of Healthcare Executives, 2002).

Purpose

This project is designed to perform a thorough business plan analysis and review of the potential development of a national referral center and center of excellence for alcohol septal ablation as a treatment for hypertrophic obstructive cardiomyopathy within the Cardiology Department of BTGH. Additionally, the impact and/or impediment of such a center on

the overriding mission and patient base of BTGH will be evaluated.

Chapter 2

Methods and Procedures

This project will be performed following the recommended actions for developing and fine-tuning a business plan as published by PSI Arista, a policy studies health consulting group. The basic business plan will consist of the following eight areas: plan overview; business description; market analysis; service delivery; volume forecast; staffing, management, and organization; preparation of a start-up plan; and a detailed financial analysis (PSI Arista, 2002). A conceptual representation of the business plan process is included in Appendix A.

The plan overview will include a description of the proposed alcohol ablation center of excellence, a profile of the markets to be served, and a presentation of the key financial aspects of this business proposal. This section will be followed by a thorough business description, which will expand on the service to be provided, the relationship of this service to BTGH and HCHD, potential patients, and expected benefits of this service for HCHD and its patients.

Next, the market analysis will define and project market size, potential patients and customers (on a local, national, and international basis), as well as, current and future competitors. This discussion will be followed by a review of the actual service delivery encompassing specific facilities and equipment. Operation of the unit on a day-to-day basis will

also be covered briefly. The volume forecast will project potential referrals and include an outline of the marketing plan.

The staffing, management, and organization section will identify required staffing as well as the relationship with medical providers at Baylor College of Medicine. This will be followed by a detailed start-up plan that summarizes all previous information and addresses the actual launching of the alcohol ablation center of excellence. This review will include identification of potential problems or bottlenecks such as equipment acquisition, licensure issues, and availability of resources.

The final step in the business plan will be a detailed financial analysis. This will include revenue projections, estimated expenses, and a five-year pro forma analysis.

It is imperative that all aspects of such an undertaking be researched adequately to maximize positive results while mitigating potential negative impacts. At all times, the integrity of the overarching mission of HCHD will be considered against the potential impact a specialty referral center would have on that mission.

Chapter 3

Business Plan Development

This business plan described below will analyze and organize the proposed development of a national center of excellence for alcohol septal ablation as treatment for hypertrophic obstructive cardiomyopathy. This center will utilize the assets and resources of BTGH as described in the introduction section of this paper. This business plan format was developed by PSI Arista as a part of their executive checklist series for health organizations (PSI Arista, 2002).

Plan Overview

As stated, this plan will examine the addition of a national referral center and center of excellence for the treatment of hypertrophic obstructive cardiomyopathy utilizing a procedure known as alcohol septal ablation. This disease afflicts approximately 1 in 500 individuals. Without a corrective procedure, symptomatic patients face consistent heart failure-like symptoms with the possibility of sudden death. Other treatment options include medication, dual pacemaker insertion, and a surgical septal myomectomy. Alcohol septal ablation offers correction of the problem with minimal side effects and reduced recuperation time. However, the procedure is still very new and its use is not yet widespread.

The market is not saturated with providers offering this procedure. To date, only a handful of hospitals provide alcohol septal ablation nationwide. BTGH has a unique opportunity as its Chief of Invasive Cardiology, Dr. Lakkis, is considered to

be one of the top two physicians offering this treatment. The other expert is Dr. Spencer who brought the procedure back from Europe in 1997 and taught it to Dr. Lakkis. Between the two of them, Dr. Spencer and Dr. Lakkis have performed over 300 alcohol septal ablation procedures for Baylor College of Medicine affiliated hospitals. Dr. Lakkis has now chosen to perform this procedure solely at BTGH. To date, he has performed roughly thirty alcohol septal ablation procedures at BTGH. The catheterization laboratory team is a tight, cohesive group with very low staff turnover.

The potential market for alcohol septal ablation is extensive. Hypertrophic obstructive cardiomyopathy is not defined by age. Dr. Lakkis has performed this procedure on individuals aged eighteen to eighty. Hypertrophic obstructive cardiomyopathy also shows no propensity for males versus females. The international recognition of Dr. Lakkis and Dr. Spencer as the best in their field at this procedure opens the market for referrals outside of the Harris County area. This vast potential market is discussed thoroughly in the market analysis section of the business plan development.

Finally, on the surface, the addition of an alcohol septal ablation center of excellence appears to be a positive financial move. The procedure is expensive but much cheaper than the surgical alternative. The current availability of equipment in the existing BTGH cardiac catheterization laboratory would require minimal start-up costs for the proposed plan. The financial details of such an undertaking will be discussed in

greater detail in the financial analysis section of this business plan.

Business Description

The alcohol septal ablation procedure will be performed in the cardiac catheterization laboratory of BTGH, which consists of two cardiac catheterization suites. Alcohol septal ablation involves the injection of pure ethanol alcohol into the heart through a catheter inserted into the septal artery. The introduction of the alcohol induces scarring of the septum and effectively shrinks the enlarged portion of the muscle. Hypertrophic obstructive cardiomyopathy sufferers should notice improvement of symptoms almost immediately. At BTGH, each uncomplicated alcohol septal ablation patient would stay an estimated two nights in the Coronary Care Unit (CCU). Discharge would be followed by routine follow up by the patient's cardiologist. Currently, BTGH performs one to two alcohol septal ablation procedures a month.

As a cutting edge medical technology, alcohol septal ablation fits as a service provided by Baylor College of Medicine and BTGH. The Texas Medical Center has always been at the forefront of medical advancement. The addition of a center of excellence for alcohol septal ablation would further solidify the elite position of BTGH and Baylor College of Medicine as top medical institutions both for advanced patient care and for teaching the next generation of medical providers. The mission of HCHD is to continually strive to "improve our community's health by delivering high-quality health care to Harris County

residents and by training the next generation of health professionals." This procedure provides a viable opportunity for unique medical training, advanced patient care, and increased revenues from outside the hospital district, which in turn would benefit Harris County residents. This benefit would include having this highly specialized procedure available to indigent county patients and also provide needed cross subsidy revenue to cover other hospital expenses.

Any individual afflicted with hypertrophic obstructive cardiomyopathy is a potential eligible patient for alcohol septal ablation. Dr. Lakkis has already treated patients from overseas indicating the possible customer base for this procedure is very large. The customers will benefit from the expertise of the medical staff at BTGH and the state-of-the-art facilities. HCHD will benefit from increased revenues and name recognition. BTGH is striving to be known as more than the trauma hospital that treats the indigent. Initiatives such as this could potentially provide the name recognition firepower on a national to international level that BTGH senior staff desires.

Market Analysis

The potential market for the BTGH alcohol septal ablation center of excellence is international. Several current patients from outside the United States have proved this fact. As an example, the most recent patient treated by Dr. Lakkis traveled from Thailand. To perform a more conservative analysis for the purposes of this business plan, projections are based on

supporting this center of excellence with United States' patients only. As will be shown below, this is overwhelmingly feasible and adequate to generate sufficient patient flow. Still, while this business plan will focus solely on supporting the operation from within the United States, it is important to keep in mind the potential for a large number of overseas patients requesting treatment.

The 2000 Census determined the current US population was over 281 million. Table 1 illustrates the potential US patient population by utilizing the following facts about hypertrophic obstructive cardiomyopathy. First, the disease afflicts one in

Table 1

Population breakdown for hypertrophic obstructive cardiomyopathy patients

Description	United States	Texas	Harris County
2000 Population	281,421,906	20,851,820	3,400,578
Prevalence for the disease (1 in 500)	562,844	41,704	6,801
Symptomatic (1 in 2500)	112,569	8,341	1,360
Unsuccessful drug intervention (50%)	56,284	4,170	680

Note: Population data from 2000 US Census

five hundred individuals, but only one in two thousand five hundred will be symptomatic. Of those that experience symptoms necessary of intervention, about fifty percent will see some success with drug protocols (N. Lakkis, personal communication, December 17, 2002). Common practice is to attempt drug intervention before pursuing surgical correction. This might change in the future since alcohol septal ablations are much less risky and invasive than the standard surgical treatment of an open-heart septal myomectomy. However, for now, all patients will initially attempt drug therapy. With that information, the

potential candidates (those with unsuccessful medication intervention) for alcohol septal ablation can be determined. Table 1 breaks this information down into several pertinent populations.

At this time, few hospitals nationwide are performing alcohol septal ablations. A combination of several articles and web searches provided a very short list of possible competitors. The current facilities actively performing alcohol septal ablation are a very prestigious list. They are Mayo Clinic (MN), Cleveland Clinic (OH), Beth Israel Deaconess (MA), Shands Health Care (FL), and UCLA Medical Center (CA) (N. Lakkis, personal conversation, December 17, 2002). Within the Texas Medical Center, Methodist Hospital has also done quite a few alcohol septal ablations, but that was with Dr. Lakkis and Dr. Spencer. Dr. Spencer has since moved out of the state, and Dr. Lakkis has decided to do all of his ablations at BTGH. Most of these organizations are still in the very early stages of performing this procedure. The most recent National Institutes of Health publication on Cardiomyopathy doesn't even list alcohol septal ablation as a treatment for the disease (National Heart, Lung, & Blood Institute, 1997). The newness and relative obscurity of this treatment should drive a desire by patients to seek out the experts. Dr. Lakkis at BTGH is considered one of the top experts at this procedure in the country (T. Cunningham, personal communication, December 17, 2002). After her surgery, the recent patient from Thailand mentioned that she chose BTGH over Mayo Clinic and Cleveland

Heart Clinic solely for the expertise of Dr. Lakkis. It is highly likely that BTGH will be considered one of the very top places in the country to receive alcohol septal ablations with the addition of this center of excellence.

It is also important to point out the impact on the competition posed from the traditional treatment consisting of a surgical septal myomectomy. Myomectomies are not performed at BTGH, but they are performed at the majority of the current competitors listed above. The hospital charge for a myomectomy is about sixty thousand dollars. Conversely, hospital charges for an alcohol septal ablation are around twenty-five thousand. It is quite possible that some of the medical centers listed above may move slowly to fully exploit the potential for alcohol septal ablations. The further they move toward the new procedure, the further they move away from the very large comparative revenues associated with the myomectomy, which is still considered the traditional mainstream treatment.

It is apparent that the level of potential hypertrophic obstructive cardiomyopathy patients far exceeds the existing treatment opportunities for alcohol septal ablation. The addition of a center of excellence for alcohol septal ablation at BTGH will barely make a dent in the available patient base. While still a relatively new procedure, alcohol septal ablation is no longer considered experimental. Insurance companies have reimbursed the procedure consistently for at least the last twelve months (T. Cunningham, personal communication, March 22, 2002). It is predicted that private insurance companies will

continue to support alcohol septal ablation as a sound fiscal alternative to the very expensive myomectomy.

Service Delivery

The BTGH cardiac catheterization laboratory currently performs surgery from 7:00 A.M. until 3:30 P.M. The current caseload is about seven cases per day. This consists of a scheduled workload and an add-on workload. Add-ons are same day diagnostic catheterizations requested by referring HCHD physicians. The wait to get into the cardiac catheterization laboratory is about one week. According to Dr. Lakkis, the staff has the capability to perform as many as fifteen cases in a day if needed, even though the average case load is seven daily (N. Lakkis, personal communication, December 17, 2002). Under this proposal, two alcohol septal ablations would be added per week. They would be scheduled on different days, for example, one on Monday afternoon with the second scheduled for Wednesday afternoon. The current patient load in the catheterization unit suggests the ability to handle these two additional patients without additional staff and more importantly, without adding any delay to HCHD beneficiaries needing diagnostic catheterizations.

The first step in the alcohol septal ablation patient encounter is insurance preauthorization. Each patient that is not a resident of Harris County will be required to demonstrate the ability to pay up front either through insurance pre certification or cash prepayment for self pay patients. Since BTGH is financially supported by Harris County property taxes

primarily for Harris County residents, this proactive reimbursement requirement for non-county residents is necessary. Without insurance preauthorization or other evidence of payment means, potential patients from outside Harris County will not qualify for this treatment.

Once all the pre-approval and preadmission paperwork is complete, the patient will present on the day of the procedure. A staff member from the cardiac catheterization laboratory will meet the patient at a prearranged time at the information desk inside the front entrance. From there, any last minute paperwork can be completed before the patient is brought to the sixth floor for preparation.

It is important that Dr. Lakkis have the opportunity for a pre-procedure visit with the patient. This can be accomplished either a day or two prior for local patients or on the same day as the scheduled procedure for out-of-town patients. This visit might include a simple exam requiring some disrobing. For this reason, utilizing the physician's business office is not a practical alternative. A dedicated exam space would be optimal for this patient encounter. The overall patient experience will make a difference in the business aspect for this procedure, especially since the goal is to attract paying patients from around the country. Therefore, to have this pre-procedure visit on the second floor within the outpatient clinic structure is not a viable option. The visit must be seamless and very patient-centered. Ultimately, an exam space adequate for this purpose must be found within the invasive cardiology department.

There are two possibilities for this space. First, a small space exists as a storage area in the hallway of the department within very close proximity to the preoperative holding area and the catheterization laboratory. This space is at a hallway corner that has an under utilized working area attached with countertop and a sink. If the unused sink and workstation in the outside hallway were removed, the wall in the existing storage space could be pushed back several feet without impeding patient transfer down the hallway. The storage space is not large enough to serve as a small clinic room without the additional space gained by moving the wall.

The second possibility is utilizing the CCU room that will become the patient's room after the procedure for the preoperative visit. This is less desirable by Dr. Lakkis, but a highly feasible option, especially if the CCU bed is a dedicated space for alcohol septal ablation.

After the screening, the patient will undergo the procedure in one of the catheterization laboratories. No additional staff are needed. The alcohol septal ablation will be scheduled later in the day to make room for same-day diagnostic procedures in the morning. As stated earlier, the invasive cardiology unit has the space currently to add two ablation patients during the week without negatively impacting wait times or requiring additional employees or overtime hours.

Once the procedure is complete, the patient will be required to spend two nights in the CCU. Provided all goes well, the patient will be discharged in the morning after the

second night. The patient can receive follow-up from their referring cardiologist and does not need to return to BTGH, unless an HCHD cardiologist referred them.

As mentioned previously, one of the central aims of this project is to provide an atmosphere that is conducive to attracting paying patients from around the country. Therefore, it is necessary to upgrade the patient care setting in the CCU for alcohol septal ablation patients. The easiest way to accomplish this would be to dedicate one CCU bed solely for alcohol septal ablation patients. This would also solve the need for a clinical visit space discussed above.

As a trauma center supporting a vast indigent population, BTGH maintains a very high occupancy rate in each critical unit. For FY03 the average occupancy rate for the 106 critical patient beds was 79.25%. Table 2 illustrates the historical occupancy

Table 2
Historical CCU bed utilization

Description	FY00	FY01	FY02	FY03	Average
Number of Beds	8	8	8	8	8
Percentage of Occupancy	80.77%	83.46%	74.38%	76.27%	78.72%
Avg Daily Census	6.46	6.68	5.95	6.10	6.30
Avg Empty CCU Beds	1.54	1.32	2.05	1.9	1.70

Note: FY03 covers Mar-Nov 2002 (9 months of data)

rates of the eight CCU rooms within BTGH. The CCU has averaged at least one empty patient room over the last 45 months. It is also important to note that the CCU often receives overflow patients from the Medical Intensive Care Unit (MICU), which inflates the true occupancy rate (actual CCU patients) of the CCU. It is estimated that between one to two patients per night

overflow into the CCU from the MICU. Even with the overflow, the CCU averages at least one empty bed per the census report.

The optimal situation would be to dedicate a CCU room strictly to alcohol septal ablation. CCU room 8 would be best suited for this purpose as it is the last room in the hallway and closely situated to the cardiac catheterization staff and laboratory. This room could be decorated with nice curtains, furniture and other accoutrements in keeping with the goal of this business plan to attract pay patients for this procedure. Once dedicated to alcohol septal ablation, this room would be occupied five days and four nights per week with two alcohol septal ablations. Having the room open at other times might also prove valuable for potential patients that would like a tour of the facilities before committing to treatment at BTGH.

However, it is imperative, in keeping with the mission of HCHD and BTGH, that the sole dedication of this CCU room not negatively impact patient care for Harris County residents. A further examination of MICU beds shows (Table 3) on the average,

Table 3
Historical MICU bed utilization

Description	FY00	FY01	FY02	FY03	Average
Number of Beds	16	16	16	16	16
Percentage of Occupancy	86.34%	88.78%	80.86%	82.16%	84.54%
Avg Daily Census	13.81	14.21	12.94	13.15	13.53
Avg Empty MICU Beds	2.19	1.79	3.06	2.85	2.47

Note: FY03 covers Mar-Nov 2002 (9 months of data)

the MICU has just over two beds available. This can't be completely accurate since the MICU is responsible for overflow into the CCU at times. Therefore, it must be estimated that the

MICU runs into space problems on a cyclical nature at peak patient admission and discharge times and at high volume seasonal timeframes. This would explain a census that averages empty rooms, even though the MICU occasionally has to defer patients to the CCU.

The dedication of CCU room 8 as an alcohol septal ablation room should not impact CCU patients, but it will have some residual impact on the MICU at peak times when overflow is needed. Possible solutions to this issue are a thorough review of the patient management process to determine if efficiencies can be gained within the admission, discharge, and step-down process. Current practice is to step-down diagnostic coronary catheterization patients directly into a CCU bed. However, the Coronary Catheterization Laboratory does have a two bed PACU space that could be utilized as a step-down resource. Stepping-down non-complicated outpatient diagnostic cases within the Coronary Catheterization Laboratory area will ease the bed crunch in the CCU thus creating more space for possible MICU overflow. Additionally, MICU overflow does occasionally end up in other areas of the building, such as the SICU or the critical wound unit. This is not as desirable since these other units are on different floors from the MICU, but it is a viable possibility.

It is the supposition of this project that dedication of CCU room 8 as a sole alcohol septal ablation asset will require some extra attention and create short term hurdles as new alternatives for patient bed assignment are explored. That

said, it is believed that dedicating CCU room 8 to this center of excellence will not create a situation where a patient is turned away for lack of availability any more frequently than it already occurs. This is especially true as bed spaces are gained through step-down efficiencies within the Coronary Catheterization Laboratory. According to the BTGH House Shift Supervisor, who is responsible for managing and matching patients and beds throughout the entire 588-bed facility on a daily basis, "Dedication of CCU 8 to Alcohol Septal Ablation will create some hardships, but they will be short-lived. Overall, the project is manageable and should not have any lasting negative effects on bed management" (E. Bush-Myles, personal communication, April 21, 2003). In an emergency situation, the dedicated space would still be available when not filled by an alcohol septal ablation patient. Therefore, dedication of CCU room 8 to this project should have no long-term negative impact and is essential to create the patient atmosphere necessary for success.

Volume Forecast

The patient business for this center of excellence for alcohol septal ablation will come from all over the country. The majority of the patients treated to date traveled to BTGH because they found information about Dr. Lakkis and the procedure on the Internet. With that in mind, a dedicated web page should be developed to provide detailed information about the procedure and experience at BTGH. For this initiative to be successful, the benefits of traveling to Houston must be

marketed to potential patients. The largest attractor is the experience of Dr. Lakkis and his staff. This procedure is new enough that patients should travel for the best and most experienced. BTGH must sell the thought of 'why go to the student when you can go to the teacher.'

Patients would come from a combination of physician referrals and self-referrals. But the more information BTGH can make available about the center of excellence, the more likely a patient will tell their doctor that they want to come here for treatment. With the current need for this procedure, it should not be difficult to schedule two patients a week with a concentrated marketing campaign.

The marketing plan should consist of a four-prong approach. First and foremost, as mentioned above, BTGH must get a professionally designed web page on the Internet extolling the benefits of this procedure and BTGH's center of excellence. This is already in the works utilizing HCHD assets. Second, an effort must be made to get success stories in the print media. This procedure is changing people's lives. The unique nature of initiating a heart attack to save a person's heart is very newsworthy. A quick search on the Internet provides several stories of successful patient encounters, but none from BTGH. A publication of a few patient related stories will change that. Third, Dr. Lakkis needs to brief the BTGH center of excellence to his colleagues at a cardiology convention or other type environment. He is highly respected in his field as one of the two best in this procedure nationwide. Getting the word on the

street among cardiology circles that BTGH is open for business on alcohol septal ablations should generate physician referrals. Finally, a professional brochure should be developed exclaiming the benefits of the procedure and the experience of BTGH. This brochure could be available to anyone who requested it. Additionally, a mailing could be made to providers in the local area to jump start local referrals.

The biggest ally in the marketing push is information through the Internet and by word of mouth. As more and more procedures are performed here, BTGH will grow to be known as a national center of excellence for alcohol septal ablation. If a waiting list develops, it will only further solidify that fact that BTGH's center of excellence for alcohol septal ablation is the best place to have this procedure.

Staffing, Management, and Organization

The current staffing of the invasive cardiology department is shown in Table 4. There is only one requested staffing

Table 4
Current staffing of invasive cardiology

<u>Position</u>	<u>FTEs</u>
Nurse Manager	0.5
Head Nurse	0.5
Clinical Nurse (RN)	4
Nursing Assistant	1
Radiology Technician	1
Office Manager	1
<u>Total</u>	<u>8</u>

Note: Nurse manager and head nurse are between non-invasive and invasive cardiology.

change for this initiative. An additional part-time clerical position that is dedicated to the alcohol septal ablation center

of excellence is desirable. This additional position would handle all correspondence and insurance pre-authorization issues. Currently the nurse manager handles these issues, but at the projected two patients per week, the load would require additional assistance. A workspace for this part-time position is available in a shared space within the Coronary Catheterization Laboratory currently occupied part-time by Dr. Lakkis' Baylor College of Medicine research staff. Dr. Lakkis has committed the necessary space within his research office for the part-time administrative position (N. Lakkis, personal communication, December 17, 2002). Beyond this position no other staffing or managerial changes are needed for this initiative.

The CCU is staffed consistently for a full patient load. Therefore, the dedication of one CCU room as an alcohol septal ablation suite would not require any additional staffing or training.

A potential management issue is the need for inclusion of HCHD patients, regardless of insurance coverage, into the program as a resident of Harris County. In keeping with the mission of HCHD and BTGH, it is necessary to address this issue up front to ensure HCHD's patients aren't left out of the program. One possible suggestion would be to hold one spot per month for an HCHD patient. This would roughly equal the current number of Harris County residents considered as candidates for alcohol septal ablation and would guarantee continued access to HCHD beneficiaries. Over time the number of treatment slots

reserved for HCHD patients could be adjusted as required. An ongoing review of the alcohol septal ablation clinic should be in place to ensure it is operating properly and meeting its intended purpose without jeopardizing the mission of HCHD.

Start-up Plan

Required facility preparation has already been discussed. In short, CCU room 8 needs to become a dedicated asset for the alcohol septal ablation center of excellence. Once that decision is made, the room needs a cosmetic overhaul involving pictures on the wall, a fresh coat of paint, new linens and curtains, and possibly some furniture such as a lamp and bedside table. At start-up, CCU room 8 can serve as the pre-procedure consultation room. If that proves difficult, expansion of the storeroom and outfitting it as a patient examination space can be explored at a later date.

No additional equipment is needed to support this initiative. The cardiac catheterization units are new and in excellent condition. The CCU bed is sufficient as well.

Since CCU room 8 will remain a true CCU patient care room, there is no need to re-certify the number of beds with regulatory authorities. This initiative will dedicate the use of the bed for a particular procedure, but it does not change the fact that it is still CCU care being delivered.

The official launching should involve media exposure and a grand ribbon cutting on CCU room 8. Preferably a prior patient or two could return to answer questions and share their story for the press.

Financial Analysis

Initial expenses for this project are relatively low. The equipment and the majority of the staff are already available. Additionally, clinic hours are not being extended. HCHD currently does not have an active cost accounting system. Utilities, housekeeping, building, biomedical equipment repair, engineering, and administrative overhead are charged centrally against HCHD and not allocated to the individual pavilions. The addition of an alcohol septal ablation center of excellence will not have an impact positively or negatively on these central district expenses since the hours, basic staff structure, and equipment will remain unchanged. Therefore, this analysis is treating the following expenses as sunk costs: utilities, housekeeping, equipment, building, biomedical equipment repair, engineering, and administrative overhead. Existing staffing positions that will remain constant under the current BTGH Coronary Catheterization Laboratory and CCU cost centers are also considered sunk costs. Finally, this assumption is made based on the fact that clinic operations are not changing from the current situation. The proposed two procedures per week will fit within the current operating structure of the cardiac catheterization laboratory without fundamental changes to operating hours, staffing, equipment, and building infrastructure.

The only required initial outlay needed to create this center of excellence for alcohol septal alcohol ablation is the hiring of a part time office manager, the cosmetic overhaul of

CCU room 8, and a marketing budget. The salary expense for the office manager is estimated to be \$17,954 annually based on fifty percent of the existing office manager's salary. For computation, this factor will be rounded to \$18,000 per year. This position would not provide benefits. If BTGH decides to hire a fulltime position that splits time with fifty percent towards this proposal and fifty percent towards another BTGH need, benefits would be required. The associated fifty percent of the benefits would then be added against alcohol septal ablation financial projections.

A budget of \$5,000 is set aside to provide a facelift for CCU room 8. This should be ample to provide wall hangings, nice linen and curtains, and small furniture pieces such as a lamp, wood bedside table, etc. All furnishings of an inherently medical nature, such as the patient bed, will remain in the room. An additional installment of \$5,000 is provided at the end of the first two-year period to replace worn out items.

The final initial expense is a budget for marketing. Getting the word on the street and generating patient flow is imperative for success. An initial budget of \$15,000 is set aside to cover printing and mailing costs. This sum should also be adequate to acquire some short-term outside web design assistance if the HCHD information systems personnel need support. Additionally, an annual marketing budget of \$5000 is included after the first year to guarantee ample ability to market the service and provide website upgrades as required.

Hospital charges will be the focus of the reimbursement

discussion. HCHD utilizes information from Medical Data Research (MDR) for pricing decisions. This software provides a breakdown based on geographical region for charges. Applicable charges for an alcohol septal ablation at BTGH are charged at the 75% MDR rate times two. This amount is still below competing facilities. For example, BTGHs charge for CPT code 0024T (alcohol ablation) is \$8,798. Methodist Hospital in Houston charges \$9,000. HCHD feels the 75% MDR rate times two is an acceptable charge for this procedure in the current environment. Table 5 shows the hospital charges for an alcohol septal ablation procedure.

Table 5
Hospital charges for alcohol septal ablation

CPT Code	Description	Charge
0024T	Alcohol Septal Ablation	\$ 8,798.00
33210	Pacemaker Temporary Insertion	\$ 3,025.00
93510	Left Heart Catheterization	\$ 5,143.00
93543	Ventriculography - Left	\$ 2,035.00
93545	Coronary Angiography	\$ 2,075.00
93555	Injection Procedure Ventricular	\$ 875.00
93556	Pulmonary Angiography	\$ 1,328.00
<u>Total Procedure Charge</u>		<u>\$ 23,279.00</u>

Note: HCHD Revenue Management Services, April 11, 2002

Cumulative annual hospital charges for the proposed alcohol septal ablation center of excellence estimating one hundred patients a year (two per week for fifty weeks) are \$2,327,900. A more conservative estimate is a projection for six patients per month versus eight. This allows for two weeks a month where only one ablation patient is identified. This project bases projections on six patients per month or 1.5 patients per week

for fifty weeks for a total of seventy-five patients annually. At this rate, annual hospital charges are \$1,745,925.

As stated earlier, in an effort to ensure Harris County residents have access to this procedure, one procedure per month can be set-aside for a district patient with no assumed reimbursement for this patient. If this HCHD treatment is not charged, the total billable procedures drop to 1.2 per week with an annual charged amount of \$1,396,740. This estimate is the most conservative in that it allows for a procedure fill rate of seventy-five percent with the added allowance that one of those patients per month will be an HCHD no-pay patient. This is illustrated in Table 6.

Table 6
Projected volume and hospital charges

Treatments per week	Weeks	Total Procedures	Total Charge	Total Charges
2	50	100	\$ 23,279.00	\$ 2,327,900.00
1.5	50	75	\$ 23,279.00	\$ 1,745,925.00
1.2	50	60	\$ 23,279.00	\$ 1,396,740.00

Appendix B includes a complete breakout of revenues and expenses through year five of the project. As mentioned above, the calculations include one completely non-reimbursable procedure per month. On top of that, a collection rate of eighty percent was factored in to account for any unforeseen payment problems. This percentage is very conservative considering the requirement for preauthorization and prepayment for non-county residents. The actual reimbursements should be better than the projected eighty percent. Final estimates show a positive gain in year one of \$1,074,392. This is a very

conservative projection. The five-year profitability of this proposal is just over \$5.4 million.

Chapter 4

Conclusion

The addition of a center of excellence for alcohol septal ablation at BTGH will provide an excellent source of revenue while advancing patient care and the overall reputation of BTGH as a place of advanced medical treatment. There is minimal risk involved with this initiative. First, the cardiac catheterization laboratory has the capacity to include the additional procedures with no additional staffing or capital investment requirements. Second, the staff has the expertise to attract paying patients from all over the country. Third, the procedure produces a positive revenue stream that will benefit the organization as a whole. At the most conservative estimates, this procedure will still generate a positive cash flow of over \$1 million annually (and has the potential to exceed that amount). And most importantly, it will generate this revenue without curtailing services to Harris County residents, which are the primary stakeholders for BTGH. Over time, alcohol septal ablation will most likely become a fairly common procedure available at many locations. But that evolution will take several years. BTGH has a unique window of opportunity over the next five years to solidify its position as a leader in this field while generating much needed cash flow for the organization.

Chapter 5

Recommendation

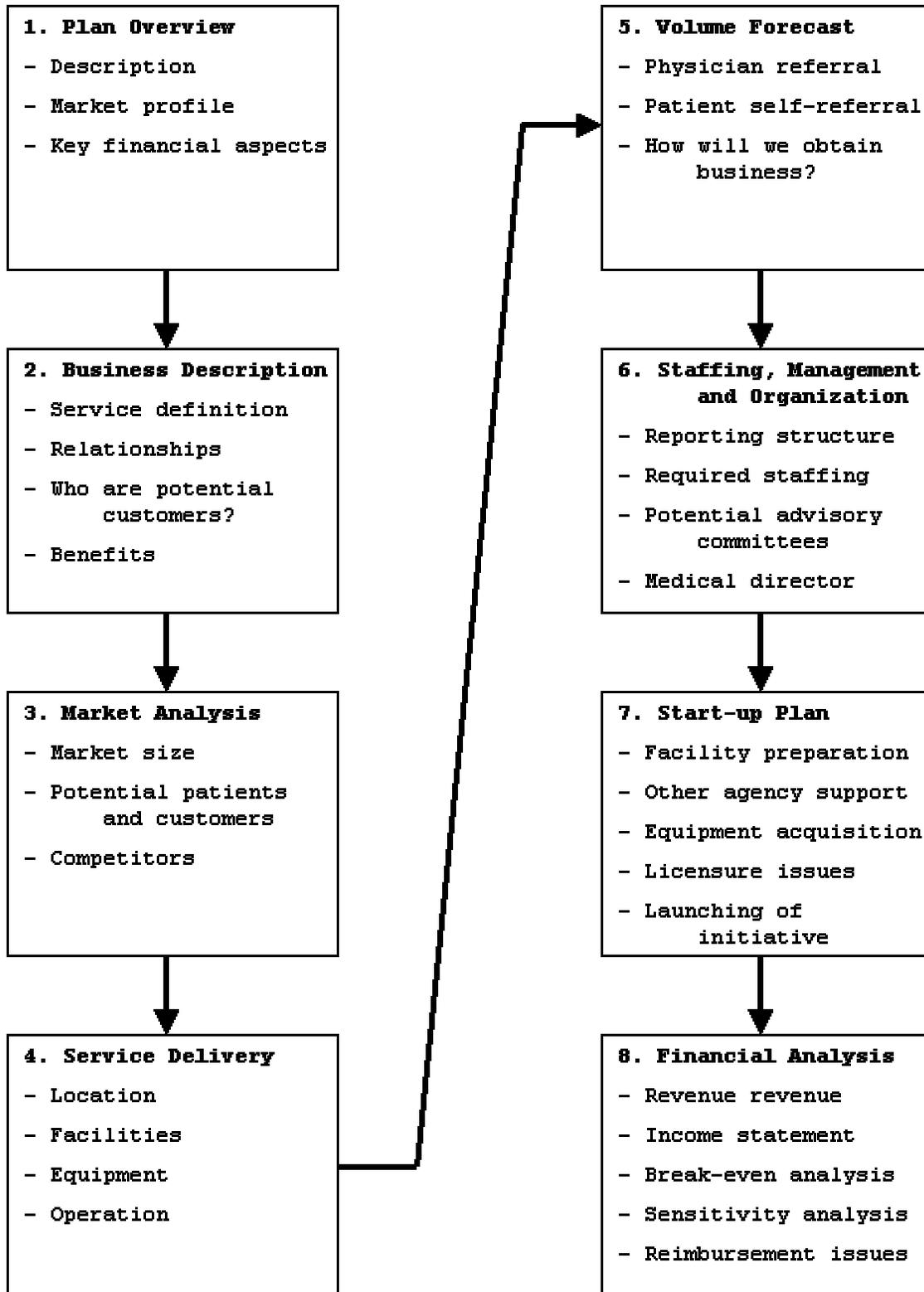
It is recommended that BTGH move forward with implementation of an alcohol septal ablation center of excellence for treatment of hypertrophic obstructive cardiomyopathy. CCU room 8 should become a dedicated asset of the project. Additionally, resources should be used to hire a part time office manager and to enhance the CCU room. A marketing push should begin immediately with the first step being a fast-tracked web page to "get the word on the street". Implementation and dedication of the BTGH center of excellence could began as early as June 1, 2003 in conjunction with the beginning of the second quarter of HCHD fiscal year 2004. There is no reason to delay this initiative.

Appendices

Appendix A

Developing a Business Plan: A Conceptual Map

Adopted from PSI Arista (2002)



Appendix B
 Pro Forma Statement

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue						
Base Charge		\$ 23,279	\$ 23,279	\$ 23,279	\$ 23,279	\$ 23,279
Reimbursable Procedures		60	60	60	60	60
Expected Reimbursement		\$ 1,396,740	\$ 1,396,740	\$ 1,396,740	\$ 1,396,740	\$ 1,396,740
Uncollectable Amount	20%	\$ 279,348	\$ 279,348	\$ 279,348	\$ 279,348	\$ 279,348
Total Inflows		\$ 1,117,392				
Expenses						
Office Manager Salary		\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000
CCU Room 8 Makeover	\$ 5,000			\$ 5,000		
Marketing Budget	\$ 15,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000
Total Outflows	\$ 20,000	\$ 23,000	\$ 23,000	\$ 28,000	\$ 23,000	\$ 23,000
Net Income	\$ (20,000)	\$ 1,094,392	\$ 1,094,392	\$ 1,089,392	\$ 1,094,392	\$ 1,094,392
Cumulative Net Income	\$ (20,000)	\$ 1,074,392	\$ 2,168,784	\$ 3,258,176	\$ 4,352,568	\$ 5,446,960

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