

**San Pedro Surgical Clinic**

Karla Maldonado, MS CRNA

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*Primary Advisor/First Reader:*

Name Kelley LaBonty, CRNA, PhD

Signature Kelley LaBonty Date April 25, 2016

*Second Reader:*

Name Dr. Suzanne Selig

Signature Suzanne Selig Date 6-13-16

## **Introduction**

The purpose of this capstone project was to create a business plan and grant proposal for the implementation of a surgical program in San Pedro Belize by the San Lucas Foundation. As part of this capstone project, the San Lucas Foundation, a nonprofit 501(c) 3 organization was formed, which will provide surgical and anesthesia care to impoverished and medically underserved communities in Central America, primarily Guatemala and Belize. The San Lucas Foundation was incorporated in the State of Michigan in 2014, given 501(c) 3 tax-exempt status from the United States Internal Revenue Service, and licensed for solicitation for charitable donations by the State of Michigan Attorney General. To promote the efforts of the organization, and to disseminate information about its programs, activities, mission and vision, a website for the San Lucas Foundation is under construction entitled [SanLucasFoundation.org](http://SanLucasFoundation.org).

To meet the health care needs of people in rural communities in Guatemala and Belize, the San Lucas Foundation will collaborate with existing organizations that provide health care in San Lucas Toliman Guatemala, and San Pedro Town Belize. For the project in Guatemala, the San Lucas Foundation will work with charitable organizations such as Friends of San Lucas, and Mercy Missions to continue to expand their surgical programs. Mercy Missions currently performs annual weeklong surgical missions, providing surgical treatment to approximately 100 patients per mission. Based in Minnesota, Friends of San Lucas organizes several other mission trips with U.S volunteer medical mission organizations throughout the year.

Currently, in San Pedro Town Belize, there is no surgical treatment offered of any kind. All patients seeking surgical treatment, elective or emergent, must travel to mainland Belize or Mexico to receive care. It is the mission of the San Lucas Foundation to provide surgical and anesthesia care to the severely medically underserved area of the San Pedro community. The

San Lucas Foundation has been collaborating with San Pedrano health care providers, community leaders and the Belize Ministry of Health for the past 18 months to establish a surgical program. To meet the needs of the community, it was decided by the founders of the San Lucas Foundation to collaborate with Dr. Daniel Benjamin Gonzales, of the Ambergris Hopes Clinic in San Pedro Town. The San Lucas Foundation is seeking grant funding and charitable donations to obtain surgical and anesthesia equipment and supplies to initiate the surgical program, and provide the critically needed surgical care to the San Pedro community.

## **Business Plan**

### *Executive Summary*

The San Pedro Surgical Clinic is a collaboration amid Dr. Benjamin Maldonado Garcia, MD, MPH general surgeon and Karla Maldonado, MS Certified Registered Nurse Anesthetist (CRNA), with Dr. Benjamin Daniel Gonzales of the Ambergris Hopes Clinic in San Pedro Town, Ambergris Caye Belize. Karla Maldonado, CRNA and Dr. Benjamin Maldonado established the San Lucas Foundation, a nonprofit organization dedicated to provide surgical and anesthesia care to impoverished and medically underserved communities in Central America. Dr. Gonzales is an obstetrician gynecologist that has practiced in San Pedro Town for the past 25 years. He founded the Ambergris Hopes Clinic, which provides general practice and obstetrical care, and has expanded its services to include 24 hour basic emergency care.

The decision to develop a surgery program in San Pedro Town was influenced by the complete absence of surgical services on the island of Ambergris Caye. The island does not have an emergency first responder, nor paramedic, or ambulance services. All patients seeking elective or emergent surgery must travel by boat or by air ambulance to Belize City, Belize or Merida, Mexico to receive care. The lack of surgical access is accentuated in trauma and

emergent situations which create life threatening risk to residents and visitors of San Pedro Town and Ambergris Caye.

The San Lucas Foundation will collaborate with other charitable organizations for donations of surgical equipment and supplies, including an anesthesia gas machine, surgical lights, tables, surgical instruments, surgical supplies, cautery and autoclave (see Appendix A). Grant funding for the development of the surgical program is being pursued by the program director Karla Maldonado, CRNA.

### *Mission Statement*

The mission statement of the San Lucas Foundation is to provide excellence in care, healing and health to the individuals and communities we serve, while stewarding the resources entrusted to us.

### *Our Core Values are:*

- Respect
- Social Justice
- Compassion
- Excellence
- Diversity
- Ownership

### *Vision Statement*

The vision of the organization is to:

- Expand from a small surgical program, to a permanent, comprehensive surgical clinic
- Obtain funding and support to provide surgical care and anesthesia care to the whole San Pedro community, regardless of the patient's ability to pay

- Be the region's most respected, and recognized medical center of choice for patients and families
- Be the medical center where physicians prefer to practice because they are valued customers and team members supported by expert healthcare professionals
- Be the medical center where healthcare workers choose to work because the medical center is recognized for excellence
- Be the medical center that community leaders, volunteers and benefactors choose to support
- Be a partner with local and international health care organizations for training of health care practitioners

### *Objectives*

The formation of the San Pedro Surgical Clinic will be developed in three stages:

Stage 1: Outpatient clinic. Because of limited resources to establish the surgery program, the outpatient clinic will be initiated to provide surgical consultations and minor surgical procedures

Stage 2: Outpatient clinic and surgery center. The medical center will provide outpatient general surgery and anesthesia services.

Stage 3: Small comprehensive hospital, including medical, surgical, obstetrics and pediatric services.

The objectives for the first years of operation include:

1. The creation of high quality, cost-efficient medical and surgical care to the community, using evidence based practices, and modern technology.
2. To form a health care practice that is self-sustaining within a year, and to form an

outpatient surgical clinic within two years.

3. It is our long term objective to work with international and local charitable organizations to create a high quality, cost-efficient surgical program that is funded in part by charitable contributions, insurance if available, and subsidized by the patient according to their ability to pay, with the intent to make the program self sustaining and financially stable.

### ***Market Analysis***

#### ***Belize Population and Demographic Profile***

Belize (formerly British Honduras) lies on the eastern or Caribbean coast of Central America, bounded on the northwest by Mexico, and on the southwest by Guatemala.<sup>1</sup> The total land area of Belize is 8,867 square miles, slightly larger than the size of the State of Massachusetts.<sup>1</sup> Belize has six administrative districts: Belize, Cayo, Corozal, Orange Walk, Stan Creek, and Toledo.<sup>1</sup> Each district has its own individual blend of culture and natural environment. COROZAL DISTRICT is located in the north, bordering Mexico. ORANGE WALK is located in the northwestern part of Belize. BELIZE DISTRICT is on the eastern coast and includes Belize City, San Pedro on Ambergris Caye and Caye Caulker. CAYO DISTRICT encompasses St Ignacio and Central Farm, and is located in the western part that borders Guatemala. STANN CREEK is located in the south and includes the town of Placencia. The Toledo District includes PUNTA GORDA located the farthest south, bordering Guatemala.<sup>1</sup>



Map of Belize <sup>1</sup>

The country has a culturally diverse population estimated at 368,310 according to the Statistical Institute of Belize population estimates for 2015.<sup>2</sup> The male-female distribution as reported in the Mid Year Estimates for 2012 included an almost even distribution of 50% males, and 50% females.<sup>3</sup> The largest portion is the Belize District, which holds 29.7% of the population, followed by the Cayo District with a population of 23.6%. Toledo District has the lowest proportion of 9.5% of the total population.<sup>3</sup>

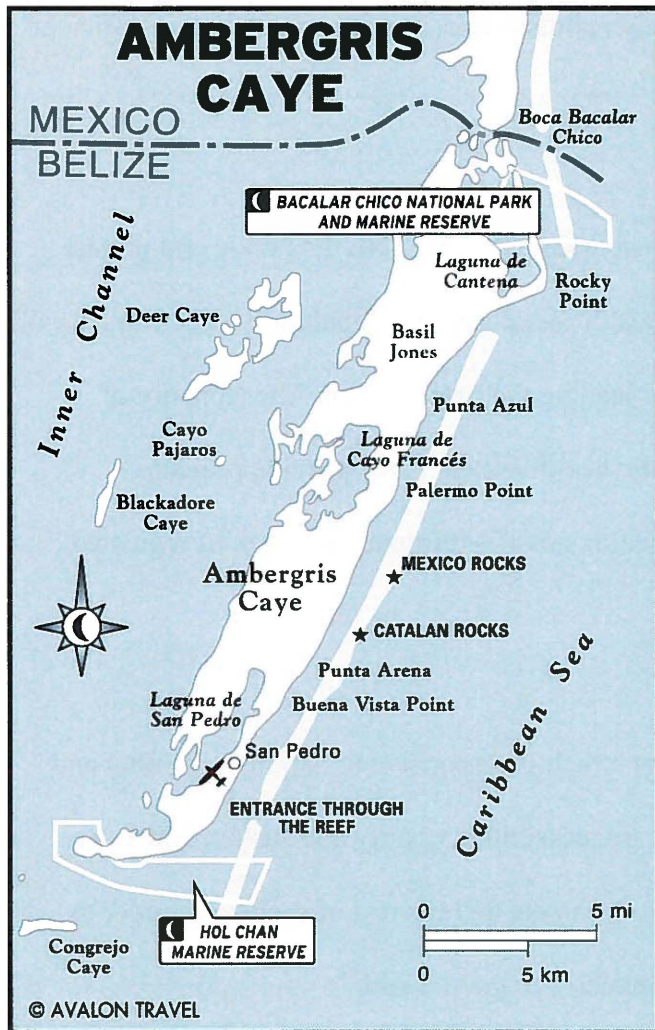
Belize has a very young population. In 2012 a population census reported that 35.59 % of the population was under 15 years of age, while 53.67 % was 20 years of age or older.<sup>3</sup> Those aged 60 years or older accounted for 6.1% of the total population.<sup>3</sup> The life expectancy is estimated at 72 years for males and 74 years for females.<sup>3</sup> Women of childbearing age (15–49 years) accounted for more than 50% of the female population.<sup>3</sup> According to a World Bank

report in 2012, the fertility rate (births per woman) was reported at 2.79.<sup>3</sup> In addition, the adolescent fertility rate (births per 1,000 women ages 15-19) was reported at 73.96 in 2010.<sup>3</sup> The World Bank estimates that the population growth rate, if sustained will result in Belize doubling its population in approximately 20 years.<sup>3</sup>

Belize has an ethnically diverse and multicultural population, made up of four main ethnic groups: Creole, Garifuna, Maya, and Mestizo (Latino).<sup>3</sup> The 2010 census showed the majority to be Mestizo (49.7%) followed by Creole (20.7%), Maya (9.9%), Garifuna (4.6 % Mennonite (3.5%)), East Indian (3.0%) and other minorities, including, Chinese, Africans, and Asians.<sup>3</sup> The population of the Cayo, Corozal, and Orange Walk Districts are predominantly Mestizo, while the Belize District is mostly Creole.<sup>3</sup> The Garifuna are found primarily in the Stann Creek District, and the Maya and East Indians are concentrated in the Toledo District.<sup>3</sup> The Toledo District has the highest level of the population living in poverty (79%), followed by Orange Walk (34.9%), Stann Creek (34.8%), Cayo (27.4%), Corozal (26.1%), and Belize District (24.8%).<sup>3</sup> The growth in population has led to a rise in the number of persons living in poverty. The 2010 census reported that the poverty rate rose from 33% in 2000 to 44% in 2010.<sup>3</sup> In addition there was a sharp increase in unemployment rates, from 12.5% in 2009 to 23.2% in 2010.<sup>3</sup>



*Ambergris Caye and San Pedro Town*



Map of Ambergris Caye<sup>4</sup>

San Pedro Town has a population of approximately 16,444 persons according to 2015 mid-year estimates by the Statistical Institute of Belize.<sup>2</sup> There are no surgical services of any kind in San Pedro Town, or on the island of Ambergris Caye. All patients seeking elective and emergent surgical care must travel on their own expenses, by boat or by plane to Belize City, Belize, or Merida, Mexico. In emergency, or life threatening situations, very often patients do not survive long enough to receive emergency care.

*Health Care in Belize*

The health sector in Belize is influenced by political, social, economic and environmental

factors. As a developing country, it faces major challenges that impact the provision of health care including high rates of poverty and unemployment, slow economic growth, and insufficient human resources.<sup>5</sup>

### ***Belize Ministry of Health***

Belize has an established medical care system delivered by both the public and private sectors, which provides universal coverage for health services to the population.<sup>6</sup> The Ministry of Health (MOH) is constitutionally responsible for leading the health sector. The Ministry of Health describes the mission of the national public health system is to “provide primary, secondary, tertiary health care and community health services through a network of regulated public facilities and programs.”<sup>6</sup>

The MOH’s vision statement describes:

We envision a national health care system which is responsive to national, regional and local needs, based on equity, affordability, accessibility, quality and sustainability in effective partnership with all sectors of government and the rest of society, in order to develop and maintain an environment conducive to good health.<sup>6</sup>

The Ministry of Health develops standards, policies and procedures and proposes legislation to support policy implementation. In addition, the Ministry works under the legal framework of health care legislation including the Public Health Act, the Health Services and Institutions Act and their Subsidiary Acts.<sup>6</sup> The Constitution of Belize, the Medical Services and Institutions, and the National Health Insurance Acts provide for the right to access health care in Belize for its citizens.<sup>6</sup>

The Ministry of Health (MOH) delivers health services through a network of health care institutes at primary, secondary and tertiary levels.<sup>6</sup> The MOH operates 60 small polyclinics

found in towns and major population centers, and eight government hospitals which are located in major cities.<sup>7,8</sup> Most of the health clinics suffer from inadequate staffing, lack of financial resources to handle patient volume, and a lack of equipment and medicine.<sup>7,8</sup> There are a total of 700 public hospital beds in the country.<sup>7</sup> Belize City offers the highest level of medical care, and hosts the country's main referral hospital Karl Heusner Memorial Hospital, which is a modern public hospital, but is challenged by maximum occupancies, equipment problems, supply shortages, and personnel and management problems.<sup>7,8</sup>

The private sector provides additional tertiary care and other services not available in the public system.<sup>6</sup> Persons in need of these services can then purchase out of pocket from the private sector, or the Ministry of Health can purchase services on their behalf.<sup>6</sup> The private sector provides health care for about 15% of the population.<sup>6</sup> 65% of the population is covered by the national public health system.<sup>6</sup> The remaining 35% of the population are provided health care via National Health Insurance, which was implemented to provide care for the poorest sector of Belize (those in southern Belize City and the districts of Stan Creek and Toledo).<sup>6</sup>

In addition to the main referral hospital, Belize City has two private hospitals. There is also a private hospital in Santa Elena run by the Seventh Day Adventist mission. There are a total of 100 hospital beds amongst the three private hospitals.<sup>6</sup> Private institutions are legally registered as businesses, and there is no legislation that addresses the regulation of private sector health services. There are no criteria or processes for accrediting health institutions.<sup>6</sup> There are no formal, defined processes for referrals and interaction between private and public sector organizations.<sup>6</sup> There are no formal standards of care, patient bill of rights, or patient privacy regulations or legislation. Furthermore, there is no Level 1 trauma care in the entire country.

The Ministry of Health functions as the regulatory body of certification of all health

professionals.<sup>6</sup> The Belize Medical Council regulates the licensure of physicians and opticians.<sup>6</sup>

Licensure of nurses and midwives is by the Nurses and Midwives Council of Belize.<sup>6</sup>

Pharmacists are licensed through the Pharmacy Board.<sup>6</sup>

### ***Health Care Provider Density***

The Belize Ministry of Health reported a total of 371 physicians, and 451 nurses in Belize as of December 2012.<sup>2</sup> With a population of 368,301 persons, Belize has a physician density ratio of 10.07 physicians and 12.2 nurses per 10,000 persons, totaling 22.27 health care providers per 10,000 people. This ratio is below World Health Organization target ratios of 25 health care providers per 10,000 persons.<sup>9</sup> It is important to note that of the 822 health care providers in the country, half are in Belize City, leaving rural areas severely underserved. In fact, there is a large gap in access to health care between urban and rural populations, and the poor and non-poor.<sup>6</sup>

### ***Health Care in San Pedro Town, Ambergris Caye***

San Pedro Town holds two general practitioners who practice at the Ministry of Health Polyclinic, three private practice general practitioners who also provide obstetrical care, and one gastroenterologist who provides basic and preventative care. The Polyclinic employs one registered nurse and three nursing assistants. The total of ten health care providers in the area is below World Health Organization (WHO) target ratios.<sup>9</sup> The population of 16,444 persons on the island of Ambergris Caye would require at least 41 health care providers to meet WHO target ratios. A total of six physicians serving San Pedro community is far below the recommended limits of the 1:1000 physician to patient ratio by the WHO.<sup>9</sup> This critical data demonstrates that San Pedro Town and its surrounding communities suffer a severe medical shortage.

Furthermore, because there are no surgical specialists or anesthesia providers on the island, all patients requiring surgery must travel to Belize City or Mexico by boat or by airplane

at their own expense to receive surgical treatment. The lack of surgical services is emphasized by injuries from violent crime and related mortality of patients with critical injuries that did not have local access to surgical treatment.<sup>10</sup>

### *Program Goals*

To establish a permanent surgical program in San Pedro Town, to improve the health, well being, and patient satisfaction, as well as decrease morbidity and mortality of the San Pedro community.

### *Organization and Management*

The San Pedro Surgical Clinic is collaboration among Dr. Benjamin Maldonado Garcia and Karla Maldonado, CRNA of the San Lucas Foundation, with Dr. Benjamin Daniel Gonzales of Ambergris Hopes Clinic in San Pedro Town. Dr. Benjamin Maldonado Garcia graduated from San Carlos University Medical School in Guatemala, and completed his surgical residency and trauma residency in Guatemala City. He completed a Master of Public Health degree in Antwerp Belgium at Prince Leopold International Institute of Tropical Medicine. After returning from Europe, he worked as a consultant for the World Health Organization, to implement a health care program to a war-torn, impoverished, rural area in Guatemala for two years. He returned to Guatemala City and practiced as a general surgeon in private practice, and also at the National Police Hospital as a staff general surgeon. He completed a fellowship in laparoscopic surgery in Michigan. He has worked with several surgical mission organizations from the United States in rural communities throughout Guatemala. He is co-founder and vice president of San Lucas Foundation with his wife Karla Maldonado, MS CRNA.

Karla Maldonado practiced as an intensive care registered nurse for ten years in Detroit Michigan prior to pursuing a Masters of Science in Nurse Anesthesiology at the University of

Detroit Mercy. She practiced as a Certified Registered Nurse Anesthetist (CRNA) in the metropolitan Detroit area for 10 years in a Level 2 trauma center, as well as outpatient surgical centers. She is currently practicing as a CRNA in Clearwater Florida. She is pursuing a Doctorate of Anesthesia Practice at the University of Michigan Flint. Karla is founder and president of the San Lucas Foundation, a non-profit organization dedicated to provide surgical and anesthesia care to impoverished and medically underserved communities in Central America.

Dr. Daniel Gonzales is a native of San Pedro and attended medical school at San Carlos University in Guatemala. He completed his residency in Obstetrics and Gynecology in Merida Mexico, and then furthered his training in gynecology, oncology, prenatalology and fertility in Guissen, Germany. He has maintained a private practice since April 2003 at Ambergris Hopes Clinic, specializing in obstetrics, gynecology, as well as general medicine.

### *Business Strategy*

The intention to develop a surgical program in San Pedro is to not only improve the health, well being, and patient satisfaction, but also to become the medical center of choice for the San Pedro community because of increased access to high quality, patient centered, and cost efficient medical care.

The primary approach to marketing includes promotion to local businesses, medical clinics, service organizations, and the Ministry of Health. In addition, we will establish a free health screening fair which will identify the volume of patients with surgical needs. Because of the limited resources in equipment and personnel, an outpatient surgical clinic will be initiated to provide: 1) surgical consultations to triage patients, 2) perform minor surgical procedures on patients requiring local anesthesia only. Procedures requiring local anesthesia include but are not

limited to: lipoma excisions, sebaceous cysts, scar revisions, mole excisions, skin tags, superficial lesions, superficial wound suturing, incision and drainage of abscesses, minor podiatry procedures, skin biopsies, and bariatric wound care.

Patients requiring anesthesia care will be triaged and scheduled in groups when an anesthesia provider is available. Outpatient services offered with anesthesia care for low risk patients include but are not limited to: general or spinal anesthesia for hernia repairs, cholecystectomies, appendectomies, intra-abdominal biopsies, hemorrhoidectomies, small fracture reductions and casting, minor orthopedic and plastic surgery.

As the volume of patients increases and the surgical program becomes established, with improved facilities and trained personnel, more complex surgical procedures requiring a short overnight stay will be accommodated, including but not limited to: thyroidectomies, acute cholecystectomies, acute appendectomies, and laparotomies. We will invite visiting national and international specialists periodically throughout the year to provide more complex and specialized surgical care including gynecology, ENT, plastics, urology, and orthopedics.

Our ultimate goal is to establish a small comprehensive hospital providing inpatient and outpatient care of surgical, medical, obstetrical, and pediatric patients, with support from visiting national and international specialists.

### ***Prospective Financial Data***

Using current population data, it is estimated that the population of San Pedro Town and its surrounding community will have approximately 5000 surgical consultations per year, with 500 major surgical cases requiring anesthesia. We assume that our surgical program will obtain 30% of the prospective surgical caseload, which will provide 150 major surgical cases requiring anesthesia care. In addition, we estimate that our surgical clinic will obtain 250 minor surgical

cases per year. This data was estimated based on the following assumptions:

Population 16,444 x 4 medical consultations per person per year = 65,600 consultations

25% Pediatric = 16,400 consultations

25% Obstetric = 16,400 consultations

25% Medical = 16,400 consultations

25% Surgical = 16,400 consultations

Of the 16,400 surgical consultations per year in the San Pedro community, we assume that our surgical program will obtain 30% of the prospective caseload (4,920 cases). Of the 4920 cases, 10% will require surgery (approximately 500 cases). Of the 500 cases, we estimate that we will obtain 30% of the caseload (150 surgical cases requiring anesthesia). In addition, we estimate that we will obtain 250 minor procedures annually. These estimates are based on population data and statistics calculated from providing surgical missions in San Lucas Toliman for the past eight years. San Pedro, Belize and San Lucas Toliman, Guatemala have very similar demographics, political and socioeconomic data, so the data can be easily extrapolated and applied to estimates for the surgical caseload of the San Pedro community.

Surgical services will be provided on a fee for service basis. Total revenue for services is estimated to be a minimum of \$270,000 for the first year. Fees for service are consistent with current fee schedules of private health care providers and institutions in the San Pedro community and Belize City. Excluding in kind donations, the total expenses for the first year for rent of facilities, utilities, personnel salaries, housekeeping, office supplies and furnishings are estimated at \$107,200. Purchase of surgical equipment and supplies will be sponsored by San Lucas Foundation. Costs for shipment of the container full of surgical and anesthesia equipment and supplies to Belize by cargo freight is estimated at \$30,000. Start up costs for the surgical



program will come from donation by Dr. Benjamin and Karla Maldonado, as well as charitable donations and grant funding from the San Lucas Foundation.

*San Pedro Surgical Clinic Budget*

**Revenue (Fee Schedule)**

	Number of patients	Fee (US dollars)	Total
Initial Surgical consultations	5000	\$30	\$150,000
Minor Procedures	250	\$150	\$37,500
Major Procedures	150		
Procedure		\$400	\$60,000
Anesthesia		\$100	\$15,000
Postop consultation		\$50	\$7,500
			<b>Total</b>
			<b>\$270,000</b>

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<b>Expenses (First year)</b>		<b>Monthly</b>	<b>Total</b>
Rent		\$2000 x 12 months	\$24,000
Utilities		\$500 x 12	\$6,000
Telephone		100 x 12	\$1,200
Personnel			\$14,000
Salaries	Surgical clinic supervisor	\$1167x 12	
	Nurse	\$1000 x 12	\$12,000
	Housekeeping	\$500 x 12	\$6,000
	Secretary	\$750 x 12	\$9,000
Office Supplies and furnishings			\$5,000
Surgical Equipment and supplies			30,000
			<b>Total</b>
			<b>\$107,200</b>

### *Implementation Plan*

A website for the non-profit organization San Lucas Foundation entitled SanLucasFoundation.org is currently under construction with consultation from the Drucker Group, a marketing consulting firm based in Chicago, and Wordpress which will be used to solicit donations, communicate the mission, vision, and values of the organization, and the development of the San Pedro Surgical Clinic program. Medical licensure and approval for the clinic from the Belize Ministry of Health is in progress. We anticipate medical licensure for Dr. Maldonado within one year. Dr. Maldonado will initiate an outpatient surgical clinic within the

Ambergris Hopes Clinic of Dr. Gonzales immediately after obtaining medical licensure.

Purchase of surgical equipment and supplies will be completed immediately after licensure is obtained, in collaboration with charitable health care organizations via the San Lucas Foundation

We anticipate shipment of the cargo container of surgical equipment and supplies within three months. Ultimately, we anticipate the initiation of the surgical program within six months of medical licensure.

## **Grant Proposal**

### ***Need Statement***

Belize is developing country with a culturally diverse population estimated at 368,310.<sup>2</sup> As a developing country, it faces major challenges that impact the provision of health care, including high rates of poverty and unemployment, slow economic growth, and insufficient human resources.<sup>6</sup>

The Belize Ministry of Health reported a total of 371 physicians and 451 nurses in Belize as of December 2012.<sup>2</sup> Belize has a physician density ratio of 10.07 physicians, and 12.2 nurses per 10,000 persons, totaling 22.27 health care providers per 10,000 people, which is below World Health Organization target ratios of 25 health care providers per 10,000 persons.<sup>9</sup> It is important to note that of the 822 health care providers in the country, half are in Belize City, leaving rural areas severely underserved. In fact, there is a large gap in access to health care between urban and rural populations, and the poor and non-poor.<sup>6, 7</sup>

San Pedro Town has a population of approximately 16,444 persons according to 2015 mid-year estimates by the Statistical Institute of Belize.<sup>2</sup> In San Pedro Town, there are two general practitioners who practice at the Ministry of Health Polyclinic, three private practice general practitioners who also provide obstetrical care, and one gastroenterologist who provides basic and preventative care. The Polyclinic employs one registered nurse and three nursing assistants. The total of ten health care providers in the area is far below World Health Organization target ratios.<sup>9</sup> The population of 16,444 persons on the island of Ambergris Caye would require at least 33 health care providers to meet WHO target ratios, which demonstrates that San Pedro Town and its surrounding communities suffer a severe medical shortage.

***Program Goal***

Our goal is to build a permanent surgery program in collaboration with Ambergris Hopes Clinic, which would improve the health and patient satisfaction, as well as decrease morbidity and mortality of the people of San Pedro and its surrounding community. Our initiative would be in alignment with goals of the Belize Ministry of Health and the World Health Organization to improve access to high quality health care to the San Pedro community.<sup>3,5</sup>

The decision to develop a surgery program in San Pedro Town is influenced by the complete absence of surgical services on the island of Ambergris Caye. The island of Ambergris Caye does not have an emergency first responder, nor paramedic, or ambulance services. All patients seeking elective or emergent surgery must travel by boat or by air ambulance to Belize City, Belize or Merida, Mexico to receive care. The lack of surgical access is accentuated in trauma and emergent situations that creates life threatening risk to residents and visitors to San Pedro Town and Ambergris Caye.

***Program Objectives***

Our long-term objectives for the development of the surgical program are to:

- Provide high quality, cost-efficient medical and surgical care to the community, using evidence based practices, and modern technology.
- To form a health care practice that is self-sustaining within a year, and to form an outpatient surgical clinic within 2 years.
- To work with international and local charitable organizations in creating a permanent, high quality, cost-efficient surgical program that is funded in part by charitable contributions, insurance if available, and subsidized by the patient according to their ability to pay, with the intent to make the program self sustaining

and financially stable.

Our objectives for the first 2 years of operation are:

- To provide medical care and surgical consultations to an estimated 20 patients per day and 5000 people per year (using current population data).
- To provide surgical and anesthesia care to at least 150 surgical patients, and 250 minor surgical patients per year.
- To reduce the number of patients that travel out of the area for elective surgical treatment.

### ***Methodology***

The development of the San Pedro Surgical Clinic will occur in three stages:

- Stage 1: Outpatient clinic. Because of limited resources to establish the surgery program, a surgical clinic will be initiated to provide surgical consultations and minor surgical procedures able to be performed in the clinic.
- Stage 2: Outpatient clinic and surgery center. The medical center will provide outpatient general surgery and anesthesia services.
- Stage 3: Small comprehensive hospital, including medical, surgical, obstetrics and pediatric services.

Patients requiring anesthesia care will be triaged and scheduled in groups when an anesthesia provider is available. Outpatient services will be offered with anesthesia care for low risk patients. As the volume of patients increases and the surgical program becomes established, with improved facilities and trained personnel, more complex surgical procedures requiring a short overnight stay will be accommodated.

Our ultimate goal is to establish a small comprehensive hospital providing inpatient and outpatient care of surgical, medical, obstetrical, and pediatric patients, with support from visiting

national and international surgical teams.

### *Management Plan*

The surgical program will be directed by Dr. Benjamin Maldonado, MD, in collaboration with Dr. Daniel Gonzales MD of Ambergris Hopes Clinic in San Pedro Belize.

Dr. Gonzales will refer surgical candidates to Dr. Maldonado. Dr. Maldonado will evaluate and triage patients into the surgical program. Dr. Maldonado will be responsible for training and supervision of clinic personnel. Karla Maldonado CRNA will be assigned as program director and will be responsible for project objectives and evaluation, as well as training of clinic personnel.

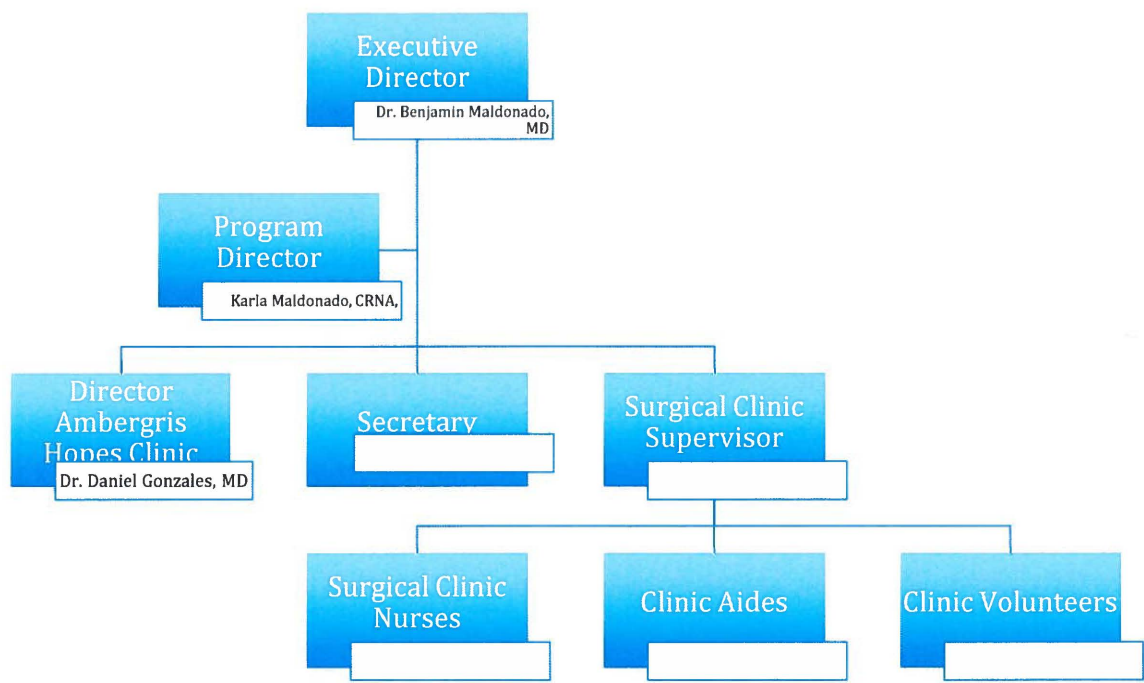
### *Management Team*

Dr. Benjamin Maldonado Garcia MD graduated from San Carlos University Medical School in Guatemala, and completed his surgical residency and trauma residency in Guatemala City. He completed a Master of Public Health degree in Antwerp Belgium at Prince Leopold International Institute of Tropical Medicine. After returning from Europe, he worked as a consultant for the World Health Organization, to implement a health care program to a war-torn, impoverished, rural area in Guatemala for 2 years. He then returned to Guatemala City and practiced as a private practice general surgeon, and also at the National Police Hospital as a staff general surgeon. Later, he completed a fellowship in laparoscopic surgery in Michigan. He has worked with several surgical mission organizations from the United States for 10 years in rural communities throughout Guatemala. He is co-founder and vice president of San Lucas Foundation with his wife Karla Maldonado, MS CRNA.

Karla Maldonado practiced as an intensive care registered nurse for 10 years in Detroit, Michigan prior to pursuing a Masters of Science in Nurse Anesthesiology at the University of

Detroit Mercy in Detroit Michigan. She has practiced as a Certified Registered Nurse Anesthetist in the metropolitan Detroit area for 10 years in a level 2 trauma center, as well as outpatient surgical centers. She is currently pursuing a Doctor of Anesthesia Practice degree at the University of Michigan, and will graduate in April 2016. She is founder and president of San Lucas Foundation a non-profit organization that provides surgical and anesthesia care to impoverished and medically underserved communities in Central America.

Dr. Daniel Gonzales MD is a native of San Pedro and attended medical school at San Carlos University in Guatemala. He completed his residency in Obstetrics and Gynecology in Merida Mexico, and then furthered his training in gynecology, oncology, prenatalology and fertility in Guissen, Germany. He has maintained a private practice since April 2003 at Ambergris Hopes Clinic, specializing in obstetrics, gynecology, as well as general medicine.





<b>Milestones</b>	<b>Person Responsible</b>	<b>Deadline</b>
Obtain surgical equipment and Surgical supplies	Program Director	First Quarter
Hire Secretary	Executive Director	First Quarter
Hire Clinic Supervisor	Executive Director	First Quarter
Hire Clinic Nurses	Program Director	First Quarter
Hire Clinic Aides	Program Director	Second Quarter
Train Volunteers	Surgical Clinic Supervisor	Second Quarter
Program initiation	Executive Dir and Program Dir	Second Quarter
Program evaluation	Program Director	Ongoing

*Training of Surgical Clinic Personnel*

Clinic Personnel will be trained by Dr. Benjamin Maldonado, and Karla Maldonado, CRNA. Personnel will be recruited from Ambergris Hopes Clinic who have basic medical skills and knowledge. Personnel will be trained to assist in surgical consultations and to assist in minor surgical procedures.

Surgical patients requiring anesthesia care will be triaged and organized into groups of approximately 30-50 patients for surgical missions. A volunteer surgical team will be invited in collaboration with San Lucas Foundation. Karla Maldonado will organize surgical teams to perform week long volunteer surgical missions and will train clinic surgical personnel with assistance from the members of the surgical mission teams.

**Facilities and Supplies**

The surgical program will be implemented using offices in the Ambergris Hopes Clinic. The clinic will designate two rooms as surgical suites: one minor procedure and one major surgical procedure.

Purchase of surgical equipment and supplies will be sponsored by the San Lucas Foundation. Karla Maldonado will secure surgical equipment and supplies in collaboration with non-profit organizations in the United States who facilitate donations of surgical equipment and

supplies. Costs for shipment of a container full of surgical equipment and supplies to Belize by cargo freight is estimated at \$30,000, including facility fees, freight charges and customs fees.

Equipment and supplies required include: surgical tables, surgical lights, cautery, sterilizer, anesthesia gas machine, surgical instruments, surgical and anesthesia supplies (See Appendix A).

### ***Evaluation***

A summative evaluation will be performed monthly by the project director. Data will be collected monthly for the following:

- Medical consults
- Surgical consults
- Minor surgical procedures
  
- Major surgical procedures requiring anesthesia

A survey will be conducted of all surgical patients who are referred to the clinic. The survey will include questions such as the patient's current health care provider, previous healthcare needs, the location of the facility where they received care, as well as desired services at the clinic. A survey will also be conducted of patients that are determined as a surgical candidate at the clinic but do not choose the clinic for care. This survey will be performed to follow up on their care, and to determine what services should be provided so they will choose the clinic for care in the future.

Data regarding the number of patients consulted and the number of surgical cases performed will be reported monthly, and will be posted by the program director on the website for San Lucas Foundation, [SanLucasFoundation.org](http://SanLucasFoundation.org), as well as the clinic newsletter.

**Budget for San Pedro Surgical Clinic**

	<b>Amount requested</b>	<b>In Kind Support</b>	<b>Total</b>
<i>Personnel</i>			
Program Director		50,000	50,000
Assistant Director		50,000	50,000
Secretary	9,000		9,000
Surgical Clinic Supervisor	14,000		14,000
Surgical Clinic Nurse	12,000		12,000
Clinic Aide	6,000		6,000
<i>Equipment</i>			
Surgical equipment and Supplies	30,000		30,000
<i>Facility</i>			
Rent	24,000		24,000
Utilities	6,000		6,000
Telephone	1,200		1,200
Office furnishings And Supplies	5,000		5,000
<i>Travel</i>		13,200	13,200
<b>Totals</b>	<b>\$107,200</b>	<b>\$113,200</b>	<b>\$220,400</b>

***Budget Narrative*****Personnel: Total Cost \$141,000****(In Kind Support \$100,000)**

*Rationale:* The **Executive Director** Dr. Benjamin Maldonado will perform surgical consultations referred from Dr. Gonzales at Ambergris Hopes Clinic. He will triage surgical patients into groups according to their surgical needs and availability of surgical personnel. He will recruit and train surgical clinic staff. He will perform minor surgical procedures as indicated in the clinic. He will provide oversight of the grant, overall personnel management, coordination with Ambergris Hopes Clinic personnel, and community stakeholders. Surgical services will be

provided on a reduced fee for service basis described below in the sustainability plan. He has committed to donation of his services for the first two years of the program.

The **Program Director** Karla Maldonado, CRNA will organize volunteer surgical mission teams into groups requiring major surgery with anesthesia care. She will organize training of local surgical clinic personnel. She will perform a monthly summative evaluation including data collection and patient surveys, as well as grant oversight. She has committed to donation of her services for the first 2 years of the program.

Clinic personnel salaries are based on current local wages in San Pedro in US dollars.

**Secretary:** \$750/month x 12 months = \$9,000

*Rationale:* The Secretary will perform administrative duties including keeping of patient records, data collection, and assist in coordination of surgical clinic activities.

**Surgical Clinic Supervisor:** \$1,167/month x 12 months= \$14,000

*Rationale:* The surgical clinic supervisor will assist in the coordination with Ambergris Hopes Clinic, manage and provide patient care, supervise clinic personnel, organize surgical equipment and supplies, and train clinic aides and volunteers.

**Surgical Clinic Nurse:** \$1,000/month x 12 months= \$12,000

*Rationale:* The surgical clinic nurse will assist in surgical procedures, provide patient care, manage patient medical records, delegate tasks to aides and volunteers.

**Surgical Equipment and Supplies: Total Cost \$30,000**

*Rationale:* Purchase of surgical equipment and supplies will be facilitated by San Lucas Foundation. Surgical equipment requested will include surgery tables, surgery lights, cautery, surgical instruments, anesthesia gas machine, sterilizer, etc. (see Appendix A). Stocking fees of a

cargo container full of needed surgical equipment and supplies, as well as costs for shipment of the container to Belize by cargo freight is estimated at \$30,000.

**Facility: Total Cost \$36,200**

*Rationale:* Rental of offices at Ambergris Hopes Clinic: \$2000/month x 12 months= \$24,000

Utilities: Air conditioning, water, electricity, insurance \$500/month x 12 months= \$6000

Telephone: \$100/ month x 12 months= \$1200

Office furnishings and supplies: Computer, printer, filing cabinets, office desk, chairs, telephone, fax machine, paper supplies

**Travel: Total Cost \$13,200**

**(In Kind Support \$13,200)**

*Rationale:* Airfare, hotel and meals for 4 trips a year for the executive director and program director are estimated:

Airfare: \$750 x 4 = \$3000 x 2 persons	\$6000
Hotel \$1000/wk x 4	\$4000
Meals \$400/wk x 4 = \$1600 x 2 persons	\$3200
	<u>\$13,200</u>

The executive director and program director will pay for their own travel costs for the first 2 years of the program.

***Sustainability Plan***

The program will require total funding of \$220,400 for the first year, of which \$113,200 will be donated in kind by the executive director and program director. Revenue generated from fees for services as described below, will remain in the program to expand surgical services, improve surgical facilities and provide training to surgical clinic personnel. As the surgical clinic becomes established with improved facilities, trained personnel, and an increased volume of patients, we will expand to provide services including complex surgical cases requiring short

periods of hospitalization. We will invite visiting national and international specialists periodically throughout the year for surgical missions to provide more complex and specialized surgical care including gynecology, ENT, plastics, urology, and orthopedics. Our ultimate goal is to establish a permanent small comprehensive hospital providing inpatient and outpatient care for surgical, medical, obstetrical, and pediatric patients, with support from volunteer national and international specialists. Dr. Benjamin and Karla Maldonado, along with the leadership of San Lucas Foundation will recruit and coordinate volunteer surgical and anesthesia providers to support the clinic activities and services. In addition, as the clinic expands its services, the Board of Directors of San Lucas Foundation will organize capital fundraising campaigns for improved facilities and acquisition of surgical supplies and equipment on an ongoing basis. It is our goal to provide high quality health care and surgical services with standards comparable to health care provided in the US.

Using current population data, it is estimated that the population of San Pedro Town will have over 5000 surgical consultations per year, and 500 major surgical cases requiring anesthesia care. We project that the surgical program will obtain at least 30% of the prospective surgical caseload, which provides 150 major surgical cases requiring anesthesia. In addition, we estimate that our surgical clinic will obtain 250 minor surgical cases per year. Surgical services will be provided on a fee for service basis, consistent with current fee schedules of private health care providers and institutions in the San Pedro community and Belize City.

**Fee Schedule**

	Number of patients	Fee (US dollars)	Total
Surgical consultations	5000	\$30	\$150,000
Minor Procedures	250	\$150	\$37,500
Major Procedures	150		
Procedure		\$400	\$60,000
Anesthesia		\$100	\$15,000
Postop consultation		\$50	\$7,500
			<b>Total</b>
			<b>\$270,000</b>

## Appendix A

### *List of Needed Medical and Surgical Supplies*

\*Anesthesia Gas Machine\*  
 \*Autoclave (large)\*  
 Gas Sterilization chamber with bags and ampules  
 Surgical Table x 2  
 ElectroCautery  
 Bovie patches  
 Surgical lights  
 Oxygen regulator  
 Suction machine x2  
 Wheelchair  
 Minor Surgery Set  
 OB Gyn Set  
 Hernia repair set  
 Tracheostomy set  
 Cholecystectomy set- including clip appliers  
 Gelphi, Richardson, Army navy, Senn, Deavers, Rakes, Weatlander retractors  
 Pickups, with and without teeth,  
 Small medium and large Debakeys  
 Kocher, right angles  
 Surgical scissors, metzembaun,  
 Scalpels, scalpel handles, blades-10, 11, 15, 20  
 Suture scissors  
 Defibrilator and crash cart  
 Monitors x2 with EKG, BP, Pulse oximeter  
 Xray machine 500MA  
 Stools x 4  
 Minor surgery light  
 Mayo instrument table x4  
 Surgical set up table x2  
 Ultrasound machine  
 Vascular loops  
 Blue towels  
 Sterile gowns  
 Sterile gloves- latex, non-latex

### **Anesthesia Supplies**

Anesthesia supply cart x 2  
 Adapter Airways-oral, nasal Ambu bags  
 Breathing circuits for Anesthesia Gas Machine  
 Laryngoscope handle and blades Miller 1, 2, 3, 4, Mac 2, 3, 4  
 Endotracheal tubes # 4, 5, 6, 7, 8  
 Laryngeal Mask Airways-#2, 3, 4, 5



Nasal Cannulas  
Simple masks  
Nonrebreather masks  
Nebulizers  
Suction catheters  
Tongue Blades  
IV administration sets  
Blood administration sets  
Piggyback tubing  
IV cannulas #16, 18, 20,22  
IV start kits  
IV solution bags-  
Lactated ringers, 0.9NS,D5W  
Torniquets  
Spinal kits and Spinal needles #22, 25, 27 Quinke, Whitacre  
Epidural kits  
Anesthesia vaporizers Desflurane, Isoflurane, Sevoflurane  
Anesthesia gas Desflurane, Isoflurane, Sevoflurane  
Central line kits  
Chest tubes,  
Chest tube drainage system  
Glidescope with covers- #2, 3,4  
Suction canisters  
Suction tubing  
Syringes- 20cc, 10cc, 5cc, 3cc, 1cc  
Needless needles  
HME filters for anesthesia circuits  
CO2 absorbers  
Nasogastric tubes  
Alcohol swabs

**Lab Supplies**

Glucometer and test strips  
Lancets

**Orthopedics**

Ace bandages  
Cast materials  
Padding  
Splints  
Stump sock  
Traction belt

**Patient Care**

Stretchers

Bedpan  
Cups  
Exam Gloves- S, M, L  
Hamper Bags  
Kidney Basin  
Patient gowns  
Sharps containers  
Urinals  
IV poles x6  
Arm boards x4  
Patient slider board  
Position padding- eggcrate foam  
Pillows  
Linens- pillow cases, table sheets, blankets,  
Draw sheets  
Bair hugger patient warmer with blankets upper body, and lower body

**Surgery**

Adhesive tape  
Band-aids  
Caps  
Masks  
Shoe covers  
Drapes-assorted  
Dressings  
Gauze  
OR trays  
Penrose drains  
Surgical Pack  
Sutures  
Suture needles  
Suture removal kits  
Hernia mesh- all sizes  
Towels  
Yankauer suction  
Asepto syringes  
Bandage scissors  
Foley catheters

If available:

Laparoscopic equipment:

Tower  
Light source  
Insufflator  
Camera

Trocars-5, 10, 12mm

Laparoscope 10mm, 5mm, 0 degree, 30 degree

Light connector

Camera connector

Laparoscopic instruments-graspers, suction tips, scissors, spatula, hook,

Maryland

Laparoscopic clip appliers, clips

Suction irrigators

**Liquids**

Alcohol

Betadyne

Chloroprep

Chlorhexadine

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