Andean Health & Development

Strategic Plan

ANDEAN
HEALTH & DEVELOPMENT

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Executive Summary

In 2017, Andean Health & Development (AHD) will mark its twentieth year of efforts to improve health care in underserved communities in Ecuador. Dr. David Gaus, a physician trained in Family Medicine and Public Health & Tropical Medicine, and Rev. Theodore M. Hesburgh, President Emeritus of the University of Notre Dame, founded AHD in 1997.

Andean Health & Development's mission (vision) is *to fundamentally change rural health care in Ecuador by providing sustainable, quality medical care today and by training the rural health care leaders of tomorrow.*

AHD's twenty-year record of major accomplishments includes:

- The construction and successful operation of two hospitals in underserved regions of Ecuador: a 17-bed facility in Pedro Vicente Maldonado (PVM) that opened in 2000 serving a community of 70,000; and a 60-bed hospital in Santo Domingo that opened in 2014 and serves a community of 500,000 (See production figures in Graph 1 of the Appendix.);

- The design, construction, and effective (and expanding) use of the Ronald McDonald House Charities Training Center situated on Santo Domingo's hospital campus. This training center also houses the only regional simulation lab, created in partnership with Northwestern University;

- The establishment of the largest Family Medicine rural training program in Latin America in partnership with the Catholic University of Ecuador and Ecuador's Ministry of Health;

- The successful implementation of a model of self-sustained, community-based, and accountable health services delivery;

- The introduction and management of effective public-private partnerships with Ecuador's national social security system and Ministry of Health;

- The creation of partnerships with academic institutions in Ecuador and the U.S., including the Catholic University of Ecuador, the University of Notre Dame, and the University of Wisconsin;

- The development and stewardship of an expanding network of funding partners including private contributors, foundations, and international institutions such as the Inter-American Development Bank. Over the past twenty years, AHD has successfully raised and efficiently managed $11,317,000 (See Graph 2 in the Appendix showing historical donations.); and

- An on-going contribution to the international discussion about health services delivery, training, and sustainable development through publication in refereed journals and presentation at regional and international meetings.

There are five factors that are the basis for every strategic decision made over the years by AHD and have led to the aforementioned accomplishments:

1. AHD is mission based. Every program expansion or new initiative must, in a measurable way, either improve the health of underserved communities or strengthen AHD's training programs.

2. AHD is creative and flexible. It is outcome driven and willing to try ideas, measure impact, shift strategies when necessary, and move forward.

3. AHD is community-based. All of its in-country efforts are directed by Ecuadorians; 100% of the teams in PVM and Santo Domingo are Ecuadorian.

4. AHD is transparent and accountable.

5. AHD is committed to asking important questions and engaging in broader discussions, based on lessons learned in Ecuador but with potential for a much larger impact.

This document provides a summary of AHD's work to date and lays out strategies for expanding its impact leading up to and beyond the 2017 twentieth year anniversary. It has two parts: Part I (Sections One through Five) provides the background information needed to set the stage for Part II. Part II (Section Six) lays out strategies to expand AHD's impact.

Part I

Section One: reviews Ecuador's Health, Healthcare System & Medical Education, highlighting the ongoing challenges faced by the healthcare system: evolving epidemiology, underfunding, heavy emphasis on urban settings, and limited number of physicians with graduate residency training (less than 25% of all physicians), particularly in rural areas.

Section Two: summarizes AHD's 15-year history in Ecuador and explains the development of Hospital Pedro Vicente Maldonado and its path to financial sustainability through various financing mechanisms, including a public-private partnership with the national social security system. It introduces the need to train family physicians in the countryside. It also discusses the need for Hospital Hesburgh in Santo Domingo, which opened in 2014 and has allowed AHD to expand its own residency training program and begin a Ministry of Health-partnered program to train public-working doctors.

Section Three: discusses the vision of AHD, which is to create quality, self-sustainable health care for rural populations and to train the future health care leaders to transform the healthcare system, specifically in rural areas.

Section Four: outlines the Family Medicine Model and explains why AHD strongly believes this kind of physician is ideal for the Ecuadorian healthcare system and how AHD's rural training program is uniquely positioned to train these physicians to address the extreme shortage of residency-trained physicians in rural areas.

Section Five: describes AHD's resources to support the training of family physicians and highlights AHD's facilities in Ecuador: Hospital PVM, Hospital Hesburgh, a state-of-the-art simulation training

center, and the future Saludesa Regional Health Institute.

Part II

Section Six: introduces AHD's research initiatives and provides five strategies for expansion of AHD's impact. All five strategies remain mission based and are dependent upon the continued successful management of all current facilities and programs. Now with two hospitals serving one community of 70,000 and another community of 500,000 with unique financing mechanisms, coupled with its physician training program, AHD looks to the future to determine how it can be most impactful. Section six, Strategies to Expand the Impact of the AHD/Saludesa Model in Ecuador & Beyond, discusses the role of its Saludesa Regional Health Institute and the exciting possible paths before AHD.

As this report illustrates, AHD is a successful organization that continues to grow as it meets the two components of its mission statement laid out by Dr. Gaus and Fr. Hesburgh almost twenty years ago. Aware of its accomplishments but focused on the future, Andean Health & Development is now poised to begin its most important work.

Section One: Ecuador's Health, Healthcare System & Medical Education

40% of Ecuador's population lives in rural settings. Like in many low-income countries, life is vastly different outside the major cities. Traditional views of the world differ from the modern, western culture of the urban centers. Although people might look modern and dress in western clothing in the countryside, they maintain strong ties to their indigenous heritage. Basic services are scant, such as potable water, regular electricity, and adequate education. Unlike the big cities, health care services are not readily available, particularly basic hospital services for people who become acutely ill. While first level medical services are more readily available, small, basic hospitals are not. The hospitals that do exist in Ecuador consist of:

- public hospitals with few residency-trained physicians and severely limited resources
- missionary-type hospitals that depend indefinitely on external funding
- private clinics that are too expensive for most of the population

Hospital beds in Ecuador:

Hospital Beds[1]	Rural	Urban
Total (24,600)	8,000	16,600

Ecuador Health Indicators:

Indicator	Ecuador	High Income Countries
Hospital beds per 1,000 population	1.6	5.6
Physicians per 1,000 population	1.7	3.1
Total Health Expenditure as % of GDP	7.5%	11.9%
Public Expenditure as % of total expenditure on health	52%	61%

[1] INEC, Base de datos de Camas Hospitalarias 2004-2014
[2] Global Burden of Diseases, Injuries, and Risk Factors Study 2010

Leading Causes of Premature Death in Ecuador (2010)[2]	Years of Life Lost in Thousands (% of total)
1. Lower respiratory infections	181 (8.8%)
2. Road injury	166 (8.1%)
3. Interpersonal violence	132 (6.5%)
4. Ischemic heart disease	115 (5.6%)
5. Stroke	89 (4.3%)
6. Pre-term birth complications	87 (4.2%)
7. Congenital anomalies	80 (3.9%)
8. HIV/AIDS	78 (3.8%)
9. Chronic kidney disease	64 (3.1%)
10. Self-harm	59 (2.9%)

Top 10 Conditions Causing Disability (2010)[3]
1. Road Injury
2. Lower Respiratory Infections
3. Interpersonal Violence
4. Ischemic Heart Disease
5. Low Back Pain
6. Major Depressive Disorder
7. Iron-Deficiency Anemia
8. Stroke
9. Pre-term Birth Complications
10. Diabetes

[2] Global Burden of Diseases, Injuries, and Risk Factors Study 2010

[3] Global Burden of Diseases, Injuries, and Risk Factors Study 2010

Population Data (2009)[4]	Ecuador	State of Wisconsin
Current Population	15,007,343	5,707,060
Infant Mortality Rate *per 1,000 live births*	19.65 deaths	6.0 deaths
Maternal Mortality *per 100,000 live births*	140 deaths	18.35 deaths
Life Expectancy	75.73 years	79.8 years
Prevalence of HIV/AIDS *per 100,000 people*	250 cases	113.5 cases
Incidence of TB *per 100,000 people*	64 cases	1.17 cases
Incidence of Malaria *per 100,000 people*	3,100 cases	---

Basic medical problems generally can be addressed in the countryside. However, the system falls short for those patients with more complex medical issues requiring hospital care. These medical issues continue to grow in number, as the epidemiologic transition unfolds in Ecuador. Emerging chronic, non-communicable disease such as diabetes, hypertension, cardiovascular disease, arthritis, obesity and mental health issues have joined the ranks of the traditional, still unresolved challenges of childbirth, infectious disease, newborn illness, malnutrition and trauma.

The healthcare system and medical education in Ecuador have followed the highly acclaimed Alma Alta "Health for All by 2000" and have focused on *primary* healthcare strategy as the vehicle to achieve this. The international health community has emphasized public health measures and first level, outpatient medical services that address the traditional health issues. Medical schools have been slow to adapt curriculum to the evolving epidemiologic landscape. This results in infrastructure that cannot respond to the needs of the community and health care providers unfamiliar with the diagnosis and/or treatment of many of the diseases they need to treat. Furthermore, continuing medical education is uncommon among graduated physicians in Ecuador. If doctors did not learn something in medical school, they are not likely to learn it "on the job."

The healthcare system faces challenges on many fronts. Most of the 20,000 physicians in the country attend medical schools in urban areas and fewer than 25% of them are residency trained. As in the United States, recruitment of medical personnel to rural areas is limited. Those trained in urban settings who choose to work in rural areas often lack the cultural skills and even clinical

[4] www.dhs.wisconsin.gov/wish and www.who.int/countries/ecu/en

skills to address the cultural complexity and the distinct medical conditions seen in rural Ecuador. Furthermore, the burdened healthcare system and its bureaucracy rapidly disenchant them, leaving them with a sense of hopelessness and an inability to provide the necessary care for their patients – the very reason they came to the countryside. Patients are forced, if able, to travel to one of a few cities to find health care, often in emergency situations, where they frequently suffer financial hardship, humiliation, fear of the unknown city, further rejection by the healthcare system in the city, and oftentimes death.

For rural communities, this translates into high maternal and infant mortality rates from improperly attended, complicated childbirths and newborns requiring resuscitation, death from trauma because of delayed medical response, complications of diabetes and hypertension including heart failure, heart attack, stroke, chronic kidney disease, limb loss, death from pneumonia, and death from snakebite, to name just a few.

Tragic examples of these health challenges are included here for an understanding on a personal level of what people live everyday. These incidents rarely gain public attention:

- 9 yr. old Manuel is bit by a poisonous snake, and no antivenom is available in the area. He dies on his way to Quito where they also do not have the antivenom.
- 17 yr. old Isabel goes to three different walk-in Ministry of Health facilities with abdominal pain and is finally diagnosed with appendicitis. No surgical facilities are available locally, and she dies in Quito from a ruptured appendix.
- 24 yr. old Carmen is carried in by her husband after dying at home from Eclampsia, a pregnancy complication that resulted in severe high blood pressure and caused her to seize and bleed into her head. He thought she was just sleeping.
- 28 yr. old Vicente was exposed to an herbicide he sprayed on crops and developed a serious organophosphate intoxication that threatened his ability to breath. No ventilators were available locally and he was transferred to Quito where he sat in a hallway in an ER unattended until he died of respiratory failure.
- 21 yr. old Veronica went into early labor at 32 weeks. No neonatal services were available, and she was transferred to the capital in a pickup truck, hoping to be admitted to a hospital. The pickup truck unsuccessfully attempted 4 public hospitals, and the baby was born in the back of the truck and died of hypothermia.
- 57 yr. old Antonio died of a heart attack because no EKG machines were available, and nobody knew how to read an EKG even if they would have had one. He was diagnosed with abdominal pain and sent home after 2 hours of observation.
- 43 yr. old Gustavo broke his femur in a motor vehicle accident. No orthopedic services were available locally, and he bled to death into his own leg on his way up to Quito.

Although Ecuador appropriately attempts to emphasize primary healthcare strategy with health education, prevention and promotion, the population continues to suffer illness, much of which is beyond the healthcare system's capacity to address as it currently operates.

Section Two: AHD's 15-Year History in Ecuador

Since 2000, Andean Health & Development (AHD) has been committed to providing high quality health care to some of the poorest communities in rural Ecuador at Hospital Pedro Vicente Maldonado (PVM). This unique hospital model couples a full access, public service philosophy with a strong, private business model that emphasizes quality. This Ecuadorian-managed hospital turns away nobody and is open seven days a week. Furthermore, it is completely self-sustainable based on the population's ability to pay and unique public-private partnerships with Ecuador's national social security system and the Ministry of Public Health. The hospital has created its own sophisticated electronic medical records systems and is the only paperless hospital in rural Ecuador.

With time, AHD recognized the gap between the urban-trained, modern, western-minded physicians and nurses, and the traditional, *mestizo*, pre-modern community they served in the countryside. AHD determined that the only way to connect effective health care providers to the community that needed them was to train them in the countryside. In 2008, AHD joined forces with Ecuador's most prestigious university, the Pontificate Catholic University of Ecuador, to begin to train physicians. Ecuador's first rural family medicine training program was born.

In 2010, AHD began to consider the next steps following the success at Hospital PVM. Replicating the administrative, financial, clinical, and teaching aspects of this hospital model would be a necessary first step. Following a feasibility study conducted by the UC-Berkeley's Haas School of Business and AHD's own evaluation of health conditions, Santo Domingo was chosen as the new site. This afforded several opportunities, including: a much larger, yet still rural community (Santo Domingo is called " the capital of rural Ecuador"), a very large unmet healthcare need, an opportunity to greatly expand the family physician training program, and a politically strategic community with potential national visibility for a new AHD hospital.

In 2012, understanding the utility of family physicians in the healthcare system and witnessing their training in just a few urban and one rural setting, the government of Ecuador embraced a strategy to train approximately 1,000 family physicians nationwide. AHD completed construction of Hospital Hesburgh in Santo Domingo in 2014 and expanded the training program from 15 residents to 60 through an agreement with the Ministry of Health of Ecuador and the Catholic University of Ecuador.

Section Three: Vision

AHD is an organization in Ecuador created to accompany and facilitate Ecuadorians to create a model of high quality, accessible, and financially self-sustainable health care for some of their poorest communities. AHD does not seek to replace the state but rather demonstrate a model that could be useful to the country. Although the focus is on the health of these communities, AHD's greatest legacy is likely to be the training of health care personnel to be the future leaders responsible for contributing to the transformation of the healthcare system to achieve that goal of "Health for All" in Ecuador and beyond. 60 residents are currently training at AHD's two hospitals.

Section Four: The Family Medicine Model

Universities in Ecuador, to varying degrees, train physicians in competencies designed to respond to and serve primarily the *marketplace*, leaving the actual patients as a second tier. AHD does not attempt to combat the health marketplace; however, it does challenge the resulting inequities in health care access and disparities, particularly in rural areas.

The National Healthcare System is replete with standards and regulations that homogenize medical decision-making among physicians. Physicians gradually become non-critical participants in a large bureaucracy, worried about forms and regulations rather than the subject of the healthcare system: the patient. Ultimately, they lose their ability to transform the system.

Family medicine is a fresh medical perspective and therefore an opportunity for Ecuador's national health system. The Ministry of Health has just recently recognized this. Family physicians will undoubtedly be among those involved in the re-defining of the national health system, learning from experiences in other countries but creating something uniquely Ecuadorian.

The family physician, distinct from other specialties in medicine, takes a bio-psychosocial approach to the patient. This means that the focus is on the patient rather than on the disease. Furthermore, the physician's understanding of the context in which the patients find themselves is critical to a successful encounter, thus the psychological and social components or spheres. That said, the family physician must know the biology or the "science" of medicine first and foremost as he/she moves around the three spheres.

AHD argues that the physician's role does not stop there, however. For the doctor-patient encounter, the definitive medical act, to be most effective, the physician must know the family, the community, the healthcare system, and society. This requires complex thinking that transcends the traditional competencies, standards and regulations seen in medical training today.

AHD's philosophy is that the effective family physician requires a profound ethical commitment to a "life-long project." AHD does not see the family physician as a "gatekeeper to the health system" or the "coordinator of specialists." Instead he/she is the principal questioner and transformer of the health system.

For specific pedagogical strategies and methodology, see Appendix.

Specific Family Medicine Knowledge & Skills for Rural Ecuador

Distinct from urban areas, the rural family physician must have additional knowledge and skills that can be summarized into four broad categories:

1. **Clinical Skills:** Skills not generally required in urban areas due to the presence of multiple medical specialties.

    - Complicated childbirth management
    - Neonatal resuscitation and management of mildly premature neonates
    - Major trauma stabilization
    - Intubation skills
    - Wound and fracture management
    - Insulin use in diabetics
    - Cardiac disease, including heart attack, heart failure, arrhythmias
    - Basic ultrasound skills
    - Diagnosis and management of depression, somatization, anxiety disorders, and suicidality
    - Basic family therapy skills
    - Recognition and initial stabilization of critically ill children and adults
    - Management of intoxications such as organophosphates and any other regularly used potentially toxic agricultural substance
    - Management of venomous animal bites, such as snakes, scorpions, and other local threats

2. **Cultural Competency:** Understand and interact with local cultural heterogeneity and, in general, with people different than oneself.

    - Residents must demonstrate openness to and successful health management of people of other cultures.
    - This is an attitude, more than a competency, which is closely monitored by teaching physicians and mentors.

3. **Autonomy:** Know that difficult clinical decisions need to be made without much experience, and walk the fine line between being pushed out of one's comfort zone, yet not go too far to be the hero.

    - This too is an attitude, more than a competency, which is monitored closely.

4. **Health System Knowledge:** One must know the strengths and weaknesses of the local and regional health service infrastructure to know how to advocate for one's patient to minimize health risks.

    - Residents must understand the nuances of transferring a sick patient to an outside facility, understanding all the reasons why that transfer might fail if not handled properly and that it could result in the death of the patient.

Clinical Experiences to Properly Train Rural Family Physicians

In addition to the usual clinical rotations an urban family medicine resident undergoes in Ecuador, there are some unique experiences required to adequately prepare *rural* physicians.

- Most of their rotations should be in rural areas, but some urban rotations are useful for the unique experiences gained there that might not be as readily available in the countryside. An equally important reason is to gain a comprehensive understanding of the healthcare system, which entails understanding health care delivery in the large urban areas.

- Residents should be exposed to high-risk obstetrical experiences (complicated pregnancy management). Successful, timely identification of sick obstetric patients, knowing when a seemingly well pregnant woman in labor might suddenly decompensate, and initial management and subsequent triaging of these patients can only be gained if residents are exposed to these cases.

- Residents should be in settings where they practice being autonomous, though with supervision. This means overnight on-call services in rural hospitals where they make decisions on challenging patients – with attending supervision, but not attending domination. These experiences can be difficult to find.

- Critical care experience is useful for the same reasons high-risk obstetric care is useful. Knowing how to identify a sick patient, where that patient needs to be, and how to initially stabilize them is an important skill that contributes greatly to the residents' self-confidence and subsequent autonomy required for working in rural settings.

Section Five: AHD's Resources to Support the Training of Family Medicine Physicians

Hospital Pedro Vicente Maldonado (HPVM) is a 17-bed teaching hospital in a remote rural area with a local population of 70,000 spread out over three counties. Residents manage the outpatient, hospital wards, labor and delivery, and ER on a daily basis with attending supervision. There is a 1.5-hour morning conference to discuss hospitalized and emergency patients, and a 2-hour conference Mon.-Fri. to discuss patient topics that come up during the week. Residents are required to read extensively and prepare these topics for discussion, with teaching attending physician supervision. Residents live in an AHD dormitory next to the hospital.

Hospital Hesburgh (HH) opened in 2014 and is a 60-bed teaching hospital in Santo Domingo, Ecuador, a community of 500,000 with minimal healthcare infrastructure. Residents have similar responsibilities as in HPVM. Conferences are similar but also include daily morning conferences for the outpatient service to discuss pertinent ambulatory care issues that come up during the day. Some specialist care is also available at HH where residents have additional teaching responsibilities. Additional services at HH include an Adult Intensive Care Unit (ICU), low and higher risk maternity service, newborn nursery and small Newborn ICU, Upper and lower endoscopy, physical therapy, speech therapy, and psychology services. Residents live in a dorm on the 8-acre campus.

Ronald McDonald House Charities Training Center

A 6,000 sq. foot training and simulation center is on AHD's Hospital Hesburgh campus. A teaching auditorium with a capacity for 80 learners affords spaces for larger groups and is connected virtually to HPVM for multi-hospital learning experiences.

The simulation labs with state of the art simulation mannequins for adults, children, and pregnant women are used for various objectives including: diagnostic skills development, patient management, maintenance of competency in infrequently used skills, and team building skills.

To date, there is no other simulation lab in rural Ecuador and only one in the capital.

Saludesa Regional Health Institute

To be completed by 2017, this will be the home of a research facility where AHD will investigate pertinent public health issues that the surrounding community faces. AHD has developed partnerships with the University of Wisconsin-Madison, the University of Notre Dame, and Harvard University. As infectious disease is a public health threat to the communities AHD's hospitals serve, antibiotic resistance has become a great concern locally. Jointly with Notre Dame, AHD's inaugural research initiative is underway to study this problem. AHD and Notre Dame are designing a full microbiology lab with molecular biology capacity.

To further define the AHD hospital model, train personnel more intensively in management skills, and prepare hospital administration teams, AHD will utilize this institute to develop ways to export the lessons learned to regions beyond the catchment area of the two hospitals. Strategies for exporting AHD's successful model are on the following pages.

Section Six: Saludesa Regional Health Institute

Improving access to quality health care in underserved communities: Sharing Lessons Learned in Latin America

This new institute, housed on the Hospital Hesburgh campus in Santo Domingo, will serve as the hub for two significant areas:

I. Clinical and public health research relevant to the community
II. Strategies to expand the impact of the AHD/Saludesa model in Ecuador and beyond.

AHD will develop university partnerships in the US and Ecuador to mobilize necessary resources and skills to pursue this strategy. "Saludesa" is AHD's counterpart foundation in Ecuador.

I. Clinical & Public Health Research Relevant to the Community

AHD's research focus is on solving the health problems that are seen today in the communities where AHD works.

Research decisions will be based on two questions at the heart of the AHD mission (vision), "will this benefit the health of the community?" and "will this benefit the training of the future health leaders?" Much of what AHD chooses to investigate will have significant importance in other areas of Latin America.

Antibiotic resistance research must receive attention because AHD has seen high resistance to many of the antibiotics traditionally used for infectious disease. As a hospital with very acutely ill patients, using the wrong antibiotic can have disastrous consequences. Other areas including snakebite management, arboviral epidemics, and mental health issues are clearly of major public health importance in AHD's communities and throughout Latin America.

Finally AHD's university partners are interested in conducting research as a way of contributing their "know how" to the wellbeing of AHD's communities. A modest investment in in-country research infrastructure will help catalyze these university relationships both in and out of Ecuador.

As an added benefit, research adds a level of academic rigor uncommon in residency programs in Ecuador. Part of the formation of Ecuador's future health leaders includes an exposure to research for their participation and for their understanding that leaders identify problems in their communities and mobilize resources to solve these problems.

The following areas have been identified as initial areas of research of significant public health impact for AHD's communities, Ecuador, and Latin America in general.

1. Antimicrobial resistance patterns

Antibiotic resistance is now spreading to low income countries and is essentially unmonitored. It has major public health consequences, and countries such as Ecuador require this monitoring for individual patients as well as for the health of the public.

2. Infectious Disease Epidemiology

Minimal data exists in Ecuador that defines the causes of newborn fever, diarrhea, pneumonia, and fever of unknown origin in children and adults. Santo Domingo is influenced by these diseases, and its community can serve as a research sample for finding their causes.

3. Transcultural Psychiatry

Understanding, diagnosing and treating psychiatric conditions outside of the predominant western medical model in the setting of a low income, rural area such as Santo Domingo and Pedro Vicente Maldonado is a critical need for these communities. Specific areas include: depression, somatization, anxiety disorders, personality disorders, and suicidality.

4. Hospital Impact

As the WHO's expanded vision of primary healthcare now includes the community hospital, new public health indicators are required to measure the true impact of a hospital in a community. AHD proposes research that takes a fresh look at the impact of community hospitals on community wellness and how they complement first level medical services.

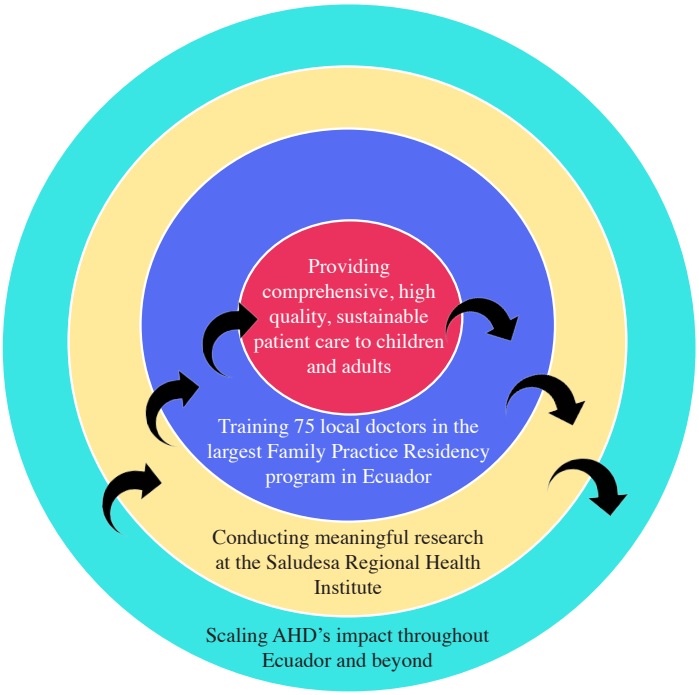
5. Training and retention of healthcare professionals in rural areas

Research is required to better understand how to recruit, train, and retain healthcare professionals to underserved rural areas in low income countries. Saludesa has been training family physicians in rural areas since 2008.

6. Public-private partnerships for health care delivery in low-income countries

Saludesa has partnered with Ecuador's national social security system to provide health care services to social security affiliates who previously had minimal access. Research to evaluate the success and challenges of these partnerships will contribute to the success of future collaborations in Ecuador and other parts of the developing world.

II. Strategies to Expand the Impact of the AHD/Saludesa Model in Ecuador & Beyond



The following strategic options, which are ranked in order of likelihood of success, emphasize AHD's institutional strengths with identified needs within the health sector. Resident training, specifically of family physicians, and hospital administration within the complex, rural context are the focus of the following strategic areas. AHD would partner with universities and NGOs to carry out this work.

1) Exporting the Family Physician
2) Exporting the Saludesa Model
3) Growing the Private Healthcare Network
4) Developing the Public-Private Healthcare Network
5) The University Hospital and the Private Healthcare Network

1. Exporting the Family Physician

The multifunctional family physician is the ideal physician for countries with physician shortages and limited residency-trained physicians and for the wide range of health care challenges that the countryside presents. This is the physician trained by AHD/Saludesa in rural Ecuador since 2008.

Goal	Train resident learners and teachers of family medicine to expand the Family Medicine training program beyond the current three Ecuadorian provinces that are home to the two Saludesa hospitals.
Location	Other provinces within Ecuador and/or other countries in Latin America
Partners	Ecuadorian universities or universities in other countries, in collaboration with ministries of health or nongovernmental organizations (NGOs).
Reliability/ Stability of Partners	Ecuadorian universities: moderate Universities in other countries: moderate
Methodology	One week/month a team of physicians and administrators travels to the teaching site. The other three weeks/month involve the completion of tasks by the site students and teachers. Modules include: • Evaluation of current setting (learners' skills, knowledge, attitude, teacher capacity and pedagogical skills, local epidemiology). • Teacher training/pedagogical skills • Learning how to learn, how to look for information, using the web • Resident skills and knowledge building strategies (lectures, workshops, simulation, case presentations) • Understanding the local healthcare system • Administration of a residency program (describing the pedagogical model, learner evaluation, teacher evaluation, motivational techniques, disciplinary action)
Timeline	The strategy will take three years. The first year involves the selection process of training staff and a residency coordinator and the purchase of training equipment. The second and third years consist of implementing the program with the third year concluding with an evaluation.

Budget for "Exporting the Family Physician" Strategy	Year One One team of 3 professionals/month x 12 months 180,000 Neonatal/Maternal/Adult mannequins and system 100,000 On-Site Residency Coordinator 24,000 Year Two One team of 3 professionals every 2 months x 12 months 90,000 On-Site Residency Coordinator 24,000 Year Three One team of 3 professionals every 3 months x 12 months 60,000 On-Site Residency Coordinator 24,000 Evaluation Final 15,000 Saludesa Administration x 3 years 225,000 **Total Cost** **$742,000*** * additional transportation costs if outside Ecuador
Political Risk	Moderate: NGO partners are more agile, though their long term funding may be less secure than MOH partners who present some political risk to AHD since changes in government can impact healthcare policy and therefore this program.
Output	After a 3-year period: • 50-100 new family physicians trained • 10 family medicine teaching physicians trained • 4,000 patients served per year by each trained physician for the duration of their careers (200,000 – 400,000 patients in total each year)

2. Exporting the Saludesa Model

Hospitals in developing countries are faced with economic challenges, patient care challenges, technology challenges, and administrative challenges. AHD/Saludesa's successful clinical, administrative, and financial models developed since 2001 and tested in its two hospitals in Ecuador can be adapted to diverse settings.

Goal	Adapt and contextualize various components of the Saludesa hospital model in new areas.
Location	Other provinces within Ecuador and/or other countries in Latin America
Partners	The ministries of health or nongovernmental organizations (NGOs) in other areas of Ecuador or beyond.
Reliability/ Stability of Partners	Ecuador's Ministry of Health: low to moderate Ministries of health in other countries: moderate NGOs in Ecuador: moderate NGOs in other countries: moderate

Methodology	Train a team of physicians, nurses, and administrators to adapt the Saludesa hospital model in a new environment. The model would include elements such as:
	• Administrative
	  ○ Application of software for inventory control
	  ○ Application of accounting software
	  ○ Establish the administrative audit of the patient record
	  ○ Re-engineering of departments
	  ○ Establishment of committees (biohazard, safety, ethics)
	• Financial
	  ○ Based on local epidemiology, establish services needed at the facility and determine what services generate revenues more than others.
	  ○ Determine the community's ability to pay out of pocket
	  ○ Foster the development of public private partnerships (MOH, social security) to generate revenues for the hospital
	• Clinical
	  ○ Establish the medical audit of the patient record
	  ○ Teach physicians/nurses how to document clinical information
	  ○ Determine mix of physicians based on local epidemiology
	  ○ Determine epidemiology to create clinical guidelines for most frequent diseases

Timeline	The strategy will last three years. The first year involves the selection process of MOH hospitals or NGOs and training the team of trainers. The second and third years consist of implementing the program with the third year concluding with an evaluation.
Budget for "Exporting the Saludesa Model" Strategy	<u>Year One</u> Training the team of trainers x 6 months at HH 60,000 Introductory Phase: 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) for 6 continuous months 162,000 System License 20,000 <u>Year Two</u> 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) for 12 continuous months 324,000 <u>Year Three</u> 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) for 12 continuous months 324,000 Final Evaluation 25,000 Saludesa Administration x 3 years <u>225,000</u> **Total Cost** **$1,140,000*** * additional transportation costs if outside Ecuador
Political Risk	<u>Moderate</u>: NGO partners are more agile, though their long term funding may be less secure than MOH partners who present some political risk to AHD since changes in government can impact healthcare policy and therefore this program.
Output	Following a three-year period, AHD will demonstrate a successful administrative, clinical, and teaching model in a rural hospital in a new region. The new hospital will serve approximately 24,000 patients each year that it is in operation.

3. Growing the Private Healthcare Network

A number of NGOs have expressed interest in working with AHD/Saludesa to expand coverage to more communities in neighboring provinces. This strategy would focus on the creation of small hospitals that would work with Hospital Hesburgh.

Goal	Establish new, small hospitals (similar to HPVM) with new NGO partners and introduce the Saludesa hospital model to create a private sector, NGO hospital network in the surrounding region.
Location	Neighboring provinces within Ecuador
Partners	Nongovernmental organizations (NGOs) in the area
Reliability / Stability of Partners	Moderate: Partnering with NGOs allows for more flexibility and stability but a possible lack of long-term financial resources that may affect the sustainability of the strategy.

Methodology	NGO partners would be identified and would place their small hospitals within the new hospital network or commit to building small hospitals which Saludesa would help equip and then introduce the Saludesa hospital model with a private sector, not-for-profit focus.
	
	Saludesa would train a team of physicians, nurses, and administrators to adapt the model specifically to the NGO sector with elements such as:
	
	• Administrative
	  o Establish a system to share clinical information among hospitals
	  o Application of software for inventory control
	  o Application of accounting software
	  o Establish the administrative audit of the patient record
	  o Re-engineering of departments
	  o Establishment of committees (biohazard, safety, ethics)
	• Financial
	  o Foster the development of public private partnership with social security to generate revenues for the hospital
	• Clinical
	  o Application of a common medical record
	  o Establish the medical audit of the patient record
	  o Teach physicians/nurses how to document clinical information
	  o Determine mix of physicians based on local epidemiology
	  o Determine epidemiology to create clinical guidelines for most frequent diseases

Timeline	The strategy will last three years. The first year includes the selection process of two NGO hospitals, obtaining a system license, and training the teams of trainers. Years two and three involve implementing the program, with the third year concluding with an evaluation.
Budget for "Growing the Private Healthcare Network" Strategy	<u>Year One</u> Selection Process of 2 NGO Hospitals 10,000 Training the team of trainers x 6 months at HH 60,000 Introductory Phase: Assistance with equipment needs at new NGO hospitals 800,000 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) alternating at each hospital for 6 continuous months 162,000 System License 20,000 <u>Year Two</u> 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) alternating at each hospital for 12 continuous months 324,000 <u>Year Three</u> 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) alternating at each hospital for 12 continuous months 324,000 Final Evaluation 25,000 Saludesa Administration x 3 years <u>225,000</u> **Total Cost** **$1,950,000**
Political Risk	<u>Low</u>: Partnering with NGOs allows for more flexibility and less sensitivity to changing policies.
Output	Following a three-year period, AHD will have created a private, not for profit hospital network in the region with Hospital Hesburgh serving at the referral hospital. 48,000 patients per year will be served between the two hospitals.

4. Developing the Public-Private Healthcare Network

AHD/Saludesa has worked intermittently with the Ministry of Health (MOH) of Ecuador over the years. Currently, the MOH-Saludesa relationship is most evident in the MOH resident training program that Saludesa is providing for the government jointly with the Catholic University of Ecuador.

Goal	A new collaboration would include the introduction of the Saludesa hospital model in MOH hospitals close to the two current Saludesa hospitals to create a public-private hospital network in the surrounding region.
Location	Neighboring provinces within Ecuador
Partners	Ministry of Public Health of Ecuador
Reliability / Stability of Partners	Historically unstable due to political volatility and MOH bureaucracy, the Minister of Health recently recognized the utility of the Family Physician in the countryside and might consider a partnership. Low to moderate probability.

Methodology	Jointly with the Ministry of Health of Ecuador, select two nearby MOH hospitals where Saludesa could introduce the Saludesa hospital model with a public sector focus. Saludesa would train a team of physicians, nurses, and administrators to adapt the model specifically to the public sector with elements such as:
	
	• Administrative
	  ○ Establish a system to share clinical information among hospitals
	  ○ Application of software for inventory control
	  ○ Application of accounting software
	  ○ Establish the administrative audit of the patient record
	  ○ Re-engineering of departments
	  ○ Establishment of committees (biohazard, safety, ethics)
	
	• Financial
	  ○ Foster the development of public-private partnership with social security to generate revenues for the hospital
	
	• Clinical
	  ○ Application of a common medical record
	  ○ Establish the medical audit of the patient record
	  ○ Teach physicians/nurses how to document clinical information
	  ○ Determine mix of physicians based on local epidemiology
	  ○ Determine epidemiology to create clinical guidelines for most frequent diseases.

Timeline	The strategy will last three years. The first year involves the selection process of two MOH hospitals and training the team of trainers. The second and third years consist of implementing the program with the third year concluding with a final evaluation.
Budget for "Developing the Public-Private Healthcare Network" Strategy	<u>Year One</u> Selection Process of 2 MOH Hospitals 10,000 Training the team of trainers x 6 months at HH 60,000 *Introductory Phase:* 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) for 6 continuous months 162,000 System License 20,000 <u>Year Two</u> 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and 1 systems engineer ($2,000) for 12 continuous months 324,000 <u>Year Three</u> 3 physicians ($5,000), 2 nurses ($2,500), 2 administrators ($2,500), and1 systems engineer ($2,000) for 12 continuous months 324,000 Final Evaluation 25,000 Saludesa Administration x 3 years <u>225,000</u> **Total Cost** **$1,150,000**
Political Risk	<u>Moderate to High</u>: Changes in government will affect health care policies, which can influence the partnership.
Output	Following a three-year period, AHD will have successfully implemented its administrative, clinical, and teaching model in two area Ecuadorian MOH hospitals that will permit a referral system within the public/private mixed healthcare provider system. 60,000 patients will be served the following services between the two MOH hospitals: • 36,000 outpatient visits • 12,000 ER visits • 6,000 inpatient visits/surgeries • 6,000 childbirths

5. The University Hospital and the Private Healthcare Network

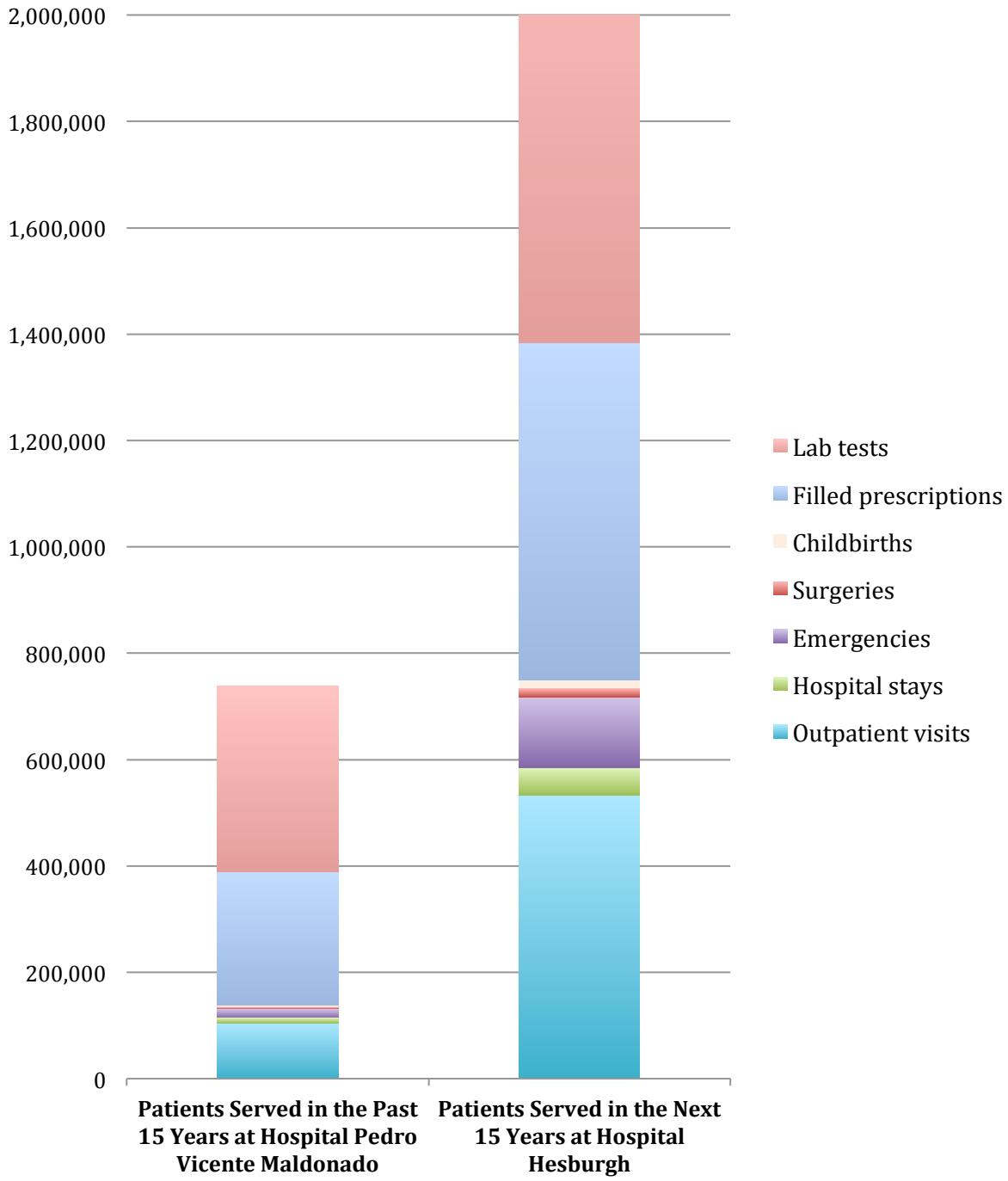
The Pontificate Catholic University of Ecuador (PUCE) has approached Saludesa to partner with them to build a new university hospital near the capital city of Quito. With funding and technical support from the PUCE, Saludesa would build and subsequently manage the university hospital on the new PUCE campus, which would be leased to Saludesa for a period of 50 years.

Goal	Establish a new network of rural, community hospitals with HH in Santo Domingo and the new university hospital in Quito with shared healthcare services, shared resources, including students, residents, faculty, attending physicians, and nurses. This network would unite tropical Ecuador with highland Ecuador, rural with urban, rich with poor. It would bring the university to the countryside as a service to the community, and it would expose the university to the healthcare problems of half of the country's population.
Location	Nayon neighborhood, Quito, Ecuador
Partners	Pontificate Catholic University of Ecuador (PUCE)
Reliability / Stability of Partner	Moderate
Methodology	Develop a planning team including PUCE and Saludesa to create a feasibility report, hospital budgets, financial projections, and funding sources. Identify partnerships in the US (university and donor agencies).
Timeline	The strategy will take 8 years in total. Construction will take 5 years, and it will take 3 years to reach financial self-sustainability at the facility.
Budget for "The University Hospital & Private HC Network"	Construction of facility 6,000,000* Equipping the facility 4,000,000 Operating Deficit over 3 years until financial breakeven 2,000,000 **Total Cost** **$12,000,000** *The PUCE would likely fund the construction.

Political Risk	Moderate
Output	Following a five-year period, AHD will have created a hospital network with the Catholic University of Ecuador including a referral center in Quito at the university hospital, in Santo Domingo at the regional referral center, and in smaller rural hospitals including HPVM. Residents and faculty will be shared between these facilities, bridging highland with jungle, urban with rural, and underserved with the not underserved. The hospital will provide services to 69,120 patients each year it is in operation: • 48,000 outpatient visits • 14,400 ER visits • 6,000 surgeries/inpatient visits • 720 childbirths

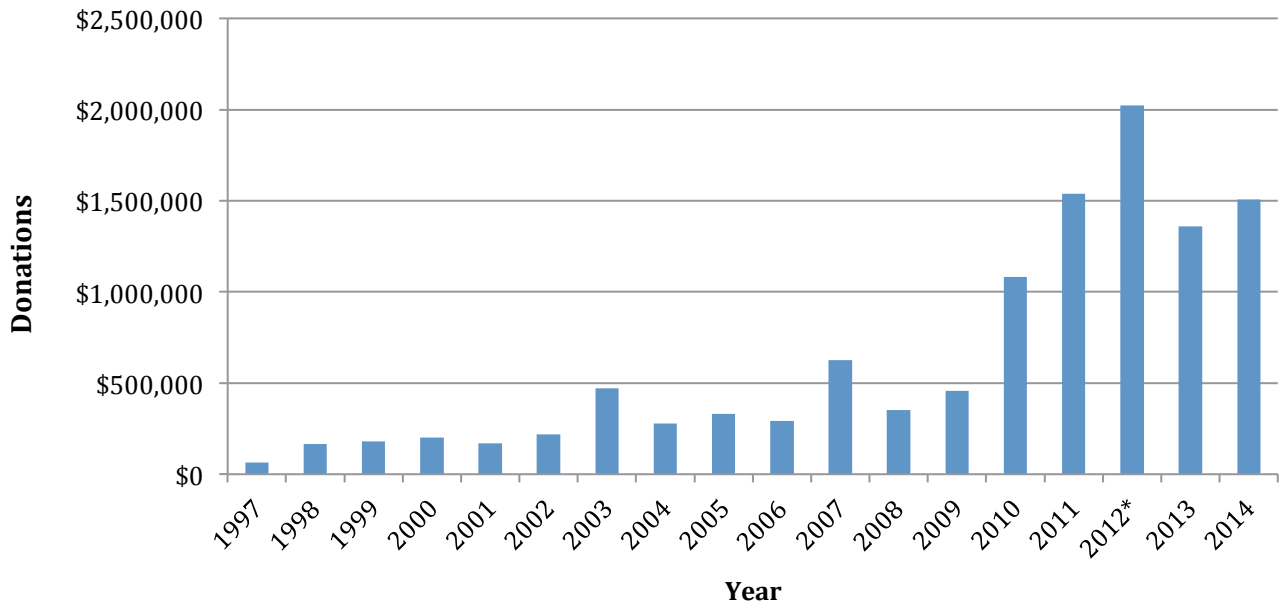
Appendix

Graph 1: Hospital Production at AHD's Two Hospitals: Current & Projected



Graph 2: Historical Donations at AHD by Year

Total: $11,317,000



*Ronald McDonald House Charities granted AHD with a $950,000 three-year pledge in 2012.

AHD's Family Medicine Model & Pedagogical Strategies

AHD highlights five pedagogical strategies to train each resident to be the principal questioner and transformer of the health system. The residents must:

1) be responsible for their own learning.

2) assume a participatory and collaborative role in the learning process.

3) maintain a connection with their surroundings for social and professional interventions.

4) commit to a process of self-reflection about what they do, how they do it, what results they achieve, and how to improve.

5) develop autonomy, critical thinking skills, collaborative attitudes, professional skills, and self-evaluation and problem-solving skills. In short, become capable of leading, influencing, and transforming the work environment.

AHD's didactic strategy is a community-oriented curriculum not based in the world of ideas, rather in the problems the patients and physicians face on a daily basis. The curriculum is not a "straight jacket," rather a guide that looks to build knowledge through the understanding of the complexities of the chaos and uncertainty of daily life with the goal of applying science to human reality. Residents must understand local epidemiology and local context.

The learning process is centered in the student or resident, guided by the teaching physicians. The learners know the mentors are there for them. AHD believes that the teaching physicians, as mentors, make the process a success – not simply the teaching facility or health center.

The curriculum settings include: Outpatient, Inpatient, Emergency, Simulation, Group Learning with clinical cases, and Workshops. Each area has its corresponding objectives, activities, and competencies. The clinical settings include AHD facilities and public hospitals for a more complete understanding of both the public and private models of healthcare delivery.

The resident evaluation has many components, but the goal is to use the evaluations to modify the didactic, pedagogical, and methodological strategy. Techniques utilized are included in the table on the following pages.

MEETING RESIDENCY TRAINING OBJECTIVES

OBJECTIVE	TECHNIQUE	INSTRUMENTS (Continuous, informal evaluation)	EVALUATION SITUATION
Learn to work in teams and organize clinical thinking.	OBSERVATION	- Class journals - Attendance sheets - Simulation - Review of teamwork and individual work	Made up of group classes (Problem Based Learning) in theoretical, practical workshops; in group work
Build and develop the actual patient-based clinical work to solve problems.	INTERROGA-TION	- Closed and open interviews.	Through accompanied consultations, supervised direct patient care, sign out of patient shifts, academic conferences in both inpatient and outpatient, and through group work on certain issues aimed at the socio-cultural sphere. (Home visits) with reports of work accomplished.
Develop critical and reflective reading in clinical case discussions.	TASK ANALYSIS	- Debates - Concept Diagrams - Concept Maps - Collective Games	In group classes (PBL), outpatient and inpatient academic conferences.
Assess clinical competencies; Evaluate problem-solving	TESTS	- Review understanding of scientific articles read critically by residents. Written Tests: written evidence of clinical cases reviewed - Collective Tests: Simulation	In group classes (PBL) In simulation Through review of critically read scientific articles

METHODOLOGICAL TECHNIQUES

STRATEGY OR TECHNIQUE	OBJECTIVE	APPLICATIONS	RECOMMENDATIONS	ROLES
Presentation of admitted patients	Present a patient to the group in an organized way; Evaluate clinical decision making	Review of the shift, its activities, and sign off; Exhibit results or conclusions from the activities.	Encourage interaction by group members; The groups are often heterogeneous and discussion may vary because of different backgrounds.	Professor: discuss the arguments used in making the decision. Student: suggest evidence based on a clinical situation.
Readings (discuss to a subject)	In an organized way, present a topic that emerged from of a particular, real case.	Conduct a article review; Present at a formal teaching conference	Define the need for learning as crucial; Suggest effective study techniques.	Teacher: discuss the relevance of the information. Student: suggest evidence based on a clinical situation.
Socratic Methodology	Question the value of an argument used in clinical practice so the student can reflect on his/her clinical practice.	During bedside rounds, patient sign out, and consults.	Inform newly arrived residents of the technique Requires a high tolerance level for criticism.	Teacher: questioner, aggressive, seeks to identify whether there is strength in the conceptual development of the discussion. Student: must defend and seek out discussion points.

STRATEGY OR TECHNIQUE, CONT.	OBJECTIVE, CONT.	APPLICATIONS, CONT.	RECOMMENDATIONS, CONT.	ROLES, CONT.
Family Medicine Complete Clinical Case	Apply the bio-psychosocial model by way of a real case.	Initiate and guide the discussion of a subject; Promote research on certain content; verifies which skills have been mastered.	The case must be well prepared and presented. Participants must be very clear about the task. It should reflect the skills achieved by the group.	Students: Assess. Research. Discuss. Propose and test their hypotheses. Teacher: Facilitate and encourage the solution of the case.
Questions Method	Lead a discussion by students though the asking of questions.	Start the discussion of a topic. Guide the discussion. Promote student participation. Generate creative controversy in the group.	The teacher should develop skills to design the questions. Avoid repetitive use of the technique.	Teacher: Guide the discovery process. Create the course and future events. Students: Take on the course. Research. Look for evidence.
Simulation	Learn from action (content and skills) through simulated situations.	For content requiring significant experience; to develop specific coping skills and face simulated situations.	Teachers should develop expertise to monitor the group and to analyze the experience. The roles of the participants should be clearly defined and rotation should be promoted.	Teacher: Manages and directs the situation; sets up the simulation; offers questions about the situation. Students: Experiment in the simulation. React to emerging conditions or variables; are active.

STRATEGY OR TECHNIQUE, CONT.	OBJECTIVE, CONT.	APPLICATIONS, CONT.	RECOMMENDATIONS, CONT.	ROLES, CONT.
Learning based on problems	The students should work in small groups, synthesize and build knowledge to solve the problems in a real case.	The students identify their learning needs in order to open up the discussion of a subject. Student participation is encouraged to identify problems in family medicine services delivery.	Build on students' willingness to work within problematic situations. Provide constant feedback to students on their participation in solving the problem. Reflect with the group about the skills, attitudes, and values of the work.	Teacher: Presents a problematic situation. Exemplifies, assesses, and facilitates. Takes part in the process as a group member. Students: Judge and evaluate their learning needs. Research. Develop hypotheses. Work individually and in a group to solve problems.