

PROECT NARRATIVE: Hawaii/Pacific Basin Area Health Education Centers Point of Service, Maintenance and Enhancement grant application (CFDA) No. 93.107

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List of Acronyms

AHEC Area Health Education Center	JABSOM John A. Burns School of Medicine
APRN Advanced Practice Registered Nurse	MUA Medically Underserved Area
AS American Samoa	MOE Ministry of Education
ASCC American Samoa Community College	MOH Ministry of Health
BHPr Bureau of Health Professions	NCLEX National Council Licensure Exam
CE Continuing Education	NMC Northern Marianas College
CHC Community Health Center	PA Physician Assistant
COM College of Micronesia	PBL Problem-Based Learning
CMS Centers for Medicare & Medicaid Services	PCC Palau Community College
CME Continuing Medical Education	PHTP Public Health Training Program
CNMI Commonwealth of the Northern Mariana Islands	PIHOA Pacific Island Health Officers Association
CPMS Comprehensive Performance Management System	ROP Republic of Palau
FQHC Federally Qualified Health Center	RMI Republic of the Marshall Islands
FSM Federated States of Micronesia	UH University of Hawaii
HCOP Health Careers Opportunity Program	UPR Uniform Progressive Report
HOSA Health Occupations Students of America	URM Underrepresented minority
HCP Health Care Provider	USAPI United States Assoc. Pacific Islands
HPB Hawaii/Pacific Basin	VTC video-teleconference
HPSA Health Professions Shortage Area	WHO World Health Organization
HRSA Health Resources and Services Administration.	WIA Workforce Investment Act
	WCCHC Waianae Coast Comprehensive Health Center

A. INTRODUCTION and PURPOSE:

Although many people have visions of tropical paradise when they think of islands in the Pacific, in reality the region faces profound health and educational disparities, has a small and isolated health workforce and minimal resources to make significant changes. The **purpose** of the Hawaii/Pacific Basin Area Health Education Center (HPB AHEC) program is to improve the health of inhabitants of Hawaii and the US Associated Pacific Islands (USAPI) by increasing the diversity and supply of well trained and culturally competent healthcare providers working in rural and underserved communities. Activities include recruiting underrepresented students into health careers, providing clinical and interprofessional training in rural and underserved areas and working to increase assessment, placement, skills and retention of primary care workers.

B. NEEDS ASSESSMENT:

Communities to be served: The HPB AHEC provides services to the entire State of Hawaii, two US-associated developing countries, one US commonwealth and one US territory. The area served by the HPB AHEC spans distances of up to 4,500 miles from point to point, or 5.1 million square miles of exclusive economic zones (most of which is open ocean) and contains 19 Federally Qualified Health Centers (FQHCs) and 121 Health Professions Shortage Areas (HPSAs). The population of the areas served by HPB AHEC is roughly 1,506,269.

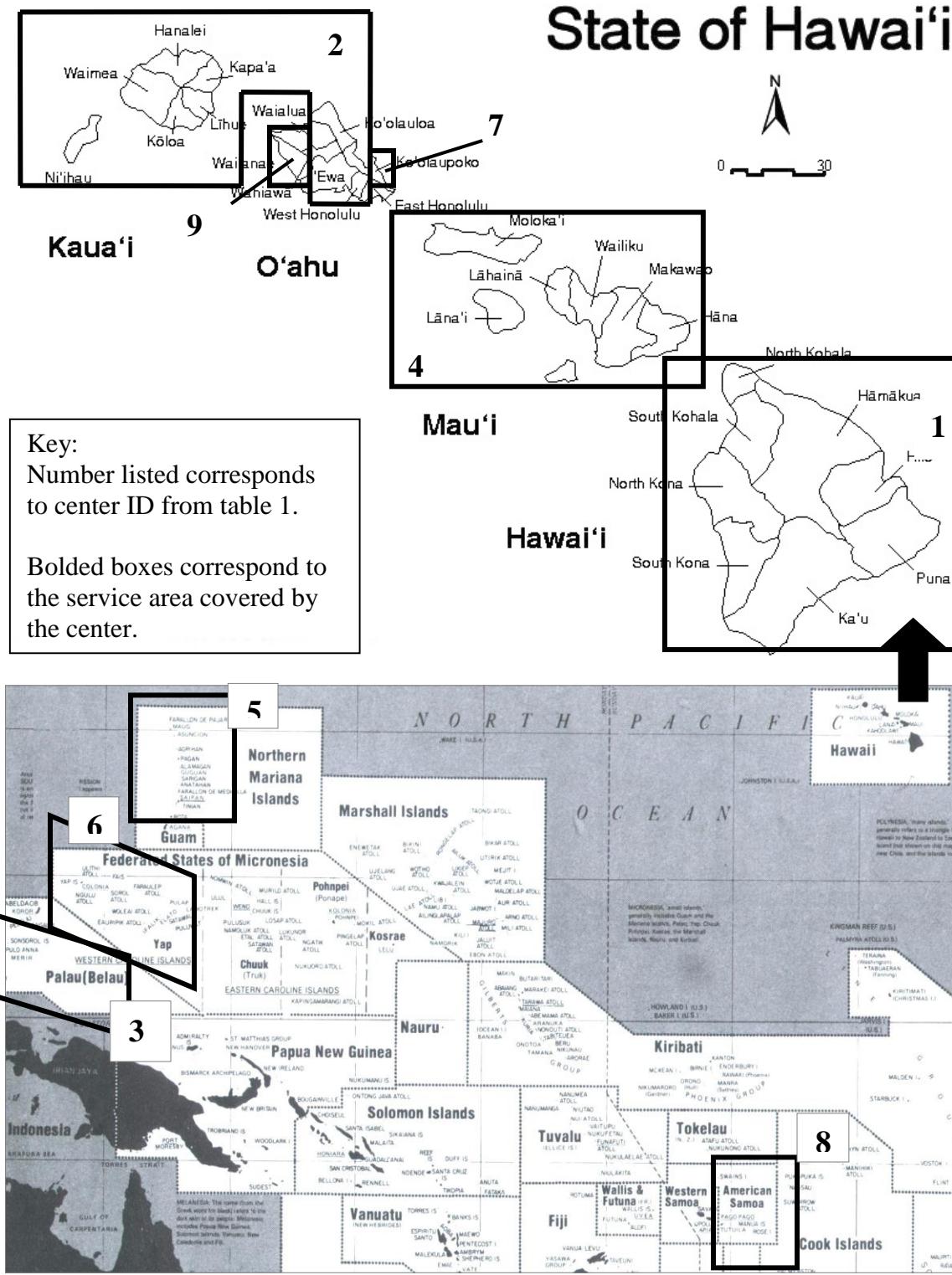
Table 1: HPB AHEC Areas Served and Distance from Program Office (PO Distance)¹

AHEC Center	Start Date	Location	County	Census tracts	Pop.	PO Distance
1.Big Island	1995	Hilo HI	Hawaii	HI: 201-221	185,079	216 mi
2. Na Lei Wili	1997	Lihue HI	Kauai/ Honolulu	HI: 1-95, 99- 112, 401-409	1,001,670	102 mi
3.Palau	2001	Koror, Rep. of Palau		N/A	20,956	4,595 mi
4.Maui County	2004	Molokai	Maui	HI: 301-319	154,834	53 mi
5.CNMI	2004	Saipan, CNMI		Saipan: 9501-14	53,883	3,709 mi
6.Yap State	2004	Fed. States Micronesia		N/A	11,200	4,322 mi
7.Waimanalo	2007	Waimanalo	Honolulu	HI: 113.01-02	5,451	14 mi
8.Am Samoa	2007	Pago Pago	AS	AS: 9501-9518	67,242	2,606 mi
9.Waianae	2009	Waianae	Honolulu	HI: 96, 97, 98	13, 177	32 mi

Geography, Demographics and Health Statistics: There are seven island archipelagos in the Pacific that are part of the US or under US protection. These include the 50th state of Hawaii, the two territories of Guam and American Samoa (AS), the Commonwealth of the Northern Mariana Islands (CNMI) and three independent nations that have a special treaty relationship with the US Government under the Compacts of Free Association that provide assistance with health, education, welfare and military support (the Federated States of Micronesia (FSM), the Republic of Palau (ROP) and the Republic of the Marshall Islands (RMI)). HPB AHEC serves AS, CNMI, ROP and Yap State, one of the four states within the FSM. The Guam AHEC Program, which began in 2009, serves the areas not served by HPB AHEC and collaborates closely to maximize benefit to all US areas of the Pacific.

¹Population Finder: Hawaii. US Census Bureau. Accessed on December 15, 2011. Available from: <http://quickfacts.census.gov/qfd/states/15/15001.html> and The World Factbook. US Central Intelligence Agency. Available from: <https://www.cia.gov/library/publications/the-world-factbook/> Accessed Jan. 7, 2012.

Figure 1: Map of Hawaii and Pacific Basin AHEC Regions (chronologically numbered)



Hawaii's Geography and Demographics: Hawaii is a state of 1,360,301 people living on seven islands. These include the northernmost island of Kauai; Oahu, home to the capital city of Honolulu; Molokai, located 25 miles southeast of Oahu, whose population is primarily Native Hawaiian; Lanai, west of Maui, formerly a vast pineapple plantation; Maui, 730 square miles of land 100 miles southeast of Honolulu; and the Island of Hawaii southeast of Maui with 4,000 square miles of land, an active volcano and winter snow on the top of an inactive volcano.

Hawaii has no ethnic majority. Native Hawaiian/part Hawaiians comprise the largest group at 24.3%. Next is Caucasians (20.4%), followed by non-Hawaiian mixed (20.1%), Japanese (17.5%), Filipino (11.8%), Chinese (3.8%) and other (2.1%).² The aging population in Hawaii is increasing and in 2030, 25% of the population is estimated to be 60 and older.³ Hawaii has 19 FQHCs and all islands have Health Professions Shortage Areas (HPSAs) or medically underserved areas (MUAs). In addition, many areas of Oahu have concentrated populations of Native Hawaiians and immigrants from the USAPIs, groups with significant health disparities compared with other groups. Because 70 percent of the population lives on the main island of Oahu, the 30 percent living on the neighboring islands have limited medical facilities, few specialists and often long drives to hospitals or expensive plane flights for care.

USAPI Jurisdictions: Geography and Demographics:⁴

The Republic of Palau is the westernmost of the Micronesian islands, situated 500 miles east of the Philippines, 4,500 miles west of Honolulu and 8,600 miles from Washington, DC. Palau is an archipelago of over 300 islands spread over 375 miles from north to south that emerged from its United Nations trust status to become an independent republic in 1994, making it one of the youngest nations in the world. Ethnic Palauans comprise about 70% of the population, Filipinos 15%, Chinese 5% and other 10%. English and Palauan are spoken, the per capita gross domestic product is \$8,100/year and there is one community college.

The Federated States of Micronesia (FSM), known during the colonial era as the Caroline Islands, are several groups of small islands stretched over 1,000,000 square miles of ocean in the western Pacific. The FSM is comprised of four states with Yap covered by the HPB AHEC and the other states covered by Guam AHEC. Yap is the westernmost FSM state, closest to Palau and has over 130 atolls (ring-like remnants of ancient volcanoes) across 500,000 square miles of ocean, with only 38 square miles of inhabitable land. Two thirds of the citizens live on the main island. The remainder of the population resides on 18 islands or atolls that are 100 to 500 miles to the east. The people of the outer islands are ethnically distinct and speak a dialect called Woleaian. Only three of the outer islands have airstrips and the primary means of transport is a field ship that circuits the Yap islands monthly. There is a small hospital/clinic and one community college.

The Commonwealth of the Northern Mariana Islands (CNMI) consists of a chain of 14 islands extending northward from the US Territory of Guam. The majority of the 53,883 residents inhabit three islands on 181 square miles of land. CNMI relies heavily on expatriate workers

²Hawaii State Dept of Health, Hawaii Health Surveillance Program; Hawaii State DBEDT State of Hawaii Data Book. Available from: www.healthtrends.org/DEMO_ethnic_dis.aspx. Accessed December 1, 2011.

³Workforce Development Council. Hawaii's Healthcare Workforce 20/20 Plan & Report. December 2011. Available from: http://hawaii.gov/labor/wdc/HealthcareReport_final_web.pdf. Accessed February 1, 2012.

⁴The World Factbook. US Central Intelligence Agency. Available from:
<https://www.cia.gov/library/publications/the-world-factbook/index.html>. Accessed Dec. 8, 2011.

(individuals from Southeast Asia and the Philippines) and therefore has a mixed population, 56% of Asian descent and 36% of Pacific Islander ancestry. In Guam and the CNMI basic services such as electricity and potable tap water are delivered consistently and safely, unlike the other USAPIs. The official languages are English, Chamorro and Carolinian; the per capita gross domestic product is the second lowest in the US, and the only community college has an associate nursing program and hosts the AHEC.

American Samoa (AS) is the only US presence in the southern hemisphere. The main island of Tutuila is 76 square miles and houses 90% of its population, the AS Lyndon B. Johnson Tropical Medical Center and the AS Community College that hosts the AHEC. The population of AS is 88% Samoan, 3% Tongan, 3% Asian, with other groups comprising the rest. The languages spoken are Samoan and English. The per capita gross domestic product is the lowest in the US and the only recent educational assessment in any of the USAPIs described 30% of 10th graders being proficient at math and 21% at writing, only 25% of 11th graders being proficient at science as of 2010.⁵ In 2009, Western and American Samoa experienced a tsunami that killed 140 people.

Table 2: Per Capita Gross Domestic Product and Literacy Rates in the USAPI⁴

Country	Per Capita GDP	Literacy Rate
US	\$48,100	99%
CNMI	\$12,500	97%
Palau	\$8,100	92%
American Samoa	\$8,000	97%
FSM	\$2,200	89%

Health Disparities in Hawaii: Populations that experience significant health disparities in Hawaii include the indigenous peoples (Native Hawaiians), rural residents and recent immigrants. Native Hawaiians have the highest all-cause mortality in the state, as well as highest rates of diabetes, cancer, heart disease, obesity and risky behaviors such as smoking of any ethnic group in Hawaii.⁶ Diabetes rates in Native Hawaiians are twice that of Whites and mortality 5.7 times higher.⁷ Native Hawaiian women have the highest incidence of and mortality rate from breast cancer in Hawaii and the third highest nationwide. The infant mortality rate for Native Hawaiians is 9.6/1000, compared with the US rate of 6.06.^{8,9} In addition, 79.5% of Native Hawaiians are overweight or obese compared with 50% of the general state population.¹⁰ A disproportionate number of Native Hawaiians live in rural areas where mortality from

⁵American Samoa Government DOE Territorial Report Card 2010-2011. Available at www.doe.as/pdf/accountability_new/2010-2011/ 1- 11 Territorial RC.pdf. Accessed 1/12/12

⁶Behavioral Risk Factor Surveillance System. State of Hawai`i Department of Health. Accessed Jan. 15, 2012. Available from: <http://hawaii.gov/health/statistics/brfss/brfss2010/demo10.html>

⁷The Office of Minority Health. Native Hawaiian and Other Pacific Islanders. US Department of Health and Human Service. Accessed Jan 15, 2012. Avail: <http://www.omhrc.gov/templates/browse.aspx?lvl=2&lvlID=71>

⁸The Office of Minority Health. Infant Mortality and Native Hawaiians/Pacific Islanders. US Department of Health and Human Service. Available from: <http://minorityhealth.hhs.gov/templates/content.aspx?lvl=3&lvlID=8&ID=8469>. Accessed 1/12/12.

⁹The World Factbook. US Central Intelligence Agency. Available from: <https://www.cia.gov/library/publications/the-world-factbook/fields/2091.html#us> Accessed 1/4/12.

¹⁰Overweight or Obese, State and Selected Ethnicities, Hawaii Health Data Warehouse. Hawaii Department of Health. Avail from: http://www.hhdw.org/cms/uploads/Ethnicity_Reports/Leading_Health_Indicators_Overweight_or_Obese%20062811.pdf. Accessed Jan. 11, 2012.

accidents, suicide and cancer are higher than in urban areas. Furthermore, rural residents of Hawaii have the highest prevalence of chronic illnesses, are more likely to be uninsured and unable to afford healthcare, have less access to a qualified healthcare personnel and are more likely to have problems with substance abuse and mental health than their urban counterparts.¹¹ Hawaii also has the 5th largest percentage of naturalized citizens in the US at 10.0% and the 6th highest percentage of foreign born residents at 18.2% of the population.¹² Immigrants have been shown to have higher rates of infections and chronic disease than US-born individuals, resulting in situations such as the State of Hawaii having 100 new cases a year of tuberculosis, with 70.1% being non US born individuals, compared with the national average of 59%.¹³ In addition, many of the immigrant families are homeless and without health insurance. These factors will continue to stress the healthcare system of already underserved communities.

Health Disparities in the USAPIs: The challenges faced in Hawaii pale in comparison to the situation in the USAPI where the populations have very high rates of malnutrition, diabetes, obesity and cancer, as well as infectious diseases rarely seen in the US proper.¹⁴ In fact, the World Health Organization reports that 47% of adults in American Samoa have diabetes.¹⁵ Parts of the region suffer tuberculosis incidence almost 12 times that of the US, as well as epidemics of dengue fever, measles, cholera and typhoid fever.¹⁶ In Palau, hepatitis B is the leading cause of infectious disease deaths, with a carrier rate of 15%. Life expectancy is as much as 15 years shorter in the region and both fertility and infant mortality almost twice that of the US.¹⁷

Table 3: Health indicators among the US-Associated Pacific Islands¹⁸

Country	Population	Life expectancy years	IMR/1000 live births	Fertility rate per woman	Health exp. Per Capita
US	314,659,000	79.0	7.00	2.05	\$7,410
CNMI	63,070	76.9	1.80	1.12	\$519
Am Samoa	65,900	73.7	11.30	4.00	\$500
ROP	20,520	63.8	12.20	1.70	\$1,000
FSM	102,620	69.0	13.50	3.90	\$333

¹¹Withy K Andaya JM, Mikami JS, Yamada S. Assessing health disparities in rural Hawaii using the Hoshin Facilitation Method. J of Rural Health. Winter 2007;23(1):84-8.

¹²Migration Policy Institute/MPI Data Hub. 2010 American Community Survey and Census Data on the Foreign Born by State. Avail. from: <http://www.migrationinformation.org/dataHub/acscensus.cfm>. Acc.12/5/11.

¹³2009 TB Statistics. Hawaii State Department of Health Tuberculosis Control Program. Avail from: <http://www.hawaii.gov/health/family-child-health/contagious-disease/tb/stats.html#Immigration>. Acc 1/16/12.

¹⁴Yamada S, Dodd A, Soe T, Chen TH, Bauman K. Diabetes Mellitus Prevalence in Out-Patient Marshallese Adults on Ebeye Island, Republic of the Marshall Islands. HMJ 2004 Feb;63:47-53.

¹⁵World Health Organization. Pacific islanders pay heavy price for abandoning traditional diet. Bulletin of the World Health Organization, Volume 88:2010. <http://www.who.int/bulletin/volumes/88/7/10-010710/en/>. Acc.11/7/11.

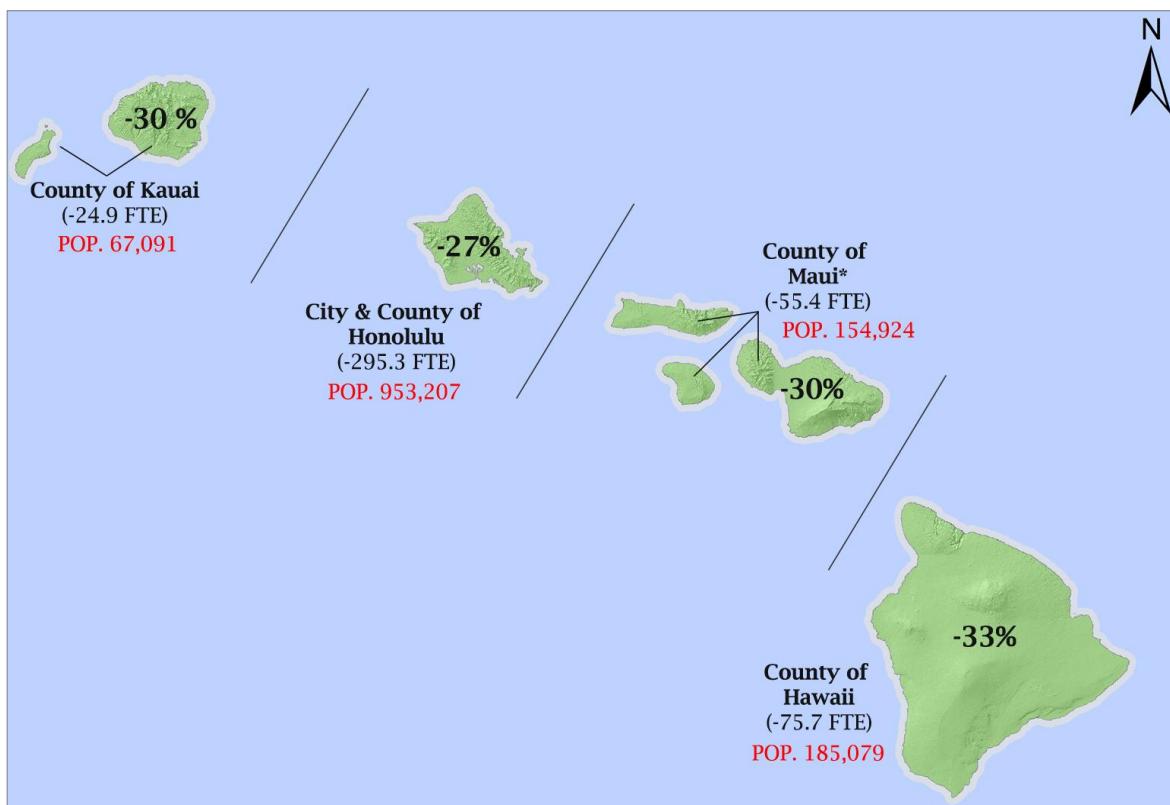
¹⁶World Health Organization. Global Health Atlas. Available at: <http://apps.who.int/globalatlas/> Acc. 1/15/12.

¹⁷Countries and Areas. World Health Organization. Regional Office for the Western Pacific. 2011 Statistical annex. Available from: <http://www.wpro.who.int/NR/rdonlyres/A60F077A-23D9-4787-BD03-A2CB1D6552A9/0/38StatisticalTables2011.pdf>. Accessed 1/14/12.

¹⁸Countries and Areas. World Health Organization. Regional Office for the Western Pacific. 2011 Statistical annex. Available from: <http://www.wpro.who.int/NR/rdonlyres/A60F077A-23D9-4787-BD03-A2CB1D6552A9/0/38StatisticalTables2011.pdf>. Accessed 1/14/12.

Hawaii Health Workforce Needs Assessment: The HRSA assessment of Hawaii demonstrates 81 HPSA sites (primary care, mental and dental combined), with HPSA scores as high as 24. In Hawaii, the worst HPSA scores are found on the islands of Maui, Kauai and Hawaii, areas served by HPB AHEC. In 2007, the HPB AHEC was contracted by the State to create a physician workforce database and ongoing assessment of Hawaii's physician population using full time equivalents of care provided by specialty and zip code (based on licensure data, public sources, surveys and community contacts). This was compared with national estimates of demand by age, ethnicity, health risk and gender of population created by Lewin Group, who also provided demand projections for HRSA. The Hawaii AHEC research demonstrated that as of 2010, Hawaii State was lacking over 600 physicians with the deficiency growing by 60 physicians a year. Half that shortage is in primary care, and when primary care Physician Assistant (PA) and Advanced Practice Registered Nurse (APRN) numbers are examined as well, Hawaii is over 450 primary care providers short.¹⁹ This research provides the baseline data for evaluation of the HPB AHEC program.

Figure 2: Hawaii Primary Care Workforce Shortage, 2011 (includes MD, DO, NP, PA)¹⁷



The Hawaii Center for Nursing estimates a current shortage of 1,697 nurses and that could increase to 2,453 by 2018.²⁰ In 2011, 1,392 monthly openings for RNs were advertised on average.²¹ Based on the age of the nursing workforce, 80% of the current nurses will retire by

¹⁹Withy K, Dall T, Sakamoto D. Hawaii Physician Workforce Assessment 2010, HMJ, in press.

²⁰Hawaii State Center for Nursing. Nursing Education Programs 2009-10. Available from: http://www.hinursing.org/pdf/Nursingeducationcapacity_09-10.pdf. Accessed Jan. 16, 2012.

²¹Workforce Development Council. Hawaii's Healthcare Workforce 20/20 Plan & Report. December 2011. Accessed February 1st, 2012. Available from: http://hawaii.gov/labor/wdc/HealthcareReport_final_web.pdf

2026.²² In Hawaii there are 690 registered nurses for every 100,000 people of the population compared to 860/100,000 elsewhere in the US.²³

USAPI Health Workforce Needs Assessment: The situation in the USAPI is, again, more dire with HRSA reporting Primary Care HPSA scores as high as 23 in the region.

Table 4: HPSA Scores in the Pacific²⁴ (higher score is greater shortage-max is 26)

Area/Jurisdiction	Primary Care Score	Mental Health Score	Dental Score
Palau	23	26	23
FSM/Yap	20	20	20
CNMI	18	18	18
American Samoa	20	20	20

The only comprehensive assessment of healthcare providers in the Pacific was performed in 2004. While demand was not assessed, the low numbers of providers, taken with the HPSA scores above, indicate severe need. Although the data is more than 2 years old, it is currently being reassessed by the Pacific Island Health Officer Association (PIHOA) and serves as a baseline for future assessments.

Table 5: Supply of medical workers in the Pacific Jurisdictions²⁵

Area	Physicians	Nurses	Dentists	Lab	Pharmacists /Techs	Radiologists /Techs	Other*
AS	47	175	15	28	12	13	62
CNMI	30	226	8	7	8	2	14
YAP	12	39	1	6	5	4	31
Palau	25	110	4	11	9	7	56

*Health Assts, Medex, CHWs, diet, mental health

The greatest retention problem is reported as low salary in a place where salaries have been frozen since 2003 at \$18,000 for doctors, \$3,000 for nurses. In addition, science and math education in elementary and secondary schools is weak, further crippling the health workforce pipeline. In FSM, for example, science and math education is so lacking that students typically do not qualify for science-based healthcare training in or outside of Micronesia.²⁶ Thus, challenges faced in the Pacific are many.

The HPB AHEC has been working with groups across the Pacific to develop the health workforce. Accomplishments to date include expanding the Pacific workforce by 136 providers, assisting with development of new CHCs, offering new training locally (so that students do not move away permanently), training science teachers and working with over 10,000 students to increase recruitment to health careers. In fact, the HPB AHEC has been successfully building the

²²Hawaii State Center for Nursing. Strategic Plan for the Nursing Workforce in Hawaii 2009-2014. Accessed Jan. 16, 2012. Available from: <http://www.hinursing.org/>

²³State Health Facts. Individual State Profiles. Accessed Dec. 13, 2011. Available from: <http://www.statehealthfacts.org/profileind.jsp?rgn=13&ind=439&cat=8>

²⁴Health Professional Shortage Areas. Bureau of Health Professions. Health Resource Services Administration. US. Department of Health and Human Services. Available from: <http://hpsafind.hrsa.gov/> Acc.12/29/11.

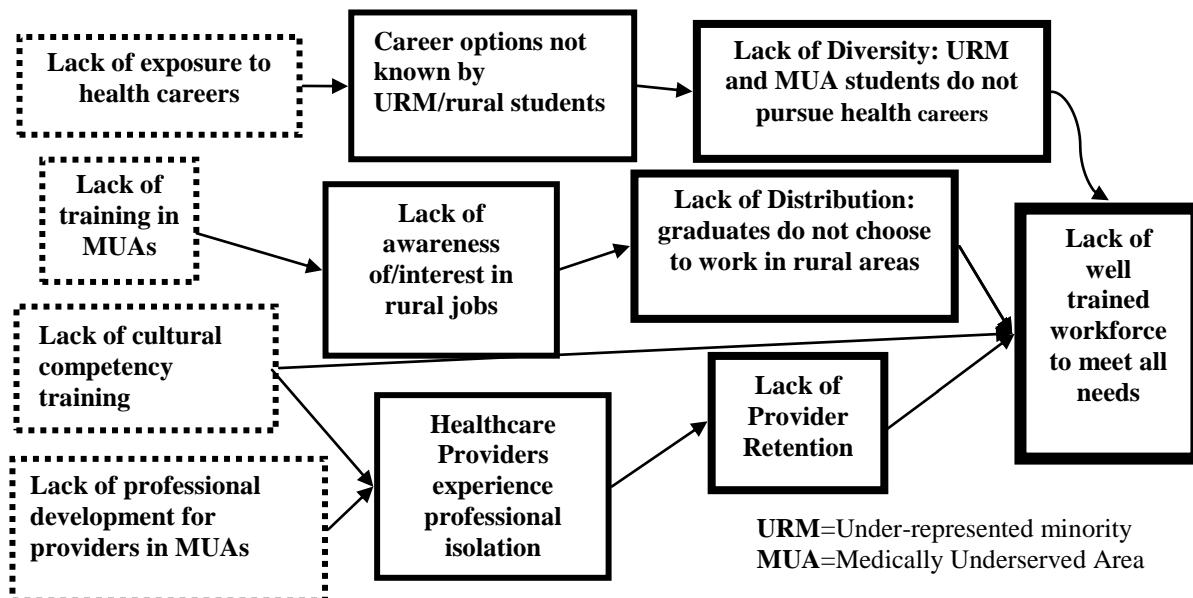
²⁵Health Worker Training n the United States Affiliated Pacific Islands: A Comprehensive Assessment of Resources and Priorities for a Continuing Professional Development Program. Clinical Training (PACT). HRSA Grant # 1 U12HP01064-01-00. Available from: <http://www.pactraining.org/> Acc 12/5/11.

²⁶Dever G, Mark D, Epp M. 2011 Progress Report on the PIHOA Nahlap Resolution & Action Plan for Human Resources for Health dated August 2006. Pacific Island Health Officers Association. March, 2011.

workforce in Hawaii and the Pacific and exceeded all past grant objectives as outlined in the Progress Report in Attachment 7. Between 7/1/2010 and 6/31/2011, 5,406 students participated in health careers recruitment programs, with those tested showing a 22% increase in knowledge of health careers, 723 students were trained in rural and underserved areas with 81% of those surveyed reporting they would consider rural practice and AHEC provided 15,624 participant hours of continuing education (CE). In addition, AHEC facilitated research opportunities for 42 community college students; trained 72 science teachers in health careers awareness; and introduced an accredited degree granting public health training program (PHTP) at College of Micronesia (COM) that is spreading across the Pacific community colleges.

Rationale, Logic Model and Anticipated Outcomes: Past and future HPB AHEC activities follow the root cause analysis developed by Dr. Withy through compilation of 32 regional interviews, board and center input and literature review.

Figure 3 Logic Model/Root Cause Analysis Map for HPB AHEC



The medical and education literature demonstrate that impacting one of the conditions above improves other factors as represented by the arrows.²⁷ The HPB AHEC activities follow this evidence based framework by increasing career awareness, rural and cultural competency training and continuing education. The HPB AHEC proposes four objectives that address diversity, distribution, quality, supply and retention of providers in rural areas by impacting the root causes on the far left of the figure. The HPB AHEC will provide health careers promotion and preparation for **3,000** students a year (at least 75% URM), community based student education for **600** students a year (interprofessional, culturally competent clinical and classroom training in rural/underserved areas), continuing education and support for **2,000** providers a year, collaboratively implement innovative recruitment methodologies and continue to perform extensive program evaluation including the physician and primary care workforce assessments for the State of Hawaii. Short term outcomes of these activities follow the logic model and

²⁷ Withy K, Huntington C, Wainwright M, Page M. The National AHEC Organization logic model project. The National AHEC Bulletin. Spring/summer 2006; XXII(2): 27-31, other citations available as well.

include documenting change in knowledge of health careers and interest in rural jobs. Long term outcomes of the HPB AHEC activities will result in 20% of AHEC student participants of more than 20 hours of AHEC contact pursuing health careers, a 5% increase in clinicians (primary care particularly) working in underserved and rural areas and a 5% improvement in retention of providers in AHEC underserved areas. Thus, the HPB AHEC will increase access to a culturally competent workforce by increasing the number of skilled and culturally competent health care workers who provide services in underserved areas.

C. METHODOLOGY and WORKPLAN

The Goal of the HPB AHEC is to improve the diversity, distribution, quality, supply and retention of the health professions workforce and thereby facilitate access to an abundant supply of knowledgeable and culturally competent providers. HPB AHEC addresses all seven AHEC statutory activities and is consistent with state, national and regional plans to assure a competent health workforce including the Hawaii Governor's 'A New Day in Hawaii Plan' and the PIHOA Human Resources for Health plan. Additionally, the HPB AHEC is in direct accordance with the HRSA Strategic Plan to improve health for all through building a skilled health workforce; the BHPr goal to expand access for underrepresented minorities to enter health professions; the BHPr Diversity Guiding Principles of developing a workforce at all levels that is reflective of the diversity of the nation and emphasizes life long learning and cultural fluency to promote innovative practices; Healthy People 2020 objectives for building Public Health Infrastructure through augmenting the public health workforce; and the mandate of the 2010 Affordable Care Act to increase the number of public health and primary health care workers in the areas of need.

Measurable Objectives

Objective 1: Improve the **diversity** of the health professions workforce by providing health career activities for and mentoring to over **3,000** students a year, 75% from underrepresented minority (URM) backgrounds and rural areas. Outcomes include increasing knowledge of and intention to pursue health careers by 20% and tracking students to demonstrate 20% of AHEC students of 20 hours or more pursue health careers.

Objective 2: Improve the **distribution and quality** of health care providers (HCPs) in the Pacific by training **600** clinical primary care and interprofessional students a year in underserved areas to learn skills and cultural humility. Specialties trained include Pharmacy Technician, Health Aid, RN, MD, DO, Public Health, Pharmacy, APRN, PA, Radiology Technician, EMT, Public Health, Nurse Aid, CHW, Community Health Aide and Laboratory Techs. Outcomes include: 20% of student participants planning to practice in rural/underserved areas and a 5% increase in primary care and workers in rural positions in at least half of the HPB AHEC areas.

Objective 3: Improve the **supply and retention** of the health workforce in the region by providing continuing education and professional support to over **2,000** HCPs and health education for **250** community members a year. HPB AHEC will also work closely with the Hawaii Legislature, Hawaii Department of Labor (WIA recipient), communities, business and industry to develop innovative strategies to attract and retain a diverse primary care workforce.

Objective 4: Conduct a thorough program **evaluation** to include measures of intention to pursue health careers, enrollment in health careers training, number of providers and retention at underserved sites. The Hawaii Physician Workforce Assessment mentioned in the needs section will provide a baseline and ongoing assessment of successful recruitment and retention of 22 primary care providers a year in Hawaii.

HPB AHEC WORK PLAN 2010-2012 Table 6: Work Plan for Measurable Objective 1

Methodology/Activities	Responsible Center/Staff	Output/ Target date	Output/ Outcome/Long Term Outcome (LT) (Measurement Used)
<u>Contact of less than 20 hours:</u> Recruiter visits, campus visits, health and career fairs, MASH camps, Teen Public Health and Health Careers Camp, health education activities	Program office recruiter visits Visitations, teen PH/HC camp AHEC 1 Big Island AHEC 2 Kauai AHEC 3 Palau AHEC 4 Maui AHEC 5 CNMI AHEC 8 Samoa AHEC 9 Waianae	1,200/yr 400/yr 50/yr 150/yr 100/yr 200/yr 50/yr 100/yr 500/yr	Output: over 2,600 students contacted per year, 75% disadvantaged students (Pacific AHEC Database). Outcome: students will know 75% of health professions questions asked and 50% will intend to pursue college (Universal Student Survey). Long term (LT) outcome: Establishment of cohort of 500 students interested in health careers, 20% of whom continue on to longer AHEC activities.
<u>Contact of over 20 hours:</u> Summer health career programs include skill development, job shadowing, foundation training and hospital internships.	AHEC 2 Kauai AHEC 3 Palau AHEC 4 Maui AHEC 5 CNMI AHEC 6 Yap AHEC 7 Waimanalo AHEC 8 Samoa	60/yr 15/yr 79/yr 25/yr 20/yr 120/yr 76/yr	Output: 395 students a year complete course, 75% are URM students (Participant survey). Outcome: 20% improvement in pre to post test assessment of health careers knowledge and 20% increase in intention to attend college (Universal Student survey). LT outcome: 20% of AHEC URM students pursue health science careers (National Student Clearinghouse Database)
Long term mentoring and near-peer mentoring.	AHEC Program office and the UH Professions Advising Center will mentor over 240 students annually.	240+/yr	Output: 240 students mentored (Pacific AHEC DB) Outcome: 50% of documented mentored students will pursue health careers (Pacific AHEC Database, National Student Clearinghouse). LT outcome: At least 25% of mentored AHEC students will graduate with health science degrees (National Student Clearinghouse)

Table 7: Work Plan for Measurable Objective 2

Measurable Objective 2: Improve the **distribution** and **quality** of HCPs in the Pacific by training **600** clinical primary care and interprofessional students a year in rural and underserved areas to learn skills and cultural humility. Specialties trained include Pharmacy Tech, Health Aid, Registered Nurse, MD, DO, Public Health, Pharmacy, APRN, PA, Radiology Technician, Emergency Medical Technician, Public Health, Nurse Aid and Laboratory Technician. Outcomes include: 20% of student participants planning to practice in rural/underserved areas and demonstrating a 5% increase in providers working in at least half of the HPB AHEC areas.

Methodology/Activities (Clinical and Classroom Training in USAPI Clinical /Interprofessional in Hawaii)	Responsible Center	Output/ year (milestone/ time)	Output/Outcome/ Long Term Outcome (LT)/ (Measurement Used)
Medical/nursing/PA/Social Work/Nursing student complete clinical rotations, and interprofessional training	Program office AHEC 1 Big Isle AHEC 2 Kauai AHEC 3 Palau AHEC 4 Maui AHEC 6 Yap AHEC 7 Waimanalo AHEC 8 Samoa AHEC 9 Waianae	36/yr 68/yr 10/yr 2/yr 6/yr 1/yr 17/yr 2/yr 20/yr	Output: Over 162 students complete training (Pacific AHEC Database) Outcome: 20% increase in participant interest in rural/MUA practice setting (Participant survey). Long term outcome: 5% increase in rural/MUA workforce size (Physician Workforce Database).
Classroom training: Interdisciplinary/interprofessional and cultural competency training. Caregiver training. Public Health and Nursing Training Practical nursing, Pharm tech. Radiology, Laboratory, Pharm Tech, Nursing, CHW, EMT training. Public Health, EMT, Rad Tech.	Program Office AHEC 2 Kauai AHEC 3 Palau AHEC 5 CNMI AHEC 6 Yap AHEC 8 Am Samoa	175/yr 15/yr 50/yr 36/yr 62/yr 100/yr	Output: Over 438 students complete training (Pacific AHEC Database) Outcome: 20% increase in participant interest in rural/MUA practice setting (Participant survey). Long term outcome: 5% increase in rural/MUA workforce size and in primary care workforce (Physician Workforce Database).

Table 8: Work Plan for Measurable Objective 3

Methodology /Activities	Responsible Center	Output/ Target Date Output/ year (milestone/time)	Output/Short Term Outcome (ST)/ Long Term Outcome (LT)/ (Measurement Used)
Coordinate CE seminars	Program Office AHEC 1 Big Island AHEC 3 Palau AHEC 5 CNMI AHEC 6 Yap AHEC 8 Am Samoa AHEC 9 Waianae	1525 hrs/yr 50 /yr 50 /yr 75 /yr 100 /yr 100/yr 100/yr	Output: 2,000 person-hours of CE provided (Pacific AHEC Database) LT Outcomes: 5% increase in job retention in at least half of AHEC rural/MUA areas (Physician Workforce Database).
<u>Community Health</u> Diabetes Education: Patch Healthy living	AHEC 1 Big Island AHEC 2 Kauai AHEC 4 Maui	50/yr 100/yr 100/yr	Output: 250 person-hours of community education (Pacific AHEC Database) LT Outcomes: 5% increase in job retention in targeted areas (Physician Workforce Database).
Work with communities, providers, groups, legislators, industry to assess workforce and develop innovative recruitment plans.	Program office and Centers will work with rural areas to perform community based participatory research to assess health workforce, develop interventions, evaluate impact and disseminate information	Three innovative recruitment strategies introduced	Output: web based advertising in collaboration with WIB grantees, community welcome wagons, Hawaii Club advertising, targeted emails and other innovative strategies; 5 presentations and 2 publications a year. LT Outcomes: Documentation of recruitment and retention of 22 <i>primary care providers</i> a year to Hawaii (Physician Workforce Database).

D. EVALUATION WORKPLAN and TECHNICAL SUPPORT CAPACITY

Table 9: Work Plan for Measurable Objective 3

Measurable Objective 4: Conduct a thorough program evaluation to include measures of intention to pursue health careers, enrollment in health careers training, new hires at underserved sites and retention of primary care providers at underserved sites.			
Methodology	Responsible Center	Time/Milestone	Evaluation Measures
Create evaluation tools as outlined below	Program Office and partner organizations	Most are already in use, will be perfected by 9/1/2012	See list of Evaluation Measurement tools below
Implement evaluation	Program Office will train all centers and oversee data collection	Implement all by 9/1/2012	Monthly reports compiled
File reports, publications, presentations	Program office and centers	Ongoing for all deadlines from HRSA and others	Complete CPMS and UPR tables and reports, numbers of publications and presentations

Evaluation Measurement tools include:

1. Pacific AHEC Database: Every month, each AHEC Center enters their activities into an online database that includes demographic and programmatic information for participants. Activities are entered by community, hours, age of participant, school and specialty of participant, underserved background, rural location and type/name of activity. The categories correspond directly to federal reporting requirements. Each center has their own login and password and can see their own results and the total activities. The database automatically compiles data for Program Office review and the Assistant Director reviews the data monthly to check for compliance with activity plans established by each AHEC center.

2. Site visits or center director meetings occur twice a year, supported also by phone and Skype visits to check on progress. All formative feedback is collected by center directors or staff and shared with Program Office at these meetings. Center directors collaborate with their peers in the quarterly all-center phone meetings and at National AHEC meetings.

3. Universal Student Survey: All health careers students of over one hour will be asked to complete a survey form to collect demographic information and true/false questions on health careers knowledge, intention to go to college and interest in future recruitment activities. Students participating in longer sessions will complete the form before and after and change will be assessed. Baseline assessment is an increase in knowledge of 22%.

4. Participant survey: All training participants are asked to complete a survey that collects information on demographics, rotation logistics and disadvantaged status at the completion of their experience. Questions added for clinical students are: Did this experience change your interest in practicing in a rural or underserved area? Did this experience impact your understanding of unique patient needs (i.e. cultural competency)? Did this rotation impact your desire to work in an interprofessional team with other HCPs? Did this rotation increase your interest in primary care? Did your housing impact your satisfaction with the rotation? Did distance learning assist your educational experience? Answer choices are on a 1-5 Likert scale (Significantly decreased; decreased; neutral; increased; significant increased). Formative comments are included as well.

6. Physician Workforce Database (ties directly to baseline needs of Primary Care shortage of > 450): The Hawaii AHEC has created the only physician database in Hawaii and it is

supported through an assessment on physician licensure fees. It contains data on age, gender, ethnicity, practice locations, specialties, hours worked, plans for retirement, training background and programs participated in for all practicing physicians, PAs and nurse practitioners in Hawaii. The database was completed in 2010, and is updated by licensure information every other year, as well as community contacts quarterly. This will serve as a baseline assessment of the workforce and directly measure changes in provider workforce and represents a close partnership with the Hawaii Department of Commerce and Consumer Affairs, Hawaii Department of Labor (WIA recipient) and the Medical Board.

7. National Student Clearinghouse is a national service that has enrollment and matriculation data for 93% of all colleges and graduate schools in the US. The Hawaii AHEC will annually tracks all program completers to assess their educational attainment, field of study and degrees to assess pursuit of health careers in the AHEC cohort. A pilot study of 23,814 students from five different AHECs across the country over the last 10 year demonstrated that 18% of AHEC career development participants graduated in health sciences (manuscript in development). Therefore, target goal is 20% of AHEC students successfully pursuing health careers.

Evaluation strategy: The HPB AHEC evaluation strategy employs three levels of evaluation to assess whether we are impacting the root causes identified through the logic model process described in the rationale section. First, traditional process evaluation or monitoring of program output to ensure that the activity is delivered as intended, will be generated from the activity protocols and demographic data required for federal reporting. Second, “merit and worth” evaluation will be measured by assessing the short term outcomes produced by the AHEC Program. This will allow the evaluation team to assess the impact of each activity and will indicate need for formative program change. Finally, long-term outcome evaluation will involve significant changes created by program activities and be used for summative evaluation and assessment of overall program impact. Using these three levels of evaluation, there will be defensible data upon which to make programmatic decisions, such as whether to continue investments or reallocate to other activities. The evaluation system will insure that the Uniform Progress Report and the Comprehensive Performance Management System Reports are accurate and on-time.

In addition, Dr. Withy has 10 years of evaluation experience and has established the only statewide physician workforce assessment by developing a database of actively practicing non-military physicians in the state. The database is the result of six years of work checking all available sources for physician information and administering the first physician licensure survey in Hawaii. Through a strong community based participatory research network, collaboration with the Department of Commerce and Consumer Affairs, the information is updated as changes are discovered at the community level and through a relicensure survey. In addition, AHEC collaborates with the Department of Labor and Industrial Relations (the local Workforce Investment Act (WIA) recipient) to disseminate information on training and job opportunities, posts job openings in rural and underserved areas at www.ahec.hawaii.edu and posts resumes of individuals seeking jobs. AHECs will alert job seeking health professionals and students to potential jobs and inform job sites of available workers.

Data Collection, Information Management and database for federal reporting: The four primary databases are maintained on a secure server at the University of Hawaii: Pacific AHEC Reporting, physician workforce, Universal Student Survey and National Student Clearinghouse student tracking databases. The Pacific AHEC Reporting database is a password protected web

portal with encryption software for which center and program office staff responsible for data collection have unique IDs and passwords so that they can enter data remotely. The data is compiled and converted within the database to the format required to complete the HRSA tables (CPMS and UPR), annual progress report summary and updates as requested by stakeholders and Program Officers. This database contains fields for all information included on the Participant Survey. After submission, data is meticulously cleaned and validated using statistical software. The data from the Pacific AHEC Reporting database is matched with annual reports from the National Student Clearinghouse, and the physician workforce database so that data from past years of program graduates can be examined for associations between AHEC experiences and practice location, specialty or other factors. This will add an additional demonstration of program impact. Thus, the HPB AHEC database provides valuable information used for assessment of program success and is the basis for dissemination of program activities via presentations and publications. All data collection has received IRB exemption/approval through the UH Committee on Human Subjects.

E. DETAILED DESCRIPTION OF PROGRAM OFFICE and CENTER ACTIVITIES: All AHEC centers have worked with community members, health care workers, administrators and their boards to identify local healthcare training needs and resources. Based on this information and available resources, each of the AHECs has developed a set of activities designed to meet the needs of their service area. The HPB AHEC Program Office works with a 10 member advisory board that meets quarterly and is composed of 1 legislator, educators in PA, nursing, NP, social work, medicine and public health, representatives of Pacific Islands Primary Care Association, PIHOA and the state HOSA Director. The Program Office provides the infrastructure for AHEC Centers to continue to identify needs as they arise, build on partnerships and assist with grant writing to help find the resources for program expansion, communicate with new partners as well as generate idea sharing between centers, maximize dissemination of program success and oversee evaluation.

Health careers promotion and preparation (addressing grant Objective 1): The HPB AHEC Program Office supports all AHEC centers and rural communities in efforts to recruit students to health careers. Through a National Institutes of Health Science Education Partnership Award (SEPA) grant, the Program Office is training middle school science teachers in use of an inquiry based science curriculum with integrated science and health career awareness activities. At least **40** teachers are being educated every year and are visited in their classrooms and provided with necessary science supplies. These teachers use video clips, field trips and class visits from older students in health careers to help students establish understanding of careers and enter the pipeline with a mentor. The AHEC program office supports the UH Professions Advising Center that matches high school and premed students with shadowing experiences, advertises available internships and provides near-peer mentoring to over **240** students a year interested in health careers. AHEC staff and student mentors also provide tours of and orientation to the Oahu health campuses to **200** students a year. The AHEC recruiter visits 25 disadvantaged schools a year to perform health workforce recruitment orientation to **1,200** students a year.

Furthermore, HPB AHEC collaborates with the Health Career Opportunities Program (institutionalized at the University of Hawaii) to support 'Teen Public Health and Health Careers Camps' reaching **200** middle and high school students annually. The three one-day Teen Public Health and Health Careers Camps include six workshops. The first two focus on suturing and casting, allowing participants to simulate a day in the clinic by practicing simple suture

techniques on synthetic suture arms and putting real casts on their fellow campers. Participants learn about public health issues in two workshops on nutrition and sexual health and discuss difficult matters in the spread of STIs and teen pregnancy. Finally they learn about opportunities in health careers from professionals in the field, public health experts and other health care administrators. Local medical students, University of Hawaii (UH) students and AHEC staff will provide mentoring and logistical support. HPB AHEC also supports career orientation activities at UH for college level students and provides staff for the annual Health Occupations Students of America (HOSA) state conference. The Program Office maintains student-friendly information on the AHEC website that includes a student resource center, pathways to careers, volunteer activities, research activities, updates on educational events and rural training opportunities (www.ahec.hawaii.edu). The HPB AHEC collaborates with staff and faculty from health science departments at UH Manoa (social work, medical technology, nutrition, nursing, dental hygiene, medicine and speech pathology/audiology) who together have created a consortium, *Ho'ola Malamalama*. This group meets regularly with the aim of promoting health careers on campus and hosts quarterly campus visits.

Community Based Student Education (addressing grant Objective 2): Health careers trainings have been developed for delivery in rural areas across the region, especially for students and residents in primary care serving fields. Rural experiences increase cultural humility and likelihood of practicing in a rural or underserved area. HPB AHEC Program Office provides the communication infrastructure and partial funding support for more than **37** health professions students traveling to distant sites. The Program Office coordinates closely with the Department of Family Medicine and Community Health's 18 person residency program, to assist in clinical placements for **10** residents a year and coordinates travel for up to **16** medical and nursing students performing primary care clinical experiences in all years of training as well as supports travel for up to **8** PA students annually. Primary care clinical experiences at USAPI AHEC Center sites are supported for **2** medical students who attend one month summer rotations annually, receiving AHEC's assistance in travel and locating preceptors. Furthermore, the HPB AHEC Program Office assists students from the continental US with finding preceptors for primary care training in Hawaii. HPB AHEC also provides oversight and educational activities for community based interprofessional students under the direction of Drs. Jill Omori and Kenton Kramer, who oversee the first/second and third year clinical experiences. All **132** medical students (first and second years combined) have cultural humility training as part of the Problem Based Learning (PBL) Curriculum. In addition, the first year medical students have three day-long interprofessional team oriented trainings with the first year nursing students (**43** unduplicated nursing a year plus 66 medical students).

Professional Development and Support (addressing grant Objective 3): The HPB AHEC Program Office assists with administering distance learning CE across the Pacific and supports CE conferences such as the Physician Workforce Assessment conferences, Hawaii State Rural Health Association conferences and the Pulama I Ke Ola Healthcare Conference in Hilo, Hawaii. Many CE activities are provided using VTC technology, and advertised and supported by the AHEC Program Office. The AHECs train providers on innovative curricula and important topics such as traumatic brain injury in returning veterans. Each center has access to teleconferencing and health training manikins provided by a HRSA Equipment grant, so the Program Office will coordinate with partners to provide CE for at least **1,525** person-hours a year. Most CEs are interprofessional and some utilize the HRSA provided manikins for simulation training across

the region. In addition, Dr. Withy is working closely with local groups to implement innovative recruitment techniques. She is working with the Hawaii State Rural Health Association and Hawaii Department of Labor to perform community based research on workforce needs and methods for recruitment. Ideas to be implemented include introduction of community welcome wagon committees, online advertising through 3RNet, and incorporate career fairs for health professions students that include National Health Service Corps awareness, creating a database of past students who wish to have information regarding employment opportunities in different areas and promoting Hawaii health careers through college level Hawaii club activities and professional educational conferences in collaboration with local health care groups, the State Office of Rural Health, the Department of Labor's Workforce Development Council and county workforce investment boards. Finally, as part of the Physician Workforce Assessment, Dr. Withy has helped develop legislative bills for malpractice reform, administrative simplification, state loan repayment, and has just been asked to be a core member of the Hawaii Health Transformation Council.

Workforce assessment and evaluation (addressing grant Objective 4): Evaluation is the cornerstone of effective program development and expansion. HPB AHEC collects qualitative and quantitative data on all program activities in order to provide feedback to partners and stakeholders and to make necessary changes to programs. The HPBAHEC coordinates regional evaluation by hosting the Pacific AHEC Data Reporting database, physician workforce database, National Student Clearinghouse and Universal Student Survey database, compiling the data, reporting outputs and outcomes and disseminating information. The Program Office makes sure that all BHP and CMS reports are submitted on time and coordinates evaluation training and assistance for all centers. Oversight is provided by a 10 member advisory board representing healthcare, education, recruitment and legislative leaders to review progress and provide program oversight and ideas for development quarterly and the nine AHEC Center boards of directors, of which more than 75% all live in the AHEC communities served. These boards negotiate the written contract and statement of work annually with the AHEC Program Office.

The Program Director and newly hired Assistant Director are well trained in needs assessment and analysis techniques and work closely with each center to develop qualitative and quantitative evaluation and assessment skills at the local level, including ability to utilize the Pacific Evaluation Database via the on-line entry system. In addition, the program office supports some region-wide activities to expand the AHEC impact. **For the program office and individual centers, planned outputs are bolded in the activity section.** Outcomes are outlined below.

Table 10: Measurement of Short and Long Term Outcomes

Short term outcomes	Long term outcomes
<i>For Health Careers promotion and preparation:</i> Assessment of health careers knowledge and interest in college are using the Universal Student Survey . At end of brief activity, students will know at least 75% of health careers and 50% intend to go to college. If activity is 20 hours or longer assessment is ad-ministered before and after	National Student Clearinghouse Database will be utilized annually to document educational attainment and progress of AHEC students. Of AHEC students participating for more than 20 hours of AHEC activities, 20% will pursue health careers. In addition, 50% of students with AHEC mentoring will pursue health careers and 25% will enter health professions workforce. Physician Workforce Database info on practice locations and information on past AHEC participants

activity to measure change with an anticipated 20% increase in career knowledge and intention to go to college.	will be analyzed to determine if AHEC students are more likely to be in primary care or rural practice than non-AHEC.
<i>For community based education:</i> Participant Survey administered before and after training experience: 25% of students will indicate increased interest in rural/MUA practice and in primary care after clinical/interprofessional experience	The Physician Workforce Database will be examined for number of primary care providers (increase by 5% or 22 primary care providers a year, and demonstrate 5% increase in workforce size in half of AHEC areas compared to baseline 2010 numbers). National Student Clearinghouse data will demonstrate 20% of AHEC students of more than 20 hours pursue health careers.
<i>For professional education and support:</i> Web page hits for job boards; decrease in job openings; decrease by 5% from nursing numbers cited in needs assessment.	Rates of providers leaving rural and underserved areas will be calculated using baseline data from the Physician Workforce Database that is described in the needs section and retention will improve by 5%.

Activities of regional AHECs

AHEC 1: Big Island AHEC

Big Island AHEC serves the Big Island of Hawaii (4,028 square miles, 185,079 people). In 2010, Hilo Medical Center took over administration of the AHEC contract from the non-profit Ke Anuenue AHEC, whose board voted to close for financial reasons as a result of overdue taxes resulting from the untimely death of a past AHEC Director. The new director of Big Island AHEC is Vice President of the Hilo Medical Center and coordinator of the Hawaii Family Medicine Residency Program, an interprofessional health care provider training program. The AHEC is managed by a 12 person board composed of local providers and patients that oversees the Hilo Medical Center. Big Island AHEC has extensive partnerships with academic programs, community groups and local healthcare organizations to expand community health knowledge and interest in health careers. Big Island AHEC's three primary activities will be interprofessional health careers training, recruitment activities and CE.

Activity 1: Health Careers Recruitment (Objective 1): Big Island AHEC has formed collaborations and partnerships with various rural communities for health career recruitment. The AHEC assists the Hilo HOSA club by providing volunteer opportunities for **50** students a year at Hilo Medical Center and supports one to two day hospital visitation programs (resembling M.A.S.H. camps for the students experience the different departments in an interactive setting).

Activity 2: Health Careers Training (Objective 2): Big Island AHEC supports student travel to Hawaii Island for at least **10** students and residents a year from health professions training programs including nursing, nurse practitioner, medicine, social work, PAs, medical technology, physical therapists and family medicine residents performing rotations in Hilo. Big Island AHEC recruits preceptors as needed and assists with acquiring lodging. In addition, the Big Island AHEC coordinates interprofessional training for **18** Pharmacy students, **12** family medicine residents, **28** nursing students and **two** public health students a year at the Hilo Family Medicine Residency Clinic where students are supervised to care for patients as a team. It is a new 4/4/4 residency that we are applying for accreditation during the current calendar year.

Activity 3: Continuing Education (Objective 3): Hilo Medical Center provides **50** hours of CE/CME a year for their staff that is transmitted by video to up to five other sites. This will continue to address topics of specific interest to rural providers in the area. In addition, the diabetes educator will provide some of the above training, as well as direct patient education in the presence of the interprofessional residents for approximately **50** hours a year to educate both patients and residents.

AHEC 2: Na Lei Wili (Intertwining Lei)

The Na Lei Wili AHEC opened in 1997 to serve Kauai, a medically underserved population and two CHCs on Oahu. The Na Lei Wili AHEC has a seven member managing board of consumers and health care providers from the area. Fran Becker, the Na Lei Wili AHEC Director, is a community services worker and pastor with seven years of AHEC experience. In 2002, Na Lei Wili AHEC developed a successful health careers program, "Grow Our Own Healers" (GOOH), an innovative, proactive approach to addressing the health workforce shortage through long term health career exploration, tiered (also called near-peer) mentoring, community public health education and community service. The program includes a Summer Health Adventure (SHA) camp for **15** students, the "Kauai Junior Medical Reserve Corps" for up to **15** high school students annually to respond to a variety of biomedical and natural disasters, a Health Occupation for Teens (HOT) Club program for **20** high school students and a program aimed at addressing the shortage of physical health education and wellness in the public schools is the 'Patch Adventure.' Students in grades K-5 throughout Kauai will have the opportunity to get fit while being made aware of the careers in chiropractic, physical therapy and rehabilitation. In addition, Na Lei Wili AHEC will continue to support training at rural and underserved sites for nursing and medical students and will continue to provide the Youth/Elderly Health Care Connection, to help increase the state's capacity to care for the aging population. Na Lei Wili AHEC's primary focus under Model AHEC funding will be health careers recruitment and training as outlined below.

Activity 1: Health Careers Recruitment (Objective 1): The SHA will continue for **15** middle and high school students from various schools on Kauai every year. Topics covered include health and wellness careers orientation, cultural activities (growing taro, traditional healing practices), and public health training: CPR/First Aid, water safety, nutrition, exercise, personal hygiene, team-building and leadership skills. The program is supported with collaboration from various community partners and student mentors in Na Lei Wili AHEC's HOT Club program. SHA students are recruited through the schools, local media and by word of mouth. There are traditionally more applicants than can be accepted and the decision is made by the NLW staff. A majority of the students indicate a continued interest in health and wellness careers as a result of the program.

The HOT Club is a year-round program for up to **20** high school students from public, private, charter and home schools to learn about and grow into health careers. The HOT Club is a local chapter of the Hawaii State and National HOSA organizations. HOT Club activities focus on developing students' medical knowledge and skills competencies, such as medical terminology, medical spelling, medical math and taking vital signs and they compete in these topics at the State and Federal HOSA conferences. These students increase their awareness of health careers with speaker presentations, health fairs and site visits to various community hospitals, clinics, dental and professional offices, as well as health careers education facilities. In addition, **10** high

school juniors and seniors gain exposure and develop technical skills through internship programs geared to shadowing community health professionals. The HOT Club program provides opportunities for volunteerism as peer mentors to the SHA students and student educators for other health-related community service projects, including developing displays for attending health and career fairs reaching over **150** students.

Additionally, Nā Lei Wili AHEC Kauai partners with Kauai District Health Office and the Kauai Civil Defense Agency to initiate the Jr. Medical Reserve Corps program for **15** students in grades 9-12 on Kauai. The program includes a full day of *Emergency Preparedness Training* featuring community response procedures training for biomedical and natural disasters, as well as CPR certification and three other quarterly meetings to upgrade skills.

As budgets are slashed in the public schools, physical education is on the top of the list for elimination, leaving students without the proper movement and fitness for growing children. A new program, the Patch Adventure, is a collaborative partnership with Dillberg Integrated Healthcare in Koloa, Kauai and the Pain Free Kauai center in Lihue, Kauai. The focus is on introducing public health and wellness through physical activity designed by Egoscue for core strengthening, agility, flexibility, balance and cardio fitness. With fitness made fun, students develop a keen interest in careers such as chiropractic, physical therapy and rehabilitation. The Patch Adventure program is an outdoor experience targeting approximately **20** K-5th graders from different geographic areas of the island during the summer and at six schools a month during the year (**80** students a year). The program supports the facilitation of the portable Patch system for indoor use at designated elementary schools around the island throughout the year.

Na Lei Wili AHEC's variety of programs target K-12 students encouraging an interest in health and wellness careers and developing mentorship skills to younger students as they continue on the journey through graduation from health professions school. As students move through the programs they progress from being program participants to being junior leaders for younger students, then develop into college mentors for high school students, then into higher level program mentors.

Activity 2: Community Based Training (Objective 2): The Na Lei Wili AHEC works to train students at CHCs in their region, including the two Kauai CHCs and Kokua Kalihi Valley Comprehensive Family Services (KKV) on Oahu. Preceptors will be recruited and travel supported as necessary for **ten** primary care clinical medical students/resident or nursing students a year to perform rotations at Na Lei Wili sites and other non-AHEC rural sites through collaborative community support. KKV will be contracted to continue the development of the Elderly/Youth Health Care Connection program that offers caregiver training for up to **15** high school and non-traditional (older) students who have ill elderly family members at home and are interested in becoming caregivers. KKV faculty and staff teach students the basics of aging and how to be a caregiver to the elderly. Skills gained include CPR and First Aid, taking vital signs and monitoring blood pressure, handling prescription medications, keeping simple medical records and other topics covered by the CHC outreach worker.

AHEC 3: Palau AHEC

The Palau AHEC, the first AHEC in the USAPI, has played both a regional and local role in developing the health careers pipeline and engaging in bridging programs. It is in year 11 of existence and has an advisory board of 12 members, nine from the community and three from

academic institutions. Dr. Greg Dever, a JABSOM trained pediatrician, is the Palau AHEC Director. During Basic/Core AHEC years, Palau concentrated on primary care and public health training and took on a regional role in Micronesia across three time zones before the establishment of the other AHECs in Yap, CNMI, College of Micronesia and College of the Marshall Islands. Eleven Medical Officers received primary care residency training. The residency program for physicians accomplished its purpose and then transitioned into undergraduate and postgraduate Public Health training. Since 2006, 300 Micronesian physicians, nurses, environmental health workers, health administrators and nutrition workers from the region graduated the Palau AHEC-facilitated Public Health Training Program (PHTP). Based upon the success of this regional PHTP, in 2007 the Palau AHEC funded the development of an Associate of Science Degree in Public Health (ASDPH) program at the College of Micronesia in Pohnpei, FSM that received accreditation by the Western Association of Schools and Colleges (WASC) and began formal public health training classes in August 2009. To accomplish this, the Palau AHEC worked with the Fiji School of Medicine and contracted one of its former Public Health faculty members, Dr. Guiseppe Cuboni, also a retired WHO Officer, to jump start the ASDPH program and facilitate its accreditation. This ASDPH program is a first step opportunity for local public health workers in Micronesia to receive locally-taught, formal, in-country and entry level public health training.

Dr. Cuboni then began working with the Palau Ministry of Health (MOH) and Palau Community College (PCC) to replicate the model but with a problem based learning approach which matches Palau's new problem-oriented National Strategic Public Health Plan. In February 2012 PCC will submit this curriculum for accreditation and plans to begin formal classes in August 2012. The program includes a track in Emergency Health Management I (EHM I) designed for the First Responder Community that is being introduced in American Samoa in April 2012.

The Palau AHEC is also addressing the local nursing shortage through 1) the expansion of PCC's nursing training infrastructure by the promotion of health careers interest and readiness at Palau High School (PHS) and PCC and 2) working with the Fiji National University (FNU) to provide nursing faculty support to PCC. The Palau AHEC will build on past efforts as follows:

Activity 1: Developing the Nursing Pipeline in Palau (Objective 1): The Palau Ministry of Education (MOE) with the assistance of the MOH has developed a Health Academy at PHS, which will identify and mainstream interested students into nursing and other health careers. Fifteen PHS students are now enrolled in the Health Academy. Palau AHEC will partner with the MOE and MOH to support these students and provide health careers information, especially regarding the nursing and public health professions, to an additional 100 students at the four high schools in Palau. Additionally, the Palau AHEC will work with PCC and its Nursing Program will assist in developing the PCC's Health Careers Initiative to encourage other PCC students to nursing or other health careers programs in the region. One of the main impediments to entry to the PCC Nursing program (and all health careers programs) is high school and community college graduates' weakness in the basic sciences. To address this challenge the Palau AHEC, along with the PIHOA, is working towards developing a regional approach to initiating a "Foundation Sciences Boot Camp" process which will be an intensive bridging program to ready high school and community college graduates so that they can qualify for and survive in science-based health careers programs in and outside the region and improve workforce diversity.

Activity 2: Undergraduate Public Health and Nursing Training (Objective 2)

The Palau AHEC will support the implementation of PCC's ASDPH program which is directed at training both a new and the current public health workforce and will become the platform to provide instruction in: Basic Public Health, Applied Epidemiology, Health Promotion and Disease Prevention, Environmental Health and Nutrition. Additionally, the ASDPH program will become the accredited instructional platform to provide tracks in Public Health Nursing, Emergency Health Management, Child Obesity and Community Nutrition, Behavioral Health, and Oral Public Health. The program will train approximately **50** public health workers and nurses in Palau and will be part of the proposed USAPI Public Health Training Network across five time zones from Palau to AS. In addition, Palau AHEC is partnering with to support the salary of one experienced nursing faculty to join and work with Palau's nursing faculty to increase training capacity. Finally, clinical rotations will be established for up to **two** nursing or medical students/residents a year from elsewhere to work in Palau.

Activity 3: Continuing Education (Objective 3): The Palau AHEC will continue to work with the Palau MOH to provide CE for the local health workforce. The COH is an organizing principle within the MOH which conducts CE and works with external institutions of higher learning to provide face-to-face or distance CE. In FY12 AHEC's Dr. Cuboni developed the training catalog for the MOH and will teach a broad range of Public Health as well as facilitate with JABSOM to host activities for at least **50** providers a year in the region.

AHEC 4: Huli Au Ola (The Turning Point of Life)

Maui County AHEC is in year 10 of existence with a five member board composed of three local health workers and two community members that serves the three-island County of Maui: Maui, Molokai and Lanai (all HPSAs or MUAs). The AHEC Center is located on the rural, largely Native Hawaiian island of Molokai. Rosie Davis, a certified leadership trainer, is the center director. Huli Au Ola AHEC delivers a one week summer health careers program for 25 students from Maui County and an in-school bi-weekly health education program for K-12 students. Molokai offers clinical training to students when requested and is becoming an increasingly popular rotation site. Huli Au Ola also offers in-school health education activities, the Junior Leaders Institute and an annual Health Education Obstacle Course and mini-Medical Academy of Science and Health (MASH) camp for children and adults.

Activity 1: Health Careers Recruitment (Objective 1): Huli Au Ola AHEC will coordinate an annual, one week summer health careers experience called the Junior Leaders Institute for **25** high school students. Topics covered include: Options in health careers, Native healing practices, fish pond ecology, life guard training, Nature Conservancy preserve visit, traditional music, dance and other cultural experiences, team building and study skills. Students will receive one college credit for participation. On the final day they present a project of their choosing to their parents and community. These Junior Leaders will then return to their communities to lead discussions of health careers at their respective high schools to members of the HOSA. In addition to local HOSA activities, the Junior Leaders will meet monthly with the AHEC staff to learn how to develop a resume and cover letter, apply to schools, improve test taking skills, locate scholarships and discuss community service projects performed with community '*kupuna*' (elders). Huli Au Ola has opened the doors to a new "AHEC Student Store" located adjacent to the Molokai Community Health Center. Staffed by Jr. Leaders, AHEC students and volunteers,

these youth are excited about working and applying new life skills while fundraising for Huli Au Ola and sharing student service projects with community members who visit from the clinic.

A new day long program featuring an Obstacle Course and a mini-MASH camp will become an annual event on Molokai; this year all 179 students from Molokai Intermediate School attended the program and it is anticipated to attract **200** in the coming years. Molokai CHC staff, EMT Services, Molokai Fireman, Molokai General Hospital staff and the Na Pu’uwai Native Hawaiian Health Care System staff provide role playing of back injuries, neck injuries and drowning victims. An obstacle course is set up for participants to learn about health careers. This event will also be offered by Huli Au Ola to partners on the islands of Maui and Lanai. In addition, AHEC staff meet biweekly with **20** Molokai High School health career pathways program students to discuss topics such as: CPR training, health careers options and education, how to take patient vitals, how to apply for scholarships, First aid, nutrition, radiology, public nursing and dentistry. In addition, Huli Au Ola AHEC staff meets with **34** K-6 students every Thursday for a three-hour nutrition program teaching students healthy eating, physical education and career options.

Activity 2: Clinical Training (Objective 2): Huli Au Ola AHEC will provide a regular primary care clinical rotation for **six to eight** 3rd and 4th year medical and advanced practice nursing students. The Molokai CHC staff has requested these rotation students and providers and has offered lodging, transportation and logistical support. Public health nursing and medical students are also drawn to Molokai rotations due to the proximity of ‘Kalaupapa’, which is Hawaii’s historic leper colony. To this day, former Hansen disease patients live, work and receive treatment from JABSOM physicians and medical students. The clinical and interprofessional students in turn assist with ongoing health careers activities and mentoring for the younger students involved in Huli Au Ola programs. This is an excellent cultural humility experience.

Activity 3: Community Health Education (Objective 3): Huli Au Ola AHEC will continue to provide weekly health education activities for students from local public schools. This includes health careers information presentations to **250** students at Kaunakakai School elementary on a weekly basis, along with physical activity and nutrition. Although the Health Education Obstacle Course/mini-MASH camp was originally conceived for middle school students, the event has proved to be equally popular with parents and family members. Over **100** adults enjoyed engaging, healthy activities; consequently the mini-MASH theme has become Molokai’s newest approach to providing health education to adults.

AHEC 5: Commonwealth of Northern Mariana Islands (CNMI)

The CNMI AHEC is in year eight of existence and has a nine member advisory committee of community members, health care workers and educators, all from the area. The Center is sponsored by and housed at the Northern Marianas College (NMC) that has a 10 member board from the community, with Orrin Pharmin as the AHEC Center Director. Achievements to date include increasing the indigenous nursing workforce by training six resident nurses who successfully passed the National Council Licensure Examination (NCLEX) certification exam, coordinating two annual health career fairs for the island of Saipan and continuing the two-week Summer Health Careers Program for 25 students from 10th to 12th grade who expressed interest in a health career. AHEC grant activities will focus on health career recruitment, RN and Nursing Assistant training, development of a career ladder high school curriculum for Nursing Assistants and CE for nurses and other clinical staff. The goal of the CNMI AHEC is to recruit,

train and retain resident local nurses and HCPs in order to improve the quality of life for all CNMI inhabitants. Since the recent US implementation of federalization over the CNMI's Department of Immigration in November 28, 2009, it is crucial that the CNMI AHEC increase its efforts in supplying local resident nurses to reduce the Commonwealth's dependence and reliance on foreign nurses by training a workforce representative of the population.

Activity 1: Health Careers Recruitment (Objective 1): The CNMI AHEC will continue to conduct an annual one-day Health Career Fair for **50** high school and college students in the CNMI. The goal of the event is to promote health careers and build awareness of the different medical professions existing in the Commonwealth. Professionals from various health fields (i.e. registered nurse, certified rehabilitation counselor, certified pharmacy technician, nutritionist, emergency medical technician, registered physical therapist, registered dental hygienist, chiropractor, etc.) will educate students about their respective careers and share their personal experiences of achieving their career and education goals.

Additionally, the CNMI AHEC will coordinate with the Public School System and the Workforce Investment Agency to hold an annual two-week summer health careers program for **25** students. Students will learn about different health career options, nutrition, test taking, study skills and confidence building. They will also be involved in activities that will help enhance and improve their math and science skills, develop a resume, apply for college and find financial aid.

Activity 2: Nursing Training (Objective 2): In order to meet the shortage of local registered nurses, the AHEC Program, through the NMC, will continue to offer NCLEX preparatory courses to improve the test-taking skills of graduating nurses from NMC, as well as nurses in the workforce who have not yet been licensed. The review course consists of 40 hours of classroom training and is offered to the islands of Rota and Tinian via distance learning from Saipan. The NCLEX preparatory class is scheduled on an annual basis, with an average of **14** students enrolling in each class. Six students who participated in the review course recently passed NCLEX exam and are working in CNMI.

Activity 3: Nursing Assistantship Program (Objective 2): The CNMI AHEC will be providing technical assistance to the Public School System's Career and Technical Education Department to offer a nursing assistant program at the Saipan Southern High School for **22** students. The Nursing Assistantship program is a secondary career technical education program for students interested in pursuing the career ladder into Nursing and culminates in taking the certification exam. The two-year program provides interested students with opportunities to learn the concepts and skills of a Nurse Assistant. It will introduce students to the following concepts: the types, purposes and organizations of health care facilities; the roles and responsibilities of each member of the health care team; the rules for communicating effectively; the structures and functions of each body system; the legal aspects of patient care; the basic medical terminology; and the knowledge and skills required by the Nursing Assistant to perform basic nursing care in the clinical setting as well as other health related areas. Students will also have hands-on experiences assisting registered nurses at a health care facility during their clinical rotation. The ultimate goal of the program is to encourage interested students to pursue a career in Nursing so that to increase the number of local resident nurses and reduce the Commonwealth's dependence and reliance on foreign nurses.

Activity 4: Continuing Education (Objective 3): CNMI AHEC will offer CE for graduate nurses and other clinical staff by working with local and federal agencies to tap into available

resources needed to conduct workshops and trainings. Topics that were identified as needed by the community include: obesity, diabetes, depression, nutrition, disaster management, women's health, management and budget in the healthcare industry and others. The CNMI AHEC will facilitate CE/CME for **75-100** nurses and/or medical professionals in collaboration with the hospital and local and visiting educators.

AHEC 6: Federated States of Micronesia (FSM) Yap AHEC

The FSM-Yap AHEC is in year eight of existence and has a 12 member board of local healthcare workers and community members. In 2008, Yap AHEC was incorporated as a non-profit under the direction of a governing board and is now a US recognized 501(c)3. Yap AHEC has and will continue to work towards its two main goals: (1) to improve the diversity and quality of professional HCPs in Yap and (2) to improve the health of the medically underserved population through education of the HCPs. To date, the major accomplishments of Yap AHEC include health assistant training for 30, CHW training for 15, nursing training for 17, online technician training for radiology (four students), pharmacy (nine students) and laboratory (seven students), coordination of all CME for Yap's health professionals and health work force recruitment in the form of an yearly summer program for high school and college students.

Activity 1: Health Careers Recruitment (Objective 1): The Yap AHEC conducts an annual month long summer program for **20** students a year to help promote interest in the health professions. The "Future Health Providers Summer Program" enrolls students in the prerequisite class for the health assistant training in COM- "Introduction to Health Sciences." In addition to the class, the students also rotate through the hospital and CHC on Preceptorships where they gain exposure to various careers in the health services. Finally the students break into groups where they complete a community health project they have designed.

Activity 2: Degree programs for Community Health Assistants and Community Health Workers (Objective 2): The Yap AHEC has implemented the COM curriculum for community health assistants (CHAs) and community health workers (CHWs) in Yap. This program is designed for the individuals that care for Yap's isolated neighboring islands. Since the beginning of the program, 30 health assistants and 15 CHWs have enrolled. Both new and current health assistants will be enrolled in the program for a total of **25** students. Yap AHEC expects to continue to offer the curriculum for new and current Community Health Assistants. A regular schedule of classes has been established to provide the training. Courses totaling five to ten credit hours are given during the three semesters every year. Students are granted a certificate in community health sciences upon completion of 46 credit hours. The first five health worker graduates (from 2009) are now serving the community of Yap by working at the CHC. In May 2011, Yap AHEC graduated 10 health assistants who are employed by Department of Health Services and currently serving their communities in the outer islands.

Activity 3: Degree Program for Practical Nurses (Objective 2): The Yap Department of Health Services has an ongoing need for more nurses in the CHCs, Public Health Department and clinical wards. Yap AHEC had responded by coordinating a career ladder nursing program with the Yap Department of Health Services. The Cohort currently has 15 nurses employed by the Department of Health who are enrolled in classes towards an Associate of Science Degree that requires approximately 80 credits hours for a certificate at the associate level. Practical nurses who are actively employed in the hospital are provided time to participate in classes on hospital grounds and perform clinical rotations at the hospital and CHCs. As of fall 2011, **four**

practical nurses have completed 70 credit hours, **three** nurses have completed 50 credit hours, **four** nurses have completed 42 credit hours, and **four** nurses have completed 18 credit hours. In addition, **eight** new nursing students are preparing to enroll into the nursing program by summer 2012. The nursing and health assistant courses will be made available to other nursing and health service staff, both for CE purposes and for credits toward higher degrees. The Department of Health services will continue to provide financial support and time for these health workers to participate in this training. AHEC will provide tutoring for all students. Enrollment in the programs will also be encouraged for qualified students in Yap who are not employed by the health service. Students are required to apply for financial aid to cover related expenses in tuition and textbooks not covered by Yap AHEC.

Activity 4: Online Pharmacy, Radiology and Laboratory Technician Training (Objective 2):

Yap AHEC has worked to identify online training programs for Yap health professionals who wish to upgrade their knowledge base. Courses in Radiology and Pharmacology are being provided through University of Alaska. An online Laboratory Technician training has been offered via the Pacific Open Learning Health Network associated with the WHO. Online trainings will be continued for **14** students and other opportunities will be explored as it is an efficient way to bring in expert training to the isolated community of Yap.

Activity 5: Continuing education courses (Objective 3): The Yap AHEC is responsible for organizing all CE for physicians, graduate nurses and other clinical staff including the weekly CME at Yap Hospital and the Wa'ab CHC. Local funds have been utilized to develop programs and workshops that will supplement the AHEC degree programs. Programs topics identified as needed by the community include: Women's health, asthma, diabetes, heart disease, H1N1, occupational injuries, bio-emergency preparedness, cultural competency and others. Yap AHEC has designed and maintains a database to track CME hours for all providers in Yap. This enables Yap AHEC to easily print out CME reports and track CME hours. Over the next years, Yap AHEC plans to address the delivery of CME to the 22 Neighboring Island health providers. Yap AHEC is considering a store-and-forward model of distance delivery. Yap AHEC will coordinate CE/CME for at least **100** providers a year through this system.

Activity 4: Yap State Durand Medical Library (Objective 2 and 3): The Yap AHEC maintains the lone medical library in Yap State. The library was established by former AHEC Director Thane Hancock, MD through a grant from the Robert Wood Johnson Foundation and replaced a library destroyed in a 2004 typhoon. This new facility provides medical and ancillary staff with educational resources and CE via an office computer for the library manager and four public access computers with Internet access. Internet access allows hospital staff to access online resources including a subscription to almost 70 online textbooks in STAT!Ref, hundreds of full-text journals and 'PubMed'. The library is located at Yap Memorial Hospital and has become a center for training (both on-line and face-to-face classes) and an essential reference for patient care. Yap AHEC has made a commitment to try to keep the library as up-to-date as possible for health students and professionals in Yap.

AHEC 7: Waimanalo

The Waimanalo AHEC is a CHC that serves an underserved Native Hawaiian population of approximately 10,000. The Waimānalo Health Center is supported by the Community Health Center Board composed of 12 local community members who oversee AHEC program. Veronica Tomooka is the Waimānalo AHEC Director. The Waimānalo AHEC activities include primary

care clinical training for three medical students, two family medicine residents and two advanced practice nursing students a year as well as an interprofessional training program and support for a culturally based in-school mentoring and health promotion program at Waimānalo Intermediate School (called Kū I Ka Māna) that provides excellent cultural humility training for students.

Activity 1: Health information and health careers recruitment (Objectives 1 & 3): The Waimānalo AHEC will work with the HPB AHEC Program Office and the Kū I Ka Māna (KIKM) daily after school mentoring program to provide twice monthly health careers orientation sessions for intermediate school students in Waimānalo. In addition, the KIKM students will be working with the interprofessional students on a weekly basis, thereby increasing exposure to students in the health careers pipeline. AHEC will seek mentors (traditional, near-peer and electronic mentors) for the **120** students in the KIKM program to encourage college pursuit. In addition, the KIKM students will benefit from the four hours a month of health education sessions provided by visiting health professions students and coordinated by KIKM.

Activity 2: Interprofessional Training (Objective 2): The Waimānalo AHEC conducts interprofessional training for **seven** health professional students (including but not limited to medical, nursing, and social worker) a year. Students participate in seminars addressing health issues for underserved populations and cultural competency and plan, develop and administer health and health career awareness sessions with middle school students. Research on this program at other sites has demonstrated a significant impact on physician graduates comfort with working in interprofessional teams²⁸ and just under 10% of program graduates are working in the sites where they did their training.

Activity 3: Clinical rotations (Objective 2): Waimānalo AHEC will expand opportunities for clinical training, to include advanced practice nursing clinical for **four** students (4-8 weeks long), medical student clinical rotations for **four** students (7 weeks long) and month-long residency training for **two** family medicine residents. The health professions training programs have expressed significant interest in increasing training at WHC and the Waimānalo AHEC Center Director will coordinate training times. The WHC staff includes adequate numbers of primary care physicians and nurse practitioners to oversee medical training.

AHEC 8: American Samoa AHEC

The American Samoa AHEC (AS AHEC) was established in 2006 and is located in the capital city of Pago Pago at the ASCC Health and Human Services Department. There is a ten member Board of Directors representing educators, health professionals, consumers and a government representative from the area. The AHEC Director is Jack Anesi, who has been involved with recruitment activities for three years at ASCC, with oversight and assistance from Dr. Irene Helsham, Dean of Academic Affairs and the faculty from Nursing and the Health and Human Services departments providing technical assistance. The AS AHEC focuses on expanding health career recruitment and pre- and in-service training for students pursuing health professions and local health care workers.

Activity 1: Health careers recruitment (Objective 1): The AHEC will coordinate a Health Professions Career Day for **100** students at the high school level along with community partners

²⁸ Yamada S, Withy KM, Ramirez VE, Lindberg M. The effect of community-based, interdisciplinary training on the subsequent careers of physicians. Journal of Interprofessional Care. March 2005; 19(2): 171-172.

such as the GEAR-UP Program, Upward Bound, ASCC's Nursing and Health and Human Services Departments. Career days will be held at the 5 high schools and 7 primary schools on the main island of Tutuila and reach 40 students on the remote islands of Manu'a. Up to **28** high school students will be accepted to a newly developed two-week summer camp program that is modeled after the Kauai and Maui County AHEC programs and includes activities and discussions with nurses, physicians, medical technologists, social workers and other health professionals from the community. AS AHEC will also hold a one-week Summer Staying Healthy and Health Professions Camp for **28** eighth graders with a scaled down version of the activities for high school students. An after school program for **20** students will be developed to encourage matriculation into the nursing and public health courses at ASCC and those that articulate into Kapiolani Community College Allied Health Programs (in Hawaii). Activities include tours of the Lyndon B. Johnson Hospital, local dispensaries and the community college and will receive computer based training on the college application process. Cultural activities will be included and students will observe actual class sessions with nursing and public health students. The participants will be briefed about the pre-requisite courses needed prior to admission to the programs and graduates will provide direction and guidance for these student activities.

Activity 2: Health Professions Training (Objective 2): The AS AHEC will work with the Palau AHEC to develop a local curriculum fashioned after the PHTP as a degree granting program in Public Health for **50** students a year. In addition, the AS AHEC will collaborate with Kapiolani Community College in Hawaii to have visiting professors come to teach courses in Emergency Medical Technician and Respiratory Therapy skills for **40** students a year and clinical rotations will be supported for up to **two** nursing or medical students/residents from elsewhere, particularly JABSOM, to include community projects and clinical work. Finally, NCLEX training for nursing graduates will be held for **10** nurses a year.

Activity 3: Community Health Outreach Certificate and Continuing Education(Obj. 2,3): In service and CE training for **60** public health workers in Community Health Outreach will be conducted by the ASCC and the Health and Human Services and Public Health departments. Students completing the Certificate of Community Health Outreach training will conduct health education workshops in the ten villages on Tutuila and in three villages in Manu'a. In addition, AS AHEC will assist with facilitation of distance CE sessions from JABSOM to the local hospital for **40** providers a year using Manikins and simulation equipment previously provided.

AHEC 9: Waianae AHEC

The Waianae AHEC, located at the Waianae Coast Comprehensive Health Center (an FQHC) is the newest and final AHEC Center within the HPB AHEC program. It is in year three of existence and has an 18 member board comprised of 50% consumers and 50% Native Hawaiians, 16 from the local area. Ric Custodio, MD, the Medical Director of Waianae Coast Comprehensive Health Center (WCCHC) which serves the federally designated medically underserved rural community of Waianae and surrounding communities, also serves as the AHEC Director. The Waianae Coast stretches along ten miles of shoreline and inland for five miles. There is only one access road into the Waianae Coast from the east which dead ends at its western point. It is an economically distressed community with a population of about 42,000. The region ranks highest on the island of Oahu for households receiving financial aid and food stamps. Waianae Coast also ranks highest in unemployment, infant mortality and teen births.

Within the service area for WCCHC, 63% of the residents live in poverty and 51% are Native Hawaiians.

WCCHC collaborates in a community-based medical education initiative with A.T. Stills University School of Osteopathic Medicine in Arizona by training clinical students and is dedicated to training future doctors who will go into primary care and treat those living in rural and underserved communities. Ten second year students perform Continuity Clinic, eight hours of clinical/community work per week in the form of Rotational Integrated Clinical Experiences and have Rotational Primary Care Clinic and Community Care Responsibilities. In Community Care they work with the homeless, the schools and participate at community events. Ten third and ten fourth year students perform rotations in mostly rural and underserved areas and at CHCs across the state.

Activity 1: Health Careers Recruitment (Objective 1): An important factor related to the under-representation of minorities in health professions is the lack of role models and exposure to health careers during the critical K-12 school years. Community Care experiences mandate the second year students speak about becoming a physician and demonstrate clinical skills at health fairs, career fairs, health professions classes, pre-med associations and any academic organization that makes a request. Waianae area youth relate well to the second year medical students who inspire local youths to consider medicine or allied health careers as a realistic possibility. Some students learn (for the first time) of medical school training in their own neighborhood and are told that if they choose to pursue medicine that they may be eligible for a Hometown Endorsement to enable admission to AT Stills. Last year the targeted audiences for health career talks ranged from third graders to college students, including two Waianae Elementary Schools, nine Oahu High Schools and two Universities. The goal is to expand health careers recruitment presentations to reach **500** students by partnering with the Waianae Health Academy (WHA). Located in Waianae and with partnerships with Leeward and Kapiolani Community Colleges, WHA provides CAN degree upon graduation and is a wonderful training option for students interested in becoming a Medical Assistant, X-Ray Tech, Pharmacy Tech, CHW, Licensed Practical Nurse or Registered Nurse.

Activity 2: Clinical Training (Objective 2): The Waianae AHEC plans on training **20** third and fourth year medical students not only in underserved Leeward Coast, but in multiple underserved and rural areas in the State of Hawaii and two in the USAPI. WCCHC has partnerships with many of the CHCs across the state. The present third year students have rotations at Kokua Kalihi Valley, Waimanalo Health Center, Hamakua Health Center, West Hawaii CHC, Kauai CHC and Waikiki Health Center. One student has spent most of her third year at LBJ Tropical Medical Center in AS. These experiences cross many different AHECs within the HPB AHEC jurisdictions. The intent is to interface with the various AHECs, provide clinical training and increase interprofessional training with the Medical Assistant, X-Ray Tech, Pharm Techs, CHWs and nurses training in the WHA. Furthermore, when students are training in rural areas, school visitations would then become part of their clinical rotation responsibilities in the form of community service.

Activity 3: Supply and Quality (Objective 3): The Waianae AHEC will assist in providing CE to **100** providers a year through face to face training and distance education. The CHC system has five sites and performs weekly CE activities. As the local hospital recently closed due to bankruptcy, there will be a greater need for care and for CE.

F. DISSEMINATION

The HPB AHEC has been extremely successful at disseminating program information both locally, nationally and internationally. Locally, AHEC Program related data are disseminated at the Statewide Program Advisory Committee, at AHEC Center Board meetings, at local health conferences, at meetings with partner organizations, in the Hawaii Medical Journal and Dr. Withy has been invited to speak at 15 conferences lately. Three examples of successful dissemination of AHEC programs within the region are described. First, the Pharmacy Technician training introduced by the new UH Hilo School of Pharmacy and offered with credit from the University of Alaska that was originally utilized by the Palau AHEC and has been included in the curriculum for all four USAPI AHECs. Second, the public health training that started for 11 medical officer physicians has been expanded from Palau to include training for over 300 individuals in Palau, RMI and FSM and is now being implemented in CNMI and AS. Third, Dr. Withy's work with Hawaii Department of Labor (WIA), HCOP, Department of Education and HOSA has led to the planning of a statewide conference for all entities involved in health careers recruiting to share ideas and consolidate resources. Additional dissemination occurs through Dr. Withy's talks to medical groups, schools and communities about workforce shortages and the AHEC Workforce Summit addressing PCMH this April.

Dissemination of program ideas nationally and internationally occurs through conference presentations and publications. Dr. Withy has been selected to speak at 11 national meetings in the last two years, including the National AHEC Organization and the Society of Teachers of Family Medicine. In addition, she has been invited to present nationally and internationally including to the Alaska Rural Health Association, the University of Auckland and at education conferences in Australia and Vietnam. She has also been requested to present program information twice at the National Institutes of Health, to the National Library of Medicine Board of Directors and to the Director of the National Center for Research Resources. Within the last two years, HPB AHEC staff has presented at 15 conferences and published seven articles in peer reviewed journals on AHEC programs, research and activities and we expect to only increase this. With this history, it is assured that information on successful programs will be disseminated widely in peer reviewed and other journals as well as at national conferences such as National AHEC Organization, American Academy of Family Physicians, Society of Teachers of Family Medicine, National Rural Health Association and the American Public Health Association meetings. In this way, the impact of HPB AHEC activities can help programs across the nation.

G. PARTNERSHIPS and LINKAGES to Improve the Health of the Underserved

(Academic, Community and Federal)

Community Based Linkages are the greatest strength of the HPB AHEC and all activities rely on the links to schools, communities, non-profits, health care organizations and both local and federal government organizations as outlined in the table below.

Table 10: Community Based Linkages

Partner Organization	Collaborative Activities
63 schools (elementary through high school)	Schools hold recruitment fairs, Teen Public Health and Health Careers Camps and host recruitment visits.
20 undergraduate schools including 10 nursing programs	Students are mentored by peer mentors, shadow providers and participate in research opportunities.
6 Graduate schools (AT Stills DO school, Pacific Univ. PA school,	Schools provide students for training in underserved communities in interdisciplinary teams and provide

Hawaii Pacific U. nursing and social work, UH College of Nursing and Dental Hygiene, UH Hilo School of Pharmacy, University of Guam Nursing program	distance learning for students and providers in the community. In addition, social work, medical technology, nutrition, nursing, dental hygiene, medicine, speech pathology/audiology programs all collaborate on the <i>Ho'ola Malamalama</i> group and do campus visits.
23 CHCs (19 are FQHCs)	CHCs region-wide provide clinical training in community based settings and/or continuing education.
Hawaii Primary Care Association and the Pacific Island Primary Care Assoc.	Facilitates performance of needs assessments, offers training opportunities and provides distance learning as well as coordinates regional networking phone calls.
Hawaii Department of Labor and Industrial Relations (the WIA grant recipient)	Together we convene regular networking meetings, skill panels, focus groups, statewide meetings, develop curriculum such as workforce readiness training, apply for grants and develop the plan to increase the primary care workforce 20% by 2020. ²¹
HRSA Regional Office	We assist with spreading information regarding NHSC and practice in rural and underserved areas
National Institutes of Health	We receive grant for science education/career awareness.
Hawaii State Rural Health Association	Dr. Withy is president; partners to perform community based participatory research to assess workforce shortages resulting in publications and web advertising
Hawaii State Department of Education	Provides Health Careers Pathway Career and Technical Education and supports HOSA clubs
HCOP and other recruitment programs	Collaborate on Options in Health campus visits, career fairs and Teen Public Health and Health Careers Camps
Hawaii Dept of Commerce and Consumer Affairs	Performs physician licensure survey instrumental in evaluation program.

H. DISTANCE LEARNING

The geography of the region requires the use of many forms of distance learning to deliver the coursework described in the objectives. The most common forms used by the HPB AHEC are synchronous activities using 1) Internet based VTC or web camera over cable modem or dial-up and 2) PowerPoint presentation and conference call, as well as non-synchronous web based training such as that from University of Alaska. VTC over IP or ISDN is sometimes used, but is more expensive. Synchronous activities are employed to convey medical education topics without on-campus requirements and because it is live, there is always a faculty present to offer the education. The web cam/Internet connectivity only requires equipment at the university and a computer at home. Students can email questions to teachers, or speak to them if they have an audio connection. Large group VTC activities require a scheduler and a local technical support person, video conferencing units and connectivity which are expensive, but are supported through the Pan-Pacific Education and Communication Experiments by Satellite (PEACE-SAT). Manikin simulation training is done over Internet in interprofessional groups with a simulation center at each site. Such training is expected to continue in the future with outside funding sources (foundation grants, end-users and local support) after grant funding ends. Evaluation of these activities includes a short satisfaction survey. For web based education programs there are no on-campus requirements. Faculty oversight is provided by both a local coordinator and by the distance course instructor from afar. Resources required are computer access and Internet

connection and we have found that in order for students to complete assignments, they must have a local program champion to check up on them regularly. The costs of courses is approximately \$1,000 per student per year funded from grant funds that will either be completed or continued by local sources when US federal grant funding is completed. Evaluation is through standard testing mechanisms and local observation of clinical skills. All students and local faculty are trained on use of computers by using synchronous training and site visits. There are currently no comparisons planned with on-campus students, although success rates can be compared.

I. RESOLUTION OF CHALLENGES

Due to the distances involved, the governmental structures of the independent developing countries (territory and commonwealth) and the lack of communications infrastructure in the rural and underserved areas served, the HPB AHEC faces many challenges. Surprisingly, language differences, even with the six different languages spoken, have not caused a problem, since the AHEC directors in the USAPI countries are bilingual and the board members speak English fluently. The resolution of challenges faced is described below.

Time differences: The region covered includes six time zones and crosses the International Date Line. Therefore, Palau is one day ahead and six hours earlier than Hawaii, so meetings are held in the afternoon Hawaii time. Unfortunately, it is very difficult to have conference activities with the continental US because the east coast is as much as 12 hours different, therefore if there are important educational events, they are usually taped and shown later (store and forward).

Communications infrastructure: Within Hawaii, there are very few areas now without broadband digital access. However the USAPI have very slow bandwidth, making electronic communications (which is least expensive) challenging. Emails from Palau regularly bounce back and video teleconferencing in Palau and Yap relies on shifting satellite positions. Therefore, all email communication is confirmed by return receipt and backed up with fax or telephone contact. CNMI and AS have a better infrastructure, so email works well there.

Site visit expense: Because of the distances involved and the fact that the single airline serving the area charges about \$2,000 to travel between Hawaii and the USAPIs, the HPB AHEC program director can only visit the USAPI centers once a year at most. When she visits, she participates in a board meeting, interacts with students, offers educational sessions as appropriate, talks with government officials, performs database training and conducts needs assessment interviews. We are transitioning to quarterly Skype meetings to decrease travel costs, in combination with monthly data review and quarterly all-center phone calls.

Funding insecurity: The fact that government (local and federal) funding sources change their support from year to year has led HPB AHEC to diversify the funding stream in case there are significant changes, as have occurred in the recent past. Sources of matching funds are many and include University of Hawaii, local governments and health systems where the AHEC Centers are located, as well as CHCs. In addition, HPB AHEC Centers and Program Office have received grants from Hawaii Department of Health, National Institutes of Health, Kellogg Foundation, Robert Wood Johnson Foundation and is currently seeking funding from others including National Science Foundation.

Cost reimbursement nature of the grant is very difficult for developing countries. In order for the USAPI areas to participate, the governments have generously agreed to spend their limited health funds on AHEC activities and in addition, have had to advance funds for AHEC grant

supported activities. Although these funds are later reimbursed, the outlay of funds is challenging for these impoverished areas. Therefore the invoicing procedure receives special attention by the AHEC staff such that every invoice is paid within one month of submission and USAPIs do not suffer budget deficits because of lagging AHEC reimbursement. In order to speed the invoice process, we have implemented a payment protocol that improves accuracy of invoices submitted.

Change in governmental regime: The CNMI AHEC experienced a four month period of suspended funding when an election brought in a change of government that had to reexamine all spending. This was finally resolved and funds again flowed, but program activities were limited during this time and staff was not paid. In order to avoid this occurrence again, the CNMI AHEC Board will orient both gubernatorial candidates before elections, work closely with staff after elections occur and have alerted other AHECs to this need.

J. ORGANIZATIONAL INFORMATION and 10 PERCENT TABLE

The University of Hawaii JABSOM is the only allopathic medical school located in the region and was created to produce the physician workforce for Hawaii. The mission statement reads as follows: JABSOM, as part of the fabric of Hawaii, is a diverse learning community committed to excellence and leadership in educating current and future health care professionals and leaders; delivering high-quality healthcare; conducting research and translating discoveries into practice; establishing community partnerships and fostering multidisciplinary collaboration; pursuing alliances unique to Hawaii and the Asia-Pacific region; and acting with forethought regarding right relationships, respect and moral action. JABSOM actively seeks to increase the number of URM students pursuing medicine, as evidenced by support for the Imi Ho`ola program (“*those who seek to heal*”) that provides post-baccalaureate training for 12 disadvantaged students a year who matriculate into medical school after one year of preparation. This program is more than 30 years old and funding has been completely institutionalized. In addition, JABSOM supports the new Department of Native Hawaiian Health, designed to improve the health of the indigenous people of Hawaii and the Native Hawaiian Center of Excellence that provides research and training to accomplish this mission. JABSOM’s Dean, Jerris R. Hedges, M.D., is committed to reducing disparities in health through programs like AHEC and seeks to increase rural training. JABSOM will continue to provide matching funds for AHEC personnel, educational infrastructure, office space, personnel and fiscal management. JABSOM is very qualified to manage the AHEC finances, as it manages \$41,000,000 annually and Dr. Withy has handled over \$15,000,000 of funds to date herself. Finally, JABSOM has a mission to address the health workforce shortages in the State and students perform **42%** of their clinical education at community settings remote from the primary teaching facility and AHEC directly sponsors **15%** of their clinical time.

Table 11: Medical School 10 percent Requirement Table (10% Table)

Acad. Yr	#Clinical Weeks	# students	Clinical Wks	# Community wks	# AHEC wks
1	8	66	528	136	250
2	6	67	402	159	60
3	46	56	2622	913	505
4	35	66	2310	1272	60
	95	255	5862	2480 (42%)	875 (15%)

K. SELF SUFFICIENCY/SUSTAINABILITY

In order to insure sustainability, the HPB AHEC activities have been planned to be contained within the project period or have been developed with a method for local organizations to assume responsibility for them. This has worked out well for many of our programs already. AHEC previously supported nursing faculty at the UH Maui Campus to expand the nursing class and these costs have been assumed by the college. The Palau residency program completed their objective of training 11 medical officers in primary care and public health who are now serving the need they were trained for. Public Health training has been institutionalized at College of Micronesia and is in the process of becoming an accredited track at PCC. Big Island AHEC has developed an interdisciplinary residency program through community support, fund raising and will seek Medicare funding once the program is fully accredited. The health aid training in Yap and increased nursing training in AS are being institutionalized by the community colleges such that they can be offered permanently.

In order to decrease need for AHEC funding, health careers recruitment programs are being coordinated and performed by local community and health care volunteers recruited to assist. The HPB AHEC helped to start up seven local HOSA clubs and is working with all 31 regional clubs to become self-sustaining through local fundraising. In addition, HPB AHEC is successfully partnering with industry, such as the larger hospitals and health care systems, the departments of education and workforce investment agencies, and HCOP (institutionalized at UH) to support funding for summer health career programs and development of statewide workforce pipeline plans. The cost of travel to rural areas and housing for clinical students is an expense that is being assumed in part by academic institutions and in part by communities being served. For example, Molokai provides free housing and transportation to clinical students and Hilo Medical Center provides this for family medicine residents. We are encouraging local community based housing options (home stays) and volume travel discounts as well.

Because each HPB activity is funded from multiple state and regional sources, all HPB AHEC activities will either be completed by the end of AHEC funding or will be self-sustaining. As mentioned under challenges, the HPB AHEC is working to diversity funding sources, so that decreasing funding from a single source will not impact program success. The HPB AHEC program director has been very successful at obtaining grants and the Assistant Director is experienced in community fundraising and is working with the UH Foundation to increase HPB AHEC's charitable donations. Each center is expected to reach autonomy within five years and is assisted in seeking income, grants, collaborations and alternate sources of funding.

L. COST-SHARING/MATCHING

The realization of the severity of the shortage of HCPs has inspired organizations and government to increase support for AHEC programs as evidenced by current and promised matching amounts. Eleven organizations have offered a total of \$958,735.35 in matching funds for the HPB AHEC program every year.

Table 12: Cost-sharing/Matching

Hawaii government/applicant institution	\$350,000
Hawaii Private Sector	\$306,000
USAPI governments	\$302,735
Total	\$958,735

M. INDEX BY REVIEW CRITERIA

Table 13: Table by Review Criteria

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