Texas Community Health Worker Study

Report to the Texas Legislature

As Required by H.B. 2610

82nd Legislature, Regular Session, 2011

Submitted by the Department of State Health Services and Health and Human Services Commission

December 19, 2012

Table of Contents

Texas Community Health Worker Study

Executive Summary

The Texas Community Health Worker Study (Study) report was developed by the Department of State Health Services (DSHS) and the Health and Human Services Commission (HHSC), with support from research conducted by the University of Texas Health Science Center at Houston, School of Public Health, Institute for Health Policy (UTHSCH-SPH), in response to the legislative charge in Texas H.B. 2610, 82nd Legislature, Regular Session, 2011 (§48.102, Texas Health and Safety Code). This bill charges the state of Texas to undertake a study of the desirability and feasibility of employing promotores or community health workers (CHWs) in Texas and to explore methods of funding and reimbursement.

The UTHSCH-SPH research team conducted a targeted literature assessment, multiple interviews (state and national), eight focus workshops within Texas (two in Spanish), an online survey of CHW employers and potential employers, and consulted with the Promotor(a) or Community Health Worker Training and Certification Advisory Committee.

CHW Description

A CHW provides cultural mediation between members of a community and health and social services, with or without compensation. To serve in this capacity a CHW:

- Is a trusted member of the community and has a close understanding of the ethnicity, language, socio-economic status, and life experiences of the community served;
- Helps people gain access to needed services; and
- Increases health knowledge and self-sufficiency of the community through activities such as outreach, patient navigation and follow-up, community health education and information, informal counseling, social support, advocacy, and participation in clinical research.[1]

[1] Full definition at 25 Texas Administrative Code, §146.1(7)

CHW Training and Certification in Texas

DSHS administers the Promotor(a) or Community Health Worker Training and Certification Program. Certification is required for a person to act as a CHW for compensation.[2] The number of certified CHWs in Texas has increased significantly over the past several years, with more than a threefold increase from December 2009 to August 2012 (625 to 1,900).

Desirability and Feasibility of Employing CHWs

Among all employers responding to a survey conducted by UTHSCH-SPH, 84 percent of current CHW employers[3] and 72 percent of those who did not employ CHWs[4] indicated they were interested in expanding the presence of CHWs in their organizations. These results indicate CHWs are generally viewed as playing a desirable role in contributing to an organization's functions. Survey results also indicated that the availability of funding and return on investment appear to play key roles in the desirability and feasibility of employing CHWs. Research identified several other key factors related to the feasibility of employing CHWs to provide publicly and privately funded health care services, including awareness of the CHW profession and workforce development.

Recruitment of qualified CHWs and access to CHW education and training were identified as barriers to employment in some areas. Additionally, a CHW career ladder was identified as a key long-term factor in feasibility.

Funding Barriers

Funding for CHWs traditionally comes from multiple sources, including all levels of government and nonprofit and private organizations. The lack of stable funding is seen as a barrier to the feasibility of employing CHWs and sustaining CHW programs.[5] Employers responding to the survey conducted by UTHSCH-SPH indicated that grant funding (public or private) most often funds CHW services. Self-funding through internal budgets was the second most utilized funding source.

---

[2] Texas Health and Safety Code, Chapter 48, §48.052
[3] (N=107)
[4] (N= 64)
[5] http://bhpr.hrsa.gov/healthworkforce/reports/chwstudy2007.pdf

CHWs' Impact on Increasing Health Care Efficiency, Quality, and Access

CHWs' knowledge of their communities and the trusting relationship they possess or build with members of their communities are important factors in the provision of culturally appropriate and effective services. CHWs help organizations better understand the needs of those they serve and reach individuals to share timely health and services information. Further, studies have shown that CHW services can increase access to services and improve health outcomes, including decreasing cardiovascular disease risk and increasing breast cancer screening rates.[6]

Research conducted by UTHSCH-SPH provided examples of financial benefits to employing CHWs in both the public and private sectors, including cost savings attributed to increased appropriate use of medical homes, and decreased hospital admissions or re-admissions, emergency department utilization, and average cost of care.

Recommendations

1. Promote CHW education and professional development.
2. Promote understanding and recognition of the CHW workforce, including opportunities to enhance understanding of CHW services and roles, CHW certification in Texas, and development of the workforce.
3. Explore the feasibility of applying successful Medicaid models from other states in Texas.
4. Identify or explore amendments to the HHSC Uniform Managed Care Contract.
5. Continue current efforts to incorporate CHWs into Patient Centered Medical Homes and related care management structures.
6. Identify opportunities to increase utilization of CHWs in public health and behavioral health programs and initiatives.
7. Consider potential roles for CHWs in the Texas Healthcare Transformation and Quality Improvement Program 1115 Waiver project.

---

[6] (Balcázar et al., 2011b, and AHRQ: Burhansstipanov, 2011)

Texas Community Health Worker Study

I. Introduction

H. B. 2610 Legislative Charge

The Texas Community Health Worker Study (Study) report was developed by the Department of State Health Services (DSHS) and the Health and Human Services Commission (HHSC), with support from research conducted by the University of Texas Health Science Center at Houston, School of Public Health, Institute for Health Policy (UTHSCH-SPH), in response to the legislative charge in Texas H.B. 2610, 82nd Legislature, Regular Session, 2011 (§48.102, Texas Health and Safety Code). This bill charges the state of Texas to undertake a study of the desirability and feasibility of employing promotores or community health workers (CHWs) in Texas. Specifically the charge is to:

(1) Study the desirability and feasibility of employing promotores and community health workers to provide publicly and privately funded health care services in this state;

(2) Explore methods of funding and reimbursing promotores and community health workers for the provision of health care services and outline the costs to this state of the funding and reimbursement;

(3) Develop recommendations to:

- *Maximize the employment of and access to promotores and community health workers;*
- *Expand the funding of and reimbursement for services provided by promotores and community health workers.*

In conducting the study required by Subsection (a), the department shall consult:

(1) Relevant national organizations engaged in the development of community health worker policy;

(2) The advisory committee; and

(3) Other individuals or organizations the department considers necessary.

In conducting the study required under Subsection (a), the department shall assess the impact of promotores and community health workers on increasing the efficiency of, quality of, and access to health care services.

Report Structure

DSHS developed the report with support from research conducted by UTHSCH-SPH. The UTHSCH-SPH research team conducted a targeted literature assessment, multiple interviews (state and national), eight focus workshops within Texas (two in Spanish), an online survey of CHW employers and potential employers, and consulted with the Promotor(a) or Community Health Worker Training and Certification Advisory Committee.

CHW Description

A CHW provides cultural mediation between members of a community and health and social services, with or without compensation. To serve in this capacity a CHW:

- Is a trusted member of the community and has a close understanding of the ethnicity, language, socio-economic status, and life experiences of the community served;
- Helps people gain access to needed services; and
- Increases health knowledge and self-sufficiency of the community through activities such as outreach, patient navigation and follow-up, community health education and information, informal counseling, social support, advocacy, and participation in clinical research.[7]

[7] Full definition at 25 Texas Administrative Code, §146.1(7)

Employers surveyed by UTHSCH-SPH indicated that the most important activities carried out by CHWs include health education/promotion; providing information about and referrals to available services; and increasing people's access to services. (Table 1)

Table 1: UTHSCH-SPH Survey – Employer opinions about the most important activities carried out by CHWs

Roles	Percentage
Health education/promotion	73%
Information and referral	64%
System navigation/access to services	63%
Informal counseling and social support	25%
Direct services	21%
Individual and community capacity building	9%
Cultural liaison/mediation	7%
Individual and community advocacy	1%

Table 2 below shows the distribution of certified CHWs by employment status in Texas as of March 2012. Distribution is presented by DSHS Health Service Regions (HSRs) and represents employment status as indicated by CHWs on their most recent certification applications (paid employment, volunteer, or unemployed). The Houston area (HSR 6/5 South) had the greatest number of CHWs with 35 percent of all certified CHWs, followed by the Harlingen area (HSR 11) with just under 20 percent of the total. The El Paso/Midland area (HSR 9/10) had the largest percentage of CHW volunteers with 45 percent, while the San Antonio area (HSR 8) had the largest percentage of unemployed CHWs at 14 percent.

Table 2: CHW employment status by DSHS Health Service Region (HSR)

(In order of largest number of CHWs employed)

Health Services Region / Headquarters	Total Certified CHWs in HSR		Percent of CHWs in HSR who are:		
	#	%	Paid	Volunteer	Unemployed
HSR 6/5 South: Houston	600	35.4%	67%	21%	12%
HSR 11: Harlingen	321	19.0%	66%	26%	8%
HSR 2/3: Arlington	246	14.5%	86%	8%	6%
HSR 8: San Antonio	172	10.2%	73%	13%	14%
HSR 9/10: El Paso	149	8.8%	48%	45%	7%
HSR 4/5 North: Tyler	76	4.5%	97%	1%	1%
HSR 7: Temple	70	4.1%	76%	23%	1%
HSR 1: Lubbock	59	3.5%	66%	24%	10%
Total	1,693	100%	70%	21%	9%

Note: From the Promotor(a) or Community Health Worker Training and Certification Program database, March 2012.

History of Texas Legislation Related to Training and Certification of CHWs

H.B. 1864, 76th Legislature, Regular Session, 1999, established the Promotor(a) Program Development Committee to study outreach and education programs for promotores and CHWs and make recommendations to the legacy Texas Department of Health. S.B. 1051, 77th Legislature, Regular Session, 2001, directed DSHS to establish and operate a certification program for persons who act as promotores or CHWs. Certification is required for a person to act as a promotor(a) or CHW for compensation."[8] S.B. 751, 77th Legislature, Regular Session, 2001, directed HHSC to "require health and human services agencies to use certified CHWs to the extent possible in health outreach and education programs" for Medicaid recipients.

The Promotor(a) or Community Health Worker Training and Certification Program was implemented in late 2001, and the first certification applications were received in late 2002.

---

[8] Texas Health and Safety Code, Chapter 48, §48.052

Certification as a CHW in Texas is based on knowledge and skills in eight core competency areas: communication, interpersonal, service coordination, capacity-building, advocacy, training, organization, and knowledge base on specific health issues. Certification requires successful completion of an approved core competencies training program of at least 160 hours and a complete and valid application. An applicant may also qualify for certification on the basis of documentation of at least 1,000 hours of relevant work experience in the most recent six years. Education and training programs may be certified to offer the full core competencies program, continuing education programs only, or both.

The Promotor(a) or CHW Training and Certification Advisory Committee (Committee) is charged with advising DSHS and HHSC concerning rules to implement standards, guidelines, and requirements adopted under Chapter 48, Health and Safety Code, relating to the training and regulation of persons working as promotores or CHWs. The Committee advises DSHS on matters related to the employment and funding of CHWs, and provides recommendations for a sustainable CHW program. The Committee reviews applications from instructors and sponsoring organizations of training programs, and recommends certification to DSHS if program requirements are met.

Committee members are appointed by the Commissioner of DSHS and include four certified CHWs, two members of the public, two professionals who work with CHWs in a community setting, and a member of the Texas Higher Education Coordinating Board or a higher education faculty member who has teaching experience in community health, public health, or adult education and who has trained CHWs.

The number of certified CHWs in Texas has increased significantly over the past several years. As of March 2012, there were nearly 1,700 certified CHWs in Texas, increasing to over 1,900 as of August 2012.

II. Desirability of Employing CHWs

Based on responses to a survey conducted by UTHSCH-SPH, 84 percent of CHW employers[9] and 72 percent of those currently not employing CHWs[10] indicated they were interested in expanding the presence of CHWs in their organizations. These results indicate CHWs are generally viewed as playing a desirable role in contributing to an organization's functions. Survey results also indicated that the availability of funding and return on investment (ROI) appear to play a key role in the desirability and feasibility of employing CHWs.

III. Feasibility of Employing CHWs

Awareness of the CHW Profession

Several national agencies have focused on CHWs in recent years. Beginning in 2010, the U.S. Department of Labor recognized CHW as a distinct occupation (Standard Occupational Classification Code 21-1094). A CHW was named to the National Health Care Workforce Commission in the same year. In May 2011, the U.S. Department of Health and Human Services convened the National Steering Committee for Promotores de Salud, which included four members from Texas, to promote the utilization of CHWs in Hispanic/Latino communities.

Despite these national activities, participants in research conducted by UTHSCH-SPH commented that many employers, including health professionals, are not aware of CHWs or have a limited view of what CHWs can do and thus are unable to determine how a CHW would contribute to their organization's priorities. Further, a National Institutes of Health-funded study of CHWs in the El Paso region found that less than 20 percent of community members living near a community health center with CHWs were aware of CHWs and how they help families (Unpublished manuscript. Wise, 2010).

Workforce Development

Texas has many elements in place to support CHW workforce development. There are currently over 25 sponsoring organizations approved by DSHS to provide training for CHWs and

---

[9] (N=107)
[10] (N= 64)

Instructors. A current list of training programs approved by DSHS to provide initial certification training and continuing education for CHWs is located at http://www.dshs.state.tx.us/mch/chw/training.aspx.

Sponsoring organizations may provide initial certification training of at least 160 hours and continuing education or focus solely on continuing education. Training is based on ensuring knowledge and skills in the required eight core competency areas.

Organizations approved to provide training for CHWs include community colleges, other academic centers such as health science centers, Area Health Education Centers (AHECs), Federally Qualified Health Centers (FQHCs), a regional CHW association, and community-based programs. Many training programs are located in urban areas, which may limit access to face-face training by CHWs residing in rural areas. However, training programs may also provide training in areas other than their main location. Additionally, several training programs have implemented training through distance learning to increase access to CHWs in all parts of the state.

In 2011, 286 CHWs graduated from an initial certification training course. Sponsoring organizations also provided approximately 160 continuing education opportunities for CHWs in 2011, offering a total of over 600 DSHS-certified contact hours, including face-to-face events and distance learning continuing education.[11] Sponsoring organizations have worked with employers in some areas to develop and implement specific training opportunities to meet identified needs. The Promotor(a) or Community Health Worker Training and Certification Advisory Committee identifies activities to increase access to CHW certification training and continuing education and provides recommendations to DSHS. In 2011, Committee members hosted or participated in several large events providing training for CHWs and reviewed applications from sponsoring organizations seeking DSHS certification as an approved training program.

The Texas Workforce Investment Council assists the Governor and the Legislature with strategic planning for and evaluation of the Texas workforce system. In fulfilling this responsibility, the

---

[11] 2011 Annual Report: Promotor(a) or Community Health Worker Training and Certification Advisory Committee

Council promotes the development of a well-educated, highly skilled workforce for Texas, and advocates for the development of an integrated workforce development system that provides quality services. The Texas Workforce System Strategic Plan for FY2010-FY2015 includes a long-term objective to demonstrate the flexibility of the "earn while you learn" model of apprenticeship programs and to expand the model to new occupational areas, including CHWs. The Council's Apprenticeship Leadership Team approved several projects to assist with this objective, including a project focused on CHW apprenticeship implemented by the Texas Area Health Education Center (AHEC) – East (Coastal Region). The CHW apprenticeship project is a one-year program with 200 hours of didactic training and an additional 2,000-2,200 hours of on-the-job learning. The training focuses on familiarization with the medical and social services pertinent to the employer and region.

Employment Barriers

Research findings from UTHSCH-SPH reveal a number of concerns among employers about recruitment and current CHW education capacity. While training has been historically provided post-hire through on-the-job experience, research participants noted the importance of high-quality training for CHWs in Texas. Areas identified by research participants as important to employment feasibility include easier access to CHW educational resources, such as additional distance learning opportunities; strengthening CHW educational and skills standards; and developing specialty trainings in areas such as diabetes management, patient navigation, and behavioral health. Employers identified recruitment of qualified CHWs as a challenge in some areas.

Several research participants noted the importance of building a strong CHW career ladder in conjunction with educational resources to support the growth and development of CHWs, either in their roles as CHWs or in other related occupations. The participants considered this a key long-term factor in the feasibility of expanding employment opportunities for CHWs.

Research participants identified CHW supervision and mentorship as a key element to CHW services and noted that additional information and educational resources may assist CHW supervisors to effectively support CHWs in their organization. Supervisors must be equipped to work with and support CHWs in their fluid roles and unconventional work hours. Supervisors

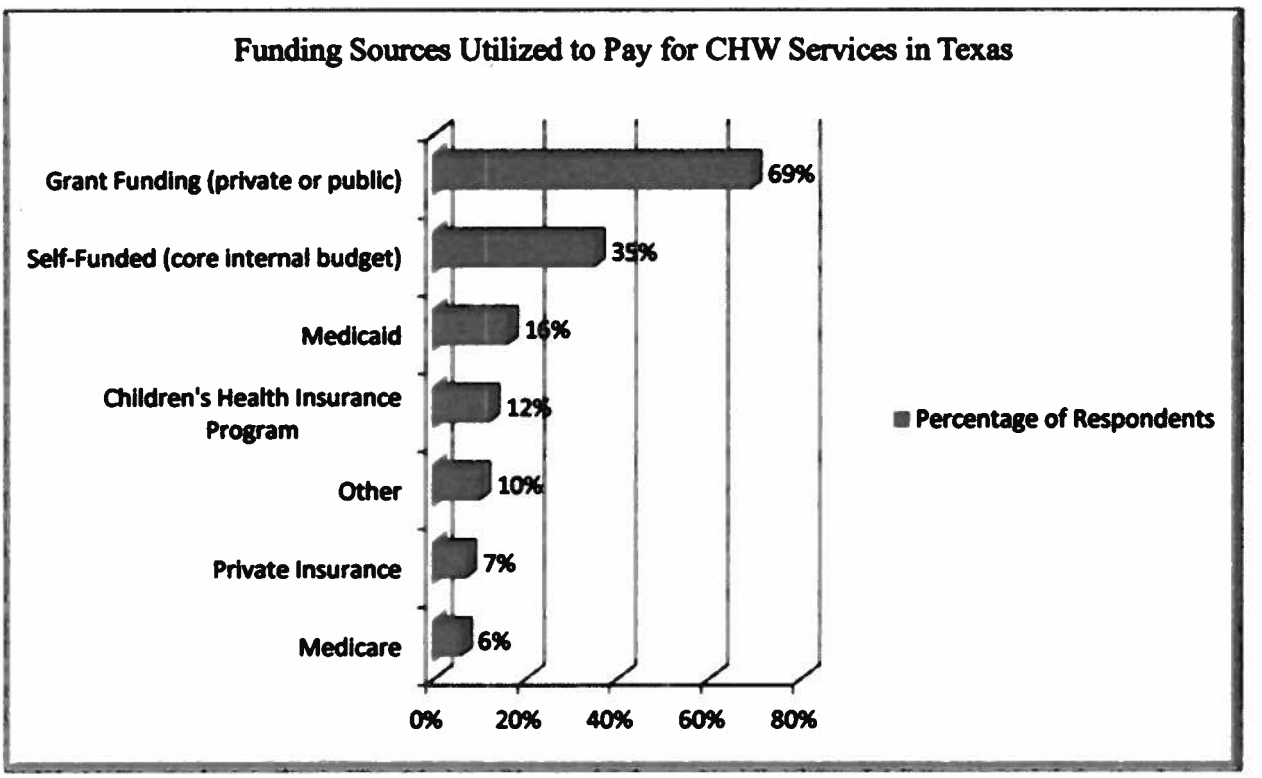
have a responsibility to help forge a unique role for CHWs in their organization, and to coordinate with other professionals in the workplace.

Funding Barriers

Funding for CHWs traditionally comes from multiple sources, including all levels of government and nonprofit and private organizations. The lack of stable funding is seen as a barrier to the feasibility of employing CHWs and sustaining CHW programs.[12]

Employers responding to the survey conducted by UTHSCH-SPH indicated that grant funding (public or private) most often funds CHW services. Self-funding through internal budgets was the second most utilized funding source.

Table 3: Employer-reported funding sources



UTHSCH-SPH Employer Survey results: Funding sources utilized to pay for CHW services in Texas. Funding sources reported by Texas employers responding that their organization includes CHWs. Note: multiple responses allowed.

[12] http://bhpr.hrsa.gov/healthworkforce/reports/chwstudy2007.pdf

IV. CHWs' Impact on Increasing Health Care Efficiency, Quality, and Access

CHWs' knowledge of their communities and the trusting relationship they possess or build with members of their communities are important factors in the provision of culturally appropriate and effective services. CHWs help organizations better understand the needs of those they serve and reach individuals to share timely health and services information. Further, studies have shown that CHW services can increase access to services and improve health outcomes, including decreasing cardiovascular disease (CVD) risk and increasing breast cancer screening rates.

The Salud Para Su Corazón model developed in Texas includes a group of CHW programs that have addressed CVD risk reduction in Hispanic/Latino communities. The program trains CHWs to recruit families, provide culturally sensitive health education on CVD risk factors, physical activity, blood pressure and sodium, cholesterol and fat, healthy weight, and diet, and visit families in their homes to reinforce the information. Results of these projects have shown positive changes in CVD risk factors at various levels, including: improved self-reported attitudes and perceptions toward CVD risk reduction, improved self-reported dietary behaviors, and improvements in clinical measures, such as cholesterol levels.[13] In a program that focuses on Native American women, CHWs in Colorado and California were trained specifically to use their cultural background to help women overcome their fears and other psychosocial barriers to breast cancer screening.[14] The program resulted in increased breast cancer screening rates.

The Texas Tech University Health Sciences Center (TTUHSC) Navigator Program, also known as Transformacion Para Salud, is a chronic disease self-management program targeted toward underserved minority populations in Lubbock. The two-year pilot program was funded by a grant from the Bureau of Health Professions, Health Resources and Services Administration. Using a group of CHWs as patient navigators, the program coordinated comprehensive health services for patients in need of chronic disease care and management for several chronic health conditions, including diabetes and hypertension. CHWs acted as liaisons between health agencies and the community, served as case managers, distributed information and provided

---

[13] (Balcázar et al, 2011b)
[14] (AHRQ: Burhansstipanov, 2011).

education to members of the community. Patients involved in the Transformacion Para Salud Program showed improvements in clinical and behavioral outcomes after 12 months of intervention. (Esperat, et al., 2012).

Four Texas hospitals in three major cities (Houston, Dallas, and San Antonio) participated in a demonstration project (2009-2011) involving CHWs in children's emergency departments (EDs), assisting families to access more appropriate sources of non-emergency care. The demonstrations were funded from a special 2009 appropriation as part of a consent decree, originally issued in 1996 in a class action case involving Texas Medicaid (currently identified as "Frew v. Janek"). CHW staff provided outreach and educational information to the caregiver in English or Spanish regarding the appropriate use of medical resources and collected face-to-face survey data during the intake visit about the participant's use of, access to, and barriers to using medical resources. An evaluation report was completed by DSHS and HHSC in August 2012. Key findings from self-reported data included:

- There was a significant decrease in the percent of participants who reported having one or more barriers to accessing appropriate medical care and a significant increase in those reporting no barriers to accessing appropriate medical care between the intervention and follow-up survey.
- CHW outreach and informing activities were reported by respondents as effective in changing behaviors.
- Participants reported a high level of confidence when asked about responding appropriately to future non-acute health conditions.

Based on Medicaid claims data, dental checkups and the average number of dental visits per participant increased significantly from the pre to post-intervention period.[15]

V. Funding and Reimbursing CHW Services

Research conducted by UTHSCH-SPH shows that there are financial benefits, in both the public and private sectors, to employing CHWs. The results of several financial analyses follow:

---

[15] DSHS. Promotores(as)/Community Health Workers Pilot Program. Second Evaluation Report; July 16, 2010 – August 31, 2011.

Private Sector Financing

Three of the four Texas hospitals participating in the demonstration project involving CHWs in children's EDs, assisting families to access more appropriate sources of non-emergency care, initiated a similar program after state funding ended.

Christus Health employs CHWs in Texas and Louisiana to assist in accessing primary and specialty care, prescription medications, durable medical equipment or supplies, transportation and to facilitate completion of applications for health and social services. CHWs also provide health education and information, support self-management of chronic conditions, communicate with health care providers, and promote lifestyle change to promote healthier behaviors. Christus Health staff indicated that cost savings have been demonstrated by reduced inpatient admissions, emergency department visits, and reduced average cost of care.

Baylor Health Care (Dallas) employs CHWs to provide culturally and linguistically appropriate health education, navigation, and/or advocacy services addressing health and social needs through the core operating budget and grant funding. Baylor Health Care staff indicated that cost-savings have been achieved through a decrease in hospital re-admissions and emergency department utilization for patients enrolled in a diabetes project.

Gateway Community Health Center (Laredo) employs CHWs through grant funding to provide outreach, education, and assist in chronic disease self-management. CHW services are seen as cost-effective as they assist patients to increase control of their health conditions through positive lifestyle changes. Gateway Community Health Center staff reported that improved self-management of health conditions resulted in reduced utilization of high-cost services, such as inpatient hospitalization and emergency department utilization.

Public Sector Financing (Medicaid)

The University of Arkansas Medical Sciences initiated a three-year Medicaid 1115 waiver demonstration in 2005 with CHWs employed by community-based organizations in three rural Arkansas counties. Program staff recruited six CHWs who had leadership skills, knowledge of their local communities, and a high school education and provided them with initial and continued training specific to the program. The CHWs advertised the program, identified

individuals who qualified for Medicaid and home and community based services who were not already receiving these services, and followed up with individuals to help them navigate the system after enrollment. Following the demonstration, Arkansas Medicaid experienced a 24 percent reduction in annual spending per waiver participant, and a net savings of $2.6 million over three years, or over $100,000 annual net saving per CHW, for a calculated ROI of 2.9:1. The authors of this analysis indicated that the program's unusual success is attributable to the high participation of minority populations, especially Blacks. (Felix et al., 2011).

In Texas, the majority of Medicaid clients receive services through the managed care delivery system. Medicaid managed care provides a capitated rate to managed care organizations (MCOs) for the provision of care. This capitated rate already provides the plans flexibility to incorporate different models. Therefore, any additional benefit provided by the MCO should not require additional funding by HHSC.

The state of Minnesota received approval from CMS to add patient education services performed by CHWs to their Medicaid State Plan on February 6, 2009. CHWs may enroll in the Medicaid program as a "non-pay" provider; the services must be billed and paid to an eligible Medicaid-enrolled provider (e.g., physician, mental health professional, dentist, etc.). CHW Medicaid services in Minnesota are defined as, "a diagnosis-related, medical intervention, not a social service." CHWs in Minnesota are defined as, "trained health educators who work with Minnesota Health Care Programs (MHCP) recipients who may have difficulty understanding providers due to cultural or language barriers."[16] CHW services (patient education) must be ordered and supervised by an eligible provider. Minnesota reports low uptake on the services with few claims filed. Adding a provider type to the Texas Medicaid system requires federal approval, and currently costs on average $700,000 to $1 million (federal and state revenue) in claims administrator system changes. The cost of expanding the use of CHWs may be more feasibly borne by other entities such as MCOs that may be able to incorporate CHWs into various service delivery models at a much lower cost.

---

[16] Minnesota Department of Human Services

VI. Recommendations

The following section includes DSHS and HHSC recommendations for maximizing the employment of and access to CHWs, and expanding the funding of and reimbursement for services provided by CHWs. The recommendations were developed in part based on research conducted by UTHSCH-SPH.

1. Promote CHW education and professional development.

Background

DSHS currently reviews and approves initial training and continuing education for CHWs. There are over 25 organizations approved by DSHS to provide CHW education, including community colleges, other academic centers such as health science centers, AHECs, FQHCs, a regional CHW association, and community-based programs. Several training programs have implemented training through distance learning to increase access to CHWs in all parts of the state.

Programs within DSHS have assisted in the development of curriculum related to specific topics, including maternal and child health, tobacco cessation for pregnant women, behavioral health, immunizations, nutrition, physical activity, obesity, chronic disease prevention and awareness, and disaster planning and preparedness. Additionally, Texas Health Steps online provider education modules designed for Medicaid health care providers cover a wide range of topics, including oral health, newborn screening, case management, developmental and behavioral health screening, prevention and wellness, adolescent health, cultural competence, medical home, injury prevention, and acute and chronic medical conditions and provide continuing education credit for CHWs.

Feasibility

DSHS will continue to increase statewide access to CHW education and professional development, including continuing education and options for training on specific health topics, such as chronic disease prevention and management, behavioral health, oral health, etc. through collaboration with current and potential training programs, program areas within

DSHS and HHSC, the Promotor(a) or CHW Training and Certification Advisory Committee, and CHW networks and associations. DSHS will explore ways to increase collaboration between employers and sponsoring organizations providing training for CHWs and supervisors to meet training needs identified by employers.

DSHS will also continue to participate on the Texas Workforce Investment Council's Apprenticeship Team and to promote awareness and utilization of the federally approved CHW apprenticeship model currently implemented by the Texas Area Health Education Center - East (Coastal Region).

2. **Promote understanding and recognition of the CHW workforce.**
   - Consider opportunities to enhance understanding of CHW services and roles, CHW certification in Texas, and development of the workforce.

Background

Texas stakeholders with an interest in CHW services include the Promotor(a) or Community Health Worker Training and Certification Advisory Committee, CHWs, CHW regional or local networks or associations, employers, trade associations, AHECs, FQHCs, and other health care centers, health plans, sponsoring organizations and instructors providing training, DSHS and HHSC and other state agencies providing health and social services, community-based or non-profit organizations, and others.

In 2010, DSHS leadership identified the promotion of a community-based, patient-centered approach as a priority initiative for fiscal year 2010. DSHS conducted an online survey to gather information related to the use of community-based, patient-centered approaches to the delivery of physical and behavioral health services in the state. In conjunction with increasing interest at both the federal and state levels, DSHS explored how to better utilize CHWs, peer support specialists, and other community members to provide certain basic health services. The survey was also conducted to identify barriers and address challenges that limit the expansion of this workforce.

Survey results regarding the benefits of these workers supported the position of DSHS to promote the use of CHWs and peer support specialists. DSHS used information obtained

from this survey to inform work underway to address the identified barriers and to more fully realize the potential for using CHWs, peer support specialists, and other community members to provide and extend health care, prevention, and education. [17]

Feasibility

DSHS will continue to promote understanding and recognition of the CHW workforce through administration of the Promotor(a) or CHW Training and Certification Program, quadrennial review of administrative rules governing the program, dissemination of annual reports, and presentations at local, state, and national presentations and trade association meetings. DSHS and HHSC will also continue to promote understanding and recognition of the CHW workforce through collaboration among state agency programs related to the provision of physical and behavioral health services, prevention and preparedness, minority health, and the elimination of health and health access disparities among racial, multicultural, disadvantaged, ethnic, and regional populations.

DSHS will also continue to collaborate with other stakeholders, including the Promotor(a) or Community Health Worker Training and Certification Advisory Committee, CHWs, CHW regional or local networks or associations, employers, trade associations, AHECs, FQHCs, and other health care centers, health plans, sponsoring organizations and instructors providing training, and community-based or non-profit organization in their efforts to enhance understanding of CHW services and roles.

3. **Explore the feasibility of applying aspects of successful Medicaid models from other states in Texas.**

Background

The research team identified Arkansas "Community Connectors" as a model utilizing CHWs to improve the delivery of Medicaid long-term care services. This model is described above under Section V. Funding and Reimbursing CHW Services.

---

[17] Use of Community-Based Patient-Centered Workforce in the Delivery of Physical and Behavioral Health Services in Texas, DSHS - Center for Program Coordination, Policy, and Innovation – June 30, 2010

Feasibility

Texas implemented a Money Follows the Person Demonstration Project that has successfully assisted more than 20,300 Texans in their transition back to the community to receive long-term services and supports since its inception in 2001. In addition, HHSC is currently exploring how the 1115 Transformation waiver or perhaps a new 1115 waiver could help Texas achieve a transformation in its long-term services delivery approach.

HHSC, with its partner the Texas Department of Aging and Disability Services, will conduct a closer examination of how home and community-based long-term services and supports can be integrated with acute care in a Medicaid managed care environment and how more Texans can successfully transition from nursing homes and other institutional settings into home and community-based settings. The use of CHWs to accomplish the goals of a long-term service delivery transformation will be further explored. HHSC will review the Arkansas "Community Connectors" model utilizing CHWs to improve the delivery of Medicaid long term-care services and determine if aspects of the project might be applied in Texas.

4. **Identify or explore amendments to the HHSC Uniform Managed Care Contract, including:**
   - Add a definition of CHW/Promotor(a)
   - Clarify that CHWs can be used in support of health plan activities
   - Clarify CHW-related activities that can be classified as a "service" versus "administration."
   - Consider existing MCO contractual requirements related to cultural competency plans and activities, and identify potential ways the MCOs could incorporate CHWs in carrying out required or other activities.

Background

On January 10, 2012, a regular quarterly meeting was held between medical directors of the state's health plans and Dr. David Lakey, Commissioner of DSHS, at which CHW services were discussed. At this meeting four health plan officials (representing Community Health

Choice, Cook Children's Health Plan, Parkland Community Health Plan and United Health Care) presented a review of their current services involving CHWs, and all expressed the view that additional activity would be beneficial. Nineteen health plans responded to the employer survey for this Study. Just over 60 percent indicated they had CHWs in their organizations, and most expressed interest in expanding or initiating CHW services if funding were available.

After further discussion between Texas Medicaid officials and the health plans in June and July 2012, it was determined that the health plans wished to pursue adjustments to contract provisions to classify certain CHW activities as "services" expenditures rather than "administrative," since their contracts impose a cap on administrative costs (*Section 10.10.2 of the Uniform Managed Care Contract between HHSC and the MCOs.)* This issue was also supported in responses to short-answer questions on the employer survey.

Whether or not the activities of a CHW can be classified as an "administrative" cost versus a "service" cost depends on the specific tasks performed by the CHW. For example, activities in support of service coordination for a STAR+PLUS client could potentially be considered service costs, while certain outreach-related activities (e.g., community health fair or enrollment event participation) would be considered administrative costs.

Feasibility

HHSC intends to amend the Uniform Managed Care Contract effective March 2013. A definition of CHW/Promotor(a) will be added, and language clarifying that CHWs can be used in support of health plan activities will be included. HHSC will further clarify for the plans what kind of CHW-related activities can be classified as a "service" versus "administration."

The use of CHWs by health plans will not be mandated; plans can opt to utilize them using their existing capitation rates. HHSC does not plan to provide an increase in capitation payment amounts to account for the hiring of CHWs, making these changes cost-neutral for the state.

5. **Continue current efforts to incorporate CHWs into Patient Centered Medical Homes and related care management structures.**

Background

The Patient Centered Medical Home (PCMH) is a health care setting that facilitates partnerships between individual patients, and their personal physicians, and when appropriate, the patient's family. Care is facilitated by registries, information technology, health information exchange and other means to assure that patients get the indicated care when and where they need and want it in a culturally and linguistically appropriate manner. Standards for PCMHs have been developed by the American Academy of Family Physicians (AAFP) and the National Committee for Quality Assurance (NCQA). NCQA standards provide specific criteria to achieve NCQA recognition as a Level 1, 2 or 3 PCMH based on meeting specific elements in six categories. CHW roles may contribute to organizations' activities in several areas as organizations work toward NCQA PCMH recognition in the following areas:

- Enhance Access and Continuity: Accommodate patients' needs with access and advice during and after hours, give patients and their families information about their medical home and provide patients with team-based care
- Identify and Manage Patient Populations: Collect and use data for population management
- Plan and Manage Care: Use evidence-based guidelines for preventive, acute and chronic care management, including medication management
- Provide Self-Care Support and Community Resources: Assist patients and their families in self-care management with information, tools and resources
- Track and Coordinate Care: Track and coordinate tests, referrals and transitions of care
- Measure and Improve Performance: Use performance and patient experience data for continuous quality improvement

Feasibility

HHSC currently has added provisions in the Uniform Managed Care Contract related to "health homes." Specifically, the contract states in Section 8.1.26.1: "HHSC encourages MCOs to develop provider incentive programs for designated providers who meet the requirements for patient-centered medical homes found in §533.0029, Texas Government Code.

At a minimum, the MCO must:

a. Maintain a system to track and monitor all Health Home Services participants for clinical, utilization, and cost measures;
b. Implement a system for Providers to request specific Health Home interventions;
c. Inform Providers about differences between recommended prevention and treatment and actual care received by Members enrolled in a Health Home Services program and Members' adherence to a service plan; and
d. Provide reports on changes in a Member's health status to his or her PCP for Members enrolled in a Health Home Services program."

6. **Identify opportunities to increase utilization of CHWs in public health and behavioral health programs and initiatives.**

Background

CHWs are currently utilized in several public health and behavioral health programs, including Healthy Texas Babies, Primary Health Care (PHC), and the Texas Medicaid Wellness Program.

The level of involvement varies by program. For example, as one element of a public education effort to address infant mortality, DSHS sponsored a conference for CHWs to provide the knowledge, tools, and resources needed to potentially engage in activities in their community to improve birth outcomes and decrease prematurity and infant mortality. The conference, "Community Health Workers Across Texas – Working Together for Healthy Texas Babies", brought approximately 300 CHWs, speakers, and others together for a 3-day event surrounding the Healthy Texas Babies initiative educational topics. The Healthy Texas

Babies initiative was developed to help Texas communities decrease infant mortality using evidence-based interventions. It involves community members, health care providers, and insurance companies. A reduction in infant mortality will improve the health of Texas babies and mothers and has the potential to save millions of dollars in health care costs. Local coalitions have developed specific plans to address the issue in their own communities and CHWs can use the information provided through the conference to support these efforts.

DSHS has contracts with local health organizations to provide critical health services to Texans that have no other health care coverage. Federal and state funds for services including, but not limited to immunizations, health and cancer screenings, prenatal care, preventive and primary child medical and dental services, are delivered by community-based provider organizations. Community health is improved when the physical and emotional needs of women and children are addressed. The role of CHWs in linking community members to available health related services requires that there be an understanding of eligibility and benefits available through state and local programs. Other opportunities may exist within other state programs or initiatives, including those with a focus on obesity and chronic disease prevention and treatment, disaster preparedness, and behavioral health.

Feasibility

DSHS will continue to work with CHW training programs and others to provide CHWs access to high-quality training related to public health or behavioral health topics and services. In addition, existing DSHS contract language will be reviewed to identify potential opportunities for CHWs to assist contractors with outreach, client follow-up, and community education for Title V Maternal and Child Health Services, Breast and Cervical Cancer Services, and other community-based services funded by the department. The legislative appropriations request for fiscal years 2014 and 2015, includes an exceptional item that would expand the Primary Health Care program and involve CHWs for outreach to direct women to services such as cancer screenings, dental services, and women's health services.

7. **Consider potential roles for CHWs in the Texas Healthcare Transformation and Quality Improvement Program 1115 Waiver project.**

Background

The Texas Healthcare Transformation and Quality Improvement Program 1115 Waiver, known as the 1115 Transformation Waiver, is a five-year demonstration waiver that allows the State to expand Medicaid managed care, including pharmacy carve-in and dental managed care, while preserving federal hospital funding historically received as Upper Payment Limit (UPL) payments. UPL payments were supplemental payments making up the difference between what Medicaid pays for a service and what Medicare would pay for the same service.

Replacing the UPL payment methodology are two funding pools:

- Uncompensated Care (UC) pool payments are designed to help offset the costs of uncompensated care provided by hospitals and other providers; and
- Delivery System Reform Incentive Payment (DSRIP) is an incentive payment to a hospital or other provider for developing programs or implementing strategies to enhance access to health care, increase the quality of care, the cost-effectiveness of care provided and the health of the patients and families served.

The waiver provides new means for local entities to access additional federal match funds:

- Through a program and process that is transparent and accountable for public funds.
- To help pay for health care services to individuals who are uninsured.
- To provide financial incentives under DSRIP for projects and investments that increase:
    - Access to health care services.
    - Quality of health care and health systems.
    - Cost-effectiveness of services and health systems.
    - Regional collaboration and coordination.

Under the 1115 transformation waiver, eligibility to receive UC or DSRIP payments requires participation in a Regional Healthcare Partnership (RHP). Each RHP must submit a regional plan due to HHSC and CMS by October 31, 2012, which will lay out selected DSRIP projects, estimated funding for each project, and identify performing providers to implement those projects. The anchoring entity is the one entity in an RHP that acts as a primary point of contact for HHSC in the region and is responsible for seeking regional stakeholder engagement and coordinating development of an RHP plan.

Feasibility

HHSC has incorporated utilization of CHWs in a draft in the RHP Planning Protocol approved by CMS, including the following:

- Category 1, Infrastructure Development – Increase Training of Primary Care Workforce
  - Increase the number of primary care providers (i.e., physicians, residents, nurse practitioners, and physician assistants) and other clinicians/staff (such as health coaches and CHWs)
  - Develop workforce enhancement initiatives to support access to behavioral health providers in underserved markets and areas (e.g., psychiatrists, psychologists, licensed medical social workers, licensed professional counselors, and licensed marriage and family therapists.)
    - Program developers will develop a plan to remediate gaps identified and data reporting mechanism to assess progress toward goal. This plan will specifically identify the severity of shortages of behavioral health specialists in a region by type (psychiatrists, licensed psychologists, nurse practitioners, physicians assistants, nurses, social workers, licensed professional counselors, licensed marriage and family therapists, licensed chemical dependency counselors, peer support specialists, and CHWs, etc.).
  - In addition, CHWs could potentially be utilized toward the goal of enhancing interpreter services and culturally competent care.
- Category 2, Innovation and Redesign
  - Implement evidence-based health promotion strategies such as use of CHWs, innovations in social media and messaging for targeted populations Engage

community health workers in an evidence-based program to increase health literacy of a targeted population.

- Establish/expand a Patient Care Navigation Program – The goal of this project is to utilize CHWs, case managers, or other types of health care professionals as patient navigators to provide enhanced social support and culturally competent care to vulnerable and/or high-risk patients.
  - Program developers have the option to provide an intervention for a targeted behavioral health population to prevent unnecessary use of services in a specified setting (i.e., the criminal justice system, emergency department, and urgent care, etc.).
  - Developers are to meet certain milestones, including: Design community-based specialized interventions for target populations. Interventions may include (but are not limited to) Residential Assistance (Foster/Companion Care, Supervised Living, Residential Support Services). CHWs can be utilized toward this milestone.

The decision on whether or not to utilize CHWs in an RHP plan depends on the participants in each region. While the initial plans are due October 31, 2012, there will be opportunities to modify RHP plans in 2013, including to add projects if funds are available.

Texas Community Health Worker Study – Report to the Texas Legislature
As required by H.B. 2610, 82nd Legislature, Regular Session, 2011

APPENDIX A
Description of Study Methodology

A. Overview

The Study, conducted by University of Texas Health Science Center at Houston, School of Public Health, Institute for Health Policy, used multiple methods, including a targeted literature assessment, case examples of successfully sustained community health worker (CHW) services, state and national key informant interviews, eight focus workshops, an online survey of CHW employer and potential employers, consultation with the Promotor(a) or Community Health Worker Training and Certification Advisory Committee, and consultation with Department of State Health Services (DSHS) and Health and Human Services Commission (HHSC) staff.

Study methods provided a synthesis of current data from sources in Texas and other states to address the following components outlined in HB 2610, 82nd Legislature, Regular Session, 2011:

- Study the desirability and feasibility of employing promotores and community health workers to provide publicly and privately funded health care services in this state;
- Explore methods of funding and reimbursing promotores and community health workers for the provision of health care services and outline the costs to this state of the funding and reimbursement; and
- Develop recommendations to maximize the employment of and access to promotores and community health workers and expand the funding and reimbursement for services provided by promotores and community health workers.

The Study Team included three researchers affiliated with the Project on Community Health Worker Policy and Practice, a component of the Institute for Health Policy housed at the University of Texas Health Science Center at Houston, School of Public Health. The researchers were supported by three Graduate Research Assistants who are pursuing their doctorates at the

School of Public Health. In addition to DSHS and HHSC staff, several experts on health care management, policy, and finance contributed to the design and implementation of each of the methods. Several hundred Study participants volunteered their time and expertise to provide input in various Study methods (See Table 1 below):

Table 1. Study participants by method

Study Phase	Participants
Case Examples (Texas and U.S. CHW employer and payers)	14
Key Informant Interviews (Texas and U.S. CHW employers, researchers, educators, and CHWs)	21
Focus Workshops (Texas CHW employers, potential employers, and	81
Employer Survey (Texas CHW employers and potential employers)	234
Total	**356**

Note: Total number may include duplication of participants as some individuals participated in different aspects of the study phases.

B. Regions Review Process

The primary purpose of the Regions Review process was to establish as large as possible database of employer and potential employer organizations. This database was then utilized to invite potential participants to participate in the online Employer Survey using a "snowball" outreach approach. The "snowball" approach is a non-probability sampling technique where known subjects provide reference to possible participants for inclusion in the survey. A second purpose was to supplement other data sources by exploring and describing differences in CHW employment patterns among the DSHS Health Service Regions.

Community Health Services staff in each of the eight Health Service Regions (HSRs) were contacted by the Study Team who described the Study and requested participation. Telephone contacts were made from late April through mid-June 2012. DSHS regional contacts were asked to identify specific CHW employers and other organizations which employed or might potentially employ CHWs.

C. Literature Assessment

A literature assessment was conducted at the beginning of the Study to summarize selected current findings on CHW services. Over 400 hard copy and electronic documents were examined, from both peer-reviewed and non-peer reviewed literature, prioritizing those published in 2007 and later, and emphasizing those materials pertaining directly to Texas. A total of 62 documents were included in the final review. Documents were selected for review if they addressed any of the following:

- Cost-effectiveness
- Return on Investment
- Potentially sustainable financing mechanisms

A summary of the literature assessment is attached as Appendix B.

D. Case Examples

The method of case examples was chosen to provide an in-depth assessment of services provided by CHWs and the financial components related to those services. CHW service case examples were selected on reported success in terms of outcomes. "Success" was defined primarily in financial terms and health outcomes, with preference for services that have moved in a significant way toward sustainable financing. Final selections were made in consultation with a working group, made up of staff from DSHS and HHSC.

Data collection took place in March 2012 and included interviews by phone with individuals representing 14 organizations and a review of related documents and websites. Eight organizations were selected as case examples in Texas:

- Texas A&M Colonias Program, U.S.-Mexico border region
- Gateway Community Health Center, Laredo
- Community Health Choice, Houston and statewide
- Baylor Health Care System, Dallas
- Texas Tech University, Lubbock

- CHRISTUS Santa Rosa Health Care, San Antonio
- Memorial Hermann Health System, Houston
- Dallas Children's Hospital, Dallas

Interviews were conducted with six additional organizations outside Texas:

- Community Health Access Program (CHAP), Ohio
- Molina Healthcare and Hidalgo Medical Services, New Mexico
- Benton County Health Department, Oregon
- Bronx Lebanon Hospital, New York
- Langdale Corporation, Georgia

Interviews were conducted using a question guide; however, interviews were open-ended in nature and followed no specified order. Each interview included the following key questions:

- What evidence or data as to the effectiveness and/or cost-effectiveness of CHWs contributed to your decision to employ CHWs in the first place?
- What have been the major results of employing CHWs in terms of health outcomes and/or financial impact?
- What would be helpful to your organization in terms of policy and systems change in order for you to expand and/or make permanent your commitment to employment of CHWs?

E. Key Informant Interviews

Key Informants were selected in consultation with DSHS and HHSC staff. A total of 21 interviews were conducted, including 15 interviews with individuals with direct experience of CHW services in Texas, and six interviews with individuals with national expertise concerning CHW services. Interviewees included health care providers, state and private health administrators, researchers, public health advocates, CHW instructors, and a CHW. Approximately two-thirds of Texas Key Informants work directly with CHWs and another third are involved with CHW training and/or health care systems capacity-building.

Interview protocols addressed:

- The desirability of employing CHWs, including CHW roles, and evidence of CHW effectiveness
- The feasibility of employing CHWs, including potential financing mechanisms for expanded CHW employment
- CHW education and training issues related to the development of the workforce

Key Informant Interviews – Organizations

- Herman Memorial Hospital, Houston
- University of Texas Medical Branch (UTMB), Galveston
- Houston Regional CHW Network, Houston
- San Antonio Metro Health District, San Antonio
- McKesson Corporation (Texas Medicaid Wellness Project), statewide
- Migrant Health Promotion, South Texas
- Texas Association of Community Health Centers (TACHC), Austin
- Texas Area Health Education Center (AHEC) – East, Galveston
- Texas AHEC East – Coastal Region, La Marque
- Maximus, Inc., statewide
- Gateway to Care, Houston
- Quad Counties Council on Alcohol and Drug Abuse, Del Rio
- Superior Health Plan, Austin
- Dia de la Mujer Latina, Inc., Manvel
- DentaQuest, Austin
- The Center for Health Professions, University of California, San Francisco
- Center for Excellence in Rural Health, University of Kentucky
- Public Health – Seattle-King County, Washington
- Office of Community Health Workers, Massachusetts Department of Public Health
- Minnesota Community Health Worker Alliance
- Institute for Health Policy, University of Virginia

F. Focus Workshops

Eight Focus Workshops were conducted in six Texas cities (El Paso, Lubbock, Houston, Weslaco, Dallas, and San Antonio). Two of the eight workshops were conducted in Spanish. Attendees for the Focus Workshops were selected by local host partners and approved by the Study Team and DSHS staff. Approximately 15-20 individuals were invited for each group. A total of 81 individuals participated, of which approximately two-thirds were employers and potential employers and one-third were CHWs.

Focus Workshops followed a structured protocol and were scheduled for approximately two hours. Participants received copies of the Study charge and began with an open discussion where participants were asked to comment on the roles CHWs play, examples of the impact of CHWs, and the funding of CHW services and health care services generally. Focus Workshop participants, working in small groups, generated a consensus answer to the following question: "How could funding best be organized to support increased and sustainable CHW services in your organization?"

G. Online Employer Survey

The Employer Survey was implemented in June 2012. The survey addressed the desirability and feasibility of employing CHWs and documentation and assessment of current methods of financing CHW services. Basic profiles of responding employers and potential employers were also collected.

Methods utilized to invite participation in the survey included endorsed survey forwarded email invitations, direct survey email invitations, and postal mail. The Study Team collected addresses for individuals and organizations affiliated with or utilizing CHW services. Postal invitations and emails were directly sent to contacts within these organizations. Endorsed surveys were those forwarded by specific contacts affiliated with various agencies, including DSHS, trade associations, and hospital associations. All emails included an embedded survey link to connect to the survey.

Approximately 2,600 individuals were contacted through these methods. A total of 234 individuals responded to the survey, including 160 who reported having CHWs working or volunteering in their organizations. Seventy four respondents were from organizations that did not have CHW services. Survey respondents were from a range of organization; however, most were from hospitals (17 percent), universities/colleges (15 percent), and community-based organizations (14 percent).

H. Study Limitations

The timeframe for this study and resulting report to the Legislature was short (10 months). With the use of multiple methods, the Study Team was frequently implementing several methods simultaneously, limiting the benefits of one method informing the next.

The Literature Assessment focused on data from 2007-2011, which led to the exclusion of significant earlier research related to CHW effectiveness and potential return on investment and financing. Therefore, the Study Team examined several systematic reviews of earlier CHW literature before 2007; however, CHW studies prior to 2007 do not provide information on key financial components, such as return on investment and methods of financing.

The process of categorizing financing models in an easily understandable way, including all theoretically possible funding models, was more challenging than anticipated, in part because available studies did not provide detailed information. The qualitative nature of this study has meant that the intentional sampling of knowledgeable individuals for the Texas and national Key Informant interviews and for the eight Texas Focus Workshops led to the inclusion of a majority of individuals with considerable knowledge of CHW services. To ensure additional balance of respondents, efforts were made to also include potential employers with relatively little knowledge of the CHW workforce and CHW services in the Focus Workshops.

Finally, the Study Team, in consultation with DSHS and HHSC, chose to use a non-random convenience sample for the online Employer Survey, incorporating employers listed on initial and renewal applications from CHWs. Although there are tradeoffs with this decision in terms

of the ability to generalize about the study findings, numerous studies in the CHW field in other states and nationally have approached surveys in a similar fashion.

Community Health Worker Study - Report to the Texas Legislature
As required by H.B. 2610, 82nd Legislature, Regular Session, 2011

Appendix B

Literature Assessment

Conducted by the University of Texas Health Science Center at Houston, School of Public Health, Institute for Health Policy (UTHSCH-SPH)

The following assessment is based on a scan of recent documents, both published and unpublished, on a limited set of subtopics related to community health workers (CHWs). Over 400 documents were examined, including web-based reports, prioritizing those published in 2007 and later. This was not a formal literature review, in that it was not conducted using a systematic search of peer-reviewed journals.

The literature assessment focused on documents that address the impact of CHW services on access, quality, and efficiency of CHW services, emphasizing those materials pertaining to Texas. Documents were selected for relevance if they addressed any of the following: measures of CHW effectiveness; issues of cost-effectiveness or return on investment (ROI); or potentially sustainable financing mechanisms. A total of 62 documents were included in the final analysis.

Several formal literature reviews have been conducted in this period, notably by Brownstein et al. (2007) and Viswanathan et al. (2010). Earlier literature reviews were summarized in the Health Resources and Services Administration (HRSA) CHW National Workforce Study (2007) and the CHW financing study by the National Fund for Medical Education (Dower et al., 2006). All noted the paucity of cost-effectiveness data in the literature, and only one (Dower) looked at potential financing models.

Evidence of CHW Effectiveness

The roles and functions of CHWs. The Institute for Medicine recommended that CHW services be included in the health care team to improve the health of underserved communities (Martinez & Knickman, 2010). The evidence presented in the articles reviewed for this summary reflects a variety of population groups characterized by the presence of health disparities including

minority subgroups, such as Latinos/Hispanics, African-Americans, Native Americans or Southeast Asians, underinsured or uninsured, persons of lower socioeconomic status, and populations in limited health resource regions (Dohan & Schrag, 2005).

An international literature review for the World Health Organization (WHO) supports the premise that "services provided by [CHWs] are expected to be more appropriate to the health needs of populations than those of clinic-based services, to be less expensive and to foster self-reliance and local participation" (Lehmann & Sanders, 2007).

Basic health care needs and access. Some empirical studies indicate that CHWs can help communities to overcome health care barriers and inefficiencies (Harris et al., 2008), promote immunization uptake, and improve outcomes for decreasing respiratory infections and malaria (Lehmann & Sanders, 2007). In a rural migrant population, CHWs increased access to health care and low-cost or free medications (AHRQ, Gray, 2012).

A pilot health care access project in California's Central San Joaquin Valley was funded from 2007-2009 by grants from the Centers for Medicare and Medicaid Services (CMS) Hispanic Health Services Research Grant Program and Kaiser Permanente's (KP) Fresno-Community Benefits Program to evaluate CHWs' effectiveness in improving access for immigrants.

This pilot project utilized a non-randomized one-group study design with the CMS funding focusing on legal resident adults and elders, while the KP funding served mixed immigration status families. The measures of health care access evaluated were insurance status, usual source of care, receipt of regular physical exam, and self-efficacy. CHWs completed baseline surveys with participants and engaged in phone calls and follow-up visits to track progress in obtaining the services, provide additional referrals for care, and assist in any applications or paperwork. Another survey was conducted at three months post-intervention. All of the health care access indicators had a significant increase from baseline to follow-up care in each participant category:

> Among the documented adult participants (CMS study), 45 percent and 70 percent had insurance at baseline and follow-up, respectively, while among the undocumented participants (KP study), 10 percent and 20 percent had insurance at baseline and follow-up, respectively. In addition, among the documented adult participants, 60 percent, and 90 percent had a regular source of care at baseline and follow-up, respectively, while among the undocumented participants, 13 percent and 59 percent had a source of care at baseline and follow-up, respectively (Capitman et al., 2010).

Flores and colleagues (2005) found that among uninsured Latino children, CHWs significantly increased the rate of coverage through Medicaid and the State Children's Health insurance program (SCHIP), as compared to other conventional methods of recruitment. CHWs were rated highly for their assistance navigating through the Medicaid application process and utilization of resources, as well as reducing the time required to obtain coverage.

Maternal/child health. A program in Tarrant County incorporated CHWs in maternal/child health (MCH) services to decrease adverse birth outcomes, specifically infant mortality (Cardarelli et al., 2011). The "Auntie-Tia" program was developed through a community-based participatory research (CBPR) process as a means to reduce disparities in pregnancy outcome for African-Americans in Tarrant County. Tarrant County has higher infant mortality rates compared to the state of Texas rate, and the U.S. Infants born to African Americans within the county were up to three times more likely to die within the first year of life than infants born to White mothers.

The Auntie-Tia CHWs provided prenatal and post-natal support, including prenatal education, parenting education, labor support, breastfeeding education, and home visiting for up to four months post-delivery. The paper does not present results in detail, but notes results from a randomized controlled trial in which women who received CHW services from the Auntie-Tia program had lower rates of adverse pregnancy outcomes and increased breastfeeding rates.

Another MCH program focused on Latino immigrants and refugees living in Boise, Idaho (AHRQ, Hobbes, 2011). CHWs provided patient support, health care navigation, and health education. After the first year of implementation, program results included increased access to care, education, and social services, including WIC, Medicaid, and the Supplemental Nutrition Assistance Program (SNAP), reduced anxiety (from 85 percent to 20 percent), and fewer missed appointments (3 percent of enrolled patients missed appointments).

The "Community HUB/Pathways" model, which originated in Ohio, has been replicated in several other states and their results have been reported by the Agency for Healthcare Research and Quality (AHRQ, 2010). The model was first applied to improve birth outcomes and has been embraced as a programmatic and payment model by the State of Ohio (see more detail in Appendix D. Case Examples).

Chronic disease

Diabetes: Gateway Community Health Center (Texas). In two studies of diabetes management, CHWs at Gateway were found to be effective in significantly reducing hemoglobin A1c (HbA1c), as well as improved diabetes management (Culica et al., 2008; Joshu et al., 2007). Joshu and colleagues discussed the results of a promotora-led diabetes self-management program in Laredo. The Gateway Community Health Center is a federally qualified health center (FQHC) that serves a predominately Latino and uninsured (approximately 60 percent) population. Approximately 20 percent of patients seen in the clinic are diabetic and have been referred by other medical providers for diabetes self-management. Patients were first assessed by a provider, provided basic education materials and a treatment plan, and then referred to the promotora-led intervention. Promotoras provided group classes and individual support. Over 80 percent of the participants completed the promotora-led intervention. Most patients achieved their self-established goals of increased physical activity (96 percent), medication adherence (79 percent), stress management (98 percent), regular blood sugar testing (95 percent), and proper foot care (77 percent). By the end of the program, approximately 63 percent of participants had HbA1c levels below 7.5, and levels were significantly lower than at baseline and at three months follow-up.

Another FQHC in western Massachusetts, serving a largely Latino population, also piloted a chronic care model for diabetes. The CHW-led intervention, included a self-management approach over a three-year course using bilingual multisession activities, including diabetes education classes, exercise classes, and chronic disease self-management classes. The project combined data of 275 individuals from a disease registry and project-participation data. Mean HbA1c levels decreased significantly from 8.6 to 8.0 after their participation in the self-management classes for a mean of 20.6 months. The authors described the CHWs as the "cornerstone" of this self-management project, concluding that it was the ability of the CHWs to relate to patients as knowledgeable peers that allowed them to engage with and motivate patients to make improvements in their management of their condition (Liebman et al., 2007).

Researchers tested the effectiveness of a culturally tailored, behavioral theory-based CHW intervention for improving glycemic control in a randomized low-income underserved population of Latino and African American diabetics from Detroit, Michigan. Participants in the

intervention group had a mean HbA1c value of 8.6 at baseline, which improved to a value of 7.8 at six months of follow-up, a finding that is clinically significant. Researchers provided evidence of the effectiveness of CHWs as members of multidisciplinary teams engaged in culturally appropriate health and social services delivery. For example, the intervention group participants' cholesterol (LDL) level improved significantly from baseline to six-month follow-up (mean 105 at baseline and 95 at six-month follow-up) (Spencer et al., 2011).

A randomized control trial was conducted in Los Angeles to assess the relative effectiveness of a CHW intervention on various health measures and clinical indicators among 189 Latinos newly diagnosed with type 2 diabetes, as compared to usual clinical diabetes care. Researchers found that culturally tailored outreach and education programs, based on transtheoretical models and delivered by trained CHWs over a six-month period, significantly improved self-care behaviors and decreased body mass index (BMI). At six-month follow-up, significant positive differences were observed in health status, emergency department (ED) admissions, medication-taking behavior, fruit and vegetable intake, exercise, and diabetes knowledge. For example, mean HbA1c decreased from 8.6 to 7.2 in the CHW intervention group, while decreases were not observed in the non-contact control group.

The authors concluded that CHWs' understanding and knowledge of local culture, values, health beliefs and behaviors, access issues, environmental influences, and language barriers can help to address and reduce the impact of diabetes and its complications. According to the authors, CHWs can provide additional assistance in retention and follow-up, helping patients to appropriately engage and utilize the health care system and local community resources, resulting in informed and motivated patients and family members. In addition, CHWs can support health care professionals in changing health behaviors and improving the management of diabetes (Babamoto et al., 2009).

Asthma: Merck Childhood Asthma Network. Asthma management significantly improved among children enrolled in a CHW care coordination intervention (Findley et al., 2008). Care coordination services are adjunct to medical services and primarily serve to effectively link families to multiple health care providers. In the Merck Childhood Asthma Network, four care coordination sites each employed three or four CHWs in Chicago, New York, Philadelphia, and San Juan (Puerto Rico). A fifth site (Los Angeles) employed school nurses as care coordinators.

The demographics of participants varied by site: 1) Chicago – 100 percent African American; 2) New York – 91 percent Latino and 9 percent African American; 3) Philadelphia – 85 percent African American, 11 percent Latino; 4) San Juan – 100 percent Latino; and 5) Los Angeles – 70 percent Latino, 22 percent African American.

CHWs provided outreach to, and enrollment of, eligible families; established asthma management goals with the family; facilitated interactions with the health care system; provided clinical or social service referrals; provided culturally competent, individualized asthma education; built social support for improved asthma management; and assisted in reducing home environmental triggers. Results from the CHW-coordinator sites were at least comparable to those in the nurse-coordinator site.

Chicago: 387 families in Chicago's South Side were recruited through asthma screening projects held at local schools and community events. At the 12 month follow-up, 98 percent of children had increased confidence in controlling asthma. A large percentage (86 percent) had a reduction in asthma-related school absences and demonstrated a significant reduction of ED visits (51 percent) and hospitalization (78 percent).

New York: Four CHWs served as part of a hospital asthma team and recruited eligible families. CHWs conducted home visits and weekly contacts for the first 3 months, then reduced contact to monthly reminders from months 4 through 6, and to bimonthly contact until the 12th month. Initial contact involved choosing asthma management goals, identification of home environmental asthma triggers, as well as implementing pest management strategies. CHWs also provided education, health care navigation services, and social support. The program demonstrated an increase in confidence of controlling asthma (94 percent), reduction in environmental triggers (91 percent), reduction in asthma-related school absences (78 percent), as well as significant reduction in ED visits (60 percent) and hospitalization (72 percent).

Philadelphia: Two established asthma prevention/reduction programs integrated their services to serve four separate communities. The Community Asthma Prevention Program (CAPP) of Children's Hospital of Philadelphia and the Child Asthma Link Line of Philadelphia Allies Against Asthma Coalition worked together to develop the coordinated care program. Children were referred by physicians, community-based organizations, Child Asthma Link Line, and school nurses to CAPP, where they received coordinated care by three CHWs. The CHWs

provided home visits, environmental interventions, education and support, and navigation services. Families received at least six home visits within the first six weeks followed by bi-weekly follow-up visits for one year. Much of the follow-up entailed linkage to social services, managed care organizations, housing organizations, schools, and primary care practices.

Results were positive with 100 percent reporting increased confidence in controlling asthma and daily controller use in moderate to severe asthma cases, significant reduction in ED visits (36 percent) and hospitalization (26 percent) as compared to baseline, and significant reduction in asthma-related school absences.

San Juan, Puerto Rico: "La Red de Asma Infantil de Puerto Rico" was a community asthma program that partnered with the city health department, a provider association, and two local housing projects. Four CHWs worked with low-literacy populations and provided education, outreach, medication management, and environmental trigger identification and reduction education. Results included 46 percent of participants with moderate to severe asthma reporting daily controller use, 97 percent reporting increased confidence in controlling asthma, reduction in asthma-related school absences (82 percent), and significant reduction in ED visits (43 percent) and hospitalization (68 percent).

Los Angeles: The L.A. Unified School District Asthma Program employed five school nurses as care coordinators. Results included 93 percent of participants reporting increased confidence of controlling asthma, reduction in asthma-related school absences (82 percent), and significant reduction of ED visits (63 percent) and hospitalization (52 percent).

Hypertension: In a published 2007 literature review, 14 studies were examined to determine the effectiveness of CHW services on interventions for hypertension. Among these studies were 8 randomized control trials (RCTs). Based upon the review, there was a consistent trend for the CHW to be of the same racial or ethnic background, socioeconomic group, and from the same community. Additionally, all of the CHWs utilized in the interventions studied did not have any prior experience in health care.

The roles of CHWs were consistently identified among all of the studies reviewed to include providing health education services necessary to control hypertension and related risk factors, providing direct services to patients (measuring and monitoring blood pressure), providing social support, and serving as a mediator for patients between the social service and health care

systems. All of the reviewed studies also showed consistent training for the CHWs in hypertension protocol and care. Ten of the studies reviewed measured positive behavior change from the CHW intervention and nine of these yielded positive results.

Significant improvements in hypertension control were reported in seven out of eight of the RCTs. All five studies measuring for medication adherence showed positive improvements among patients. Two of the reviewed studies specifically linked the successful intervention in part to the social support and trust of the relationship provided by the CHWs (Brownstein et al., 2007). A variety of interventions have also provided evidence that CHWs have been effective in reducing risk factors for cardiovascular disease utilizing the Salud Para Su Corazón Model (Balcázar et al., 2011b).

HIV/AIDS: The Prevention and Access to Care and Treatment (PACT) project serves HIV-positive individuals who were not responding to standard health care practices. PACT is a community-based program under Partners in Health, serving African Americans and Latinos in inner-city Boston. Patients deemed as failing to maintain the appropriate CD4 counts and identified as non-adherent to antiretroviral therapy were referred to PACT by their medical providers.

PACT's CHWs, who are ethnically and linguistically similar to program patients, provided home-based care and support, as well as outreach, counseling and health care navigation (AHRQ, Behforouz, 2011). They also provided education on adherence to treatment regimens, accompanied patients to health care and social service appointments, and provided communication assistance. Patients within the program showed significant improvement in CD4 count and increased adherence to HIV/AIDS retroviral therapies, as well as decreased emergency department (ED) and hospitalization costs. The improvement in CD4 counts was so significant in many patients that they were no longer diagnosed as having AIDS. Published data suggest that program services cost about $5,000 per HIV/AIDS patient/year.

Cancer: An article on Patient Navigation with cancer survivors from the Survivorship Working Group does not report actual outcome data, but offers a new systematic look at measurement of navigation outcomes, which may apply in situations where CHWs serve as Navigators. In the survivorship aspect of cancer care, patients are no longer under the care of an oncologist, and need routine follow-up care to maintain remission and to follow treatment guidelines.

The Working Group, convened by the American Cancer Society, proposed the use of clinical outcomes including symptom management, physical functioning, mental health, management of other chronic and/or comorbid conditions, coordination of specialty care, and preventive medicine. Health care utilization outcomes include access to care, adherence to clinical follow-up recommendations, utilization of survivorship care, and continuity of care. The Working Group advocated integrating a medical home into survivorship care (Pratt-Chapman et al., 2011).

A number of CHW initiatives in cancer screening outreach have been reported over the years (HRSA, 2007). A pilot program in Atlanta, Georgia, reported significant increases in follow-up appointments and treatment after abnormal mammogram screenings (Crump et al., 2008). Approximately 94 percent of women in the intervention group kept their appointments compared to approximately 76 percent of women in the conventional group. More women in the intervention group (98 percent) attended their biopsy or fine needle aspiration appointments compared to 80 percent of those in the conventional treatment group (Crump et al., 2008).

A program working with American Indian women increased breast cancer screening rates (AHRQ, Burhansstipanov, 2011). The CHWs were trained specifically to use their cultural background to help women overcome their fears and other psychosocial barriers to breast cancer screening. In Massachusetts and New York, a mixed patient population was randomized into a CHW intervention and conventional colorectal screening program. Colorectal cancer screening rates and follow-up treatments were significantly increased in the CHW intervention group compared to the conventional recruitment method (Hendren et al., 2010; Percac-Lima S et al., 2008).

Health related behaviors. Patients exhibiting risky health behaviors were linked to community resources, including CHWs, in the Community Health Educator Referral Liaison program. In this program, providers referred unhealthy patients, who were at possible risk of cardiovascular disease, cancer, or other chronic diseases, to CHWs who provided referral to external resources, counseling and support, communication with the primary provider, and follow-up assessment. Patients reported decreases in BMI and improved health status that included improved diet, less smoking and alcohol consumption, and increased physical activity (AHRQ, Holtrop, 2011).

Oral health. There have been very few published accounts of CHW interventions in oral health. New Mexico has piloted a "health commons" model for providing dental care in underserved

neighborhoods. In this model, CHWs provided patient support within several neighborhood care sites, but the impact of the CHW role has not been measured (Formicola, 2004).

Estimates of cost savings and other business benefits from employing CHWs

Evaluating costs and benefits. The CHW National Workforce Study noted the scarcity of cost-effectiveness studies in its 2007 literature review (Health Resources and Services Administration [HRSA], 2007).

Much of the literature has been based on short-term, grant funded projects from private sources (e.g., The Robert Wood Johnson Foundation, W. K. Kellogg Foundation, Livestrong Foundation, American Cancer Society) and federal grant monies (e.g., HRSA, National Institutes of Health [NIH], Office of Minority Health).

These projects have often been funded to include hiring and training of CHWs, as well as intervention and evaluation. However, these studies focused primarily on the efficacy of CHW interventions, and results were generally not comparable due to variations among hiring and training practices (HRSA, 2007). Because of this variability, Whitley and colleagues attempted to help define some basic cost measures for CHW programs (Whitley et al., 2011). In this analysis, the authors identified fixed and variable costs that should be considered when incorporating CHWs into a health care program. They also suggest that costs should include human capital costs, such as employment, training, and supervision/administrative costs. Because of the lack of standardization in training and educational requirements of CHWs, the costs are highly variable. Cost to charge ratios, where providers may charge third party payers additional amounts above actual direct costs, can further affect the cost or ROI for the employment of CHWs in the program.

Since a report by the National Fund for Medical Education on financing of CHW services (Dower et al., 2006), there has been an increased interest in the evaluation of costs and benefits of CHW programs. (For example, in a diabetes education program in Dallas, CHW services proved to be cost-effective in diabetes management (Culica et al., 2008), not only by reducing hemoglobin A1c in program participants, but also by reducing the cost for physician-supervised diabetes educators and nutritional counselors. In this model, the CHW served as the bilingual

health educator and health assessor under the supervision of the clinician/director. The program reduced personnel costs and achieved low annual expenditures per patient ($461). The developers of the Stanford Chronic Disease Self-management Program (CDSMP) demonstrated effectiveness, reducing health care cost by approximately $200 per participant. The savings for participants who completed the study were about $400,000 (Lorig, et al., 2010).

Return on investment (ROI). Return on investment has become an important evaluative parameter for examining the integration of CHWs as part of the health care team (Rush, 2012). Although few published reports of CHW programs discuss costs, several recent papers report a significant return.

Denver Health, the public safety-net heath system for the City and County of Denver, analyzed the return on investment for its CHW program and published one of the first CHW ROI studies. The report indicated that utilization of CHWs saved $2.28 for every $1 spent in the program (Whitley et al., 2006). Primary and specialty care visits increased and urgent/inpatient care dropped with the use of CHW interventions. Denver Health reported that its colorectal screening program provided a positive ROI. Clinics that conducted 175 screenings per year were able to cover the base salary of a CHW at $42,250/year. Clinics that screened at least 50 patients per year were eligible for part-time or full-time CHW salary support (Dwyer, 2011).

The Baltimore City Health Department (BCHD, 2008) proposed integrating CHWs into its health care system to serve patients with chronic diseases. The BCHD employed CHWs to identify and screen high-risk individuals for cardiovascular disease (CVD) and diabetes through three clinics in underserved communities. The 2008 report estimated that this CHW intervention could lead to potential cost savings of $137 per patient per month. Among patients with congestive heart failure, estimates indicated that hospital cost savings could exceed program costs by a ratio of 5:1. Among patients with multiple chronic conditions, the projected ROI was calculated at $2.25-$2.84 saved per $1 spent. No actual data on ROI have been published to date.

The "Community Connector" Program was piloted in three rural Arkansas counties from 2005-2008, utilizing CHWs in a Medicaid demonstration program serving adults with unmet long-term care needs. Funding was received from the Robert Wood Johnson Foundation to match federal Medicaid dollars. Study participants in the intervention group were matched with a control

group in five other nearby counties, through propensity score matching. CHWs conducted outreach to identify individuals with physical disabilities and eligible for Medicaid, with potential unmet need for long term care, or at risk of being placed in a nursing home. There was a reduction in annual Medicaid spending per participant, resulting in a total estimated saving of $3.5 million in Medicaid expenditures over the three years of the program, for a net saving of $2.6 million. Spending among program participants was nearly 25 percent less than non-participants. This is equivalent to a net ROI of almost $3 for every dollar invested in the program.

Models to finance ongoing CHW services

A comprehensive study of financing mechanisms for CHWs was conducted in 2006 by Dower et al., and funded by the Blue Cross and Blue Shield Foundation of Minnesota. The study was the first study of CHW financing mechanisms and is still considered the most comprehensive to date. The study's primary purpose was to identify best practice guidelines to support and sustain the work of CHWs in the United States. The study summarized funding sources for CHW services, including associated benefits and challenges. The study identified four major funding models for CHW services: charitable foundation/government agency; Medicaid, government; government general funds; and private company.

Basic factors affecting potential financial models. As noted above, most of the CHW programs described in reviewed documents have depended on short-term grant funding to support the salaries and services. Presently, there is no single standardized model that defines the role and use of CHWs. Several models incorporate CHWs into the health care team and others include them as part of an auxiliary service to the clinic. However, all articles reviewed addressing employment of CHWs promote the integration of CHWs into the health care team for successful results (Ingram et al., 2011).

The CHW report of the Massachusetts Department of Public Health Community Health Worker Advisory Committee (2009) included a formal review of possible financing models for CHWs. Four categories of funding models were identified: public and commercial insurance, public and private sector operating budgets, public grants and contracts, and private foundation grants. For each option, legal, financial, operational and political feasibility was considered. The report

noted that MassHealth, the Massachusetts Medicaid program, has chosen to pay for CHW services under administrative match. MassHealth can also directly employ CHWs or contract with an institution that employs CHWs to provide services to the community (Mass. Dept. of Public Health, 2009).

Another financing model is the integration of CHWs within a patient-centered medical home (PCMH). In this model, the health care system places the family and patient, rather than the provider, at the center of the system. The PCMH accepts responsibility for coordinating all of the patient's care for a supplemental monthly fee (Balcazar, 2011; Cantor J, 2011; Pratt-Chapman et al., 2011; Volkmann & Castañares, 2011).

Cantor and colleagues discussed a variant on the PCMH, the "community centered health home" (CCHH). The CCHH accepts responsibility for community-based prevention for a broader population, as well as focusing on those at greatest risk and those with disease. Within this model, CHWs called "health coaches" perform functions associated with community-based primary prevention. The authors advocated for incentive payments to CCHHs tied to specific outcomes, and bundling payments for community prevention from multiple sources, not limited to the member's primary third-party payer (Cantor et al., 2011).

Specific state financing initiatives. A few states have begun to incorporate the CHW model into their systems of health care. However, little is known at this stage of development of the CHW models about how financial systems/mechanisms in these states account for the cost and benefits of CHW services.

Although only in its preliminary stages, New Mexico has recently proposed the standardization of training, certification and implementation of CHWs (Griego, 2011) with a view toward sustainable support of CHWs. The organizing New Mexico coalition has proposed that the state department of health be the agency to coordinate training and certification of CHWs and their trainers and the training programs, as well as to develop a registry of certified CHWs.

Oregon, too, is integrating CHWs into its health care system through implementation of the "Pathways" care coordination model (Buntin, 2011). Oregon House Bill 3650 (2011) shifts Medicaid away from the current managed care model towards "coordinated care organizations" that are specifically required to provide members "assistance in navigating the health care delivery system and in accessing community and social support services and statewide resources,

including through … community health workers" (Oregon Revised Statutes Chapter 414, as amended July 2011; Buntin, 2011).

References

Agency for Healthcare Research and Quality [AHRQ]. Burhansstipanov,L. (2011). Lay health advisors help urban American Indian women overcome barriers to breast cancer screening.

AHRQ. (2010). Connecting Those at Risk to Care: A Guide to Building a Community "HUB" to Promote a System of Collaboration, Accountability, and Improved Outcomes.

AHRQ. Behforouz, H. (2011). Culturally competent CHWs improve outcomes and reduce inpatient utilization among inner-city HIV/AIDS patients.

AHRQ. Gray, S.E. (2012). Field-based outreach workers facilitate access to health care and social services for underserved individuals in rural areas.

AHRQ. Hobbes, J. (2011). Culturally responsive maternity care clinic enhances access to care for expectant refugee mothers and their children.

AHRQ. Holtrop, J.S. (2008). Community referral liaisons help patients reduce risky health behaviors, leading to improvements in health status.

AHRQ. Mirkil, M.Q. (2011). Onsite clinic staffed by bilingual culturally competent interdisciplinary team brings health education and primary care to low-income uninsured workers.

Allen, J.K., Dennison, Himmelfarb, C.R,, Szanton,S.L,, Bone, L., Hill, M.N., & Levine, D.M. (2011). COACH trial: a randomized controlled trial of nurse practitioner/CHW cardiovascular disease risk reduction in urban community health centers: rationale and design. *Contemporary Clinical Trials,* 32, 403-411.

American Public Health Association. APHA (2010). Policy Statement 2009-1: Support for CHWs to Increase Health Access and to Reduce Health Inequities. Retrieved from http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1393

Babamoto, K.S., Sey, K.A., Camilleri, A.J., Karlan, V.J., Catalasan, J., & Morisky, D.E. (2009). Improving Diabetes Care and Health Measures Among Hispanics Using Community Health Workers: Results from a Randomized Controlled Trial. *Health Education Behavior*, 36, 113-126.

Balcazar, H., Rosenthal, L.E., Brownstein, N.J., Rush, C.H., Matos, S., & Hernandez, L. (2011). CHWs can be a public health force for change in the United States: three actions for a new paradigm. *Am J Public Health,* 101(12), 2199-203.

Balcazar, H., Alvarado, M., & Ortiz, G. (2011b). Salud Para Su Corazon (Health for Your Heart) CHW model: community and clinical approaches for addressing CVD risk reduction in Hispanic/Latinos. *J Ambulatory Care Manage,* 34 (4), 362-372.

Baltimore City Health Department (BCHD). (2008). Reducing suffering and death from cardiovascular disease and diabetes. Press Release. (article name: Baltimore Disparities Init-CHW.pdf)

Battaglia, T.A., Burhansstipanov, L., Murrell, S.S., Dwyer, A.J., & Caron, S.E. (2011). Assessing the impact of patient navigation: prevention and early detection metrics. *Cancer*, 117(15), 3553-64.

Beckham S., Kaahaaina D., Voloch K., & Washburn, A. (2004). A Community-Based Asthma Management Program: Effects on Resource Utilization and Quality of Life. *Hawaii Med J,* 63, 121-126.

Brownstein, J.N., Chowdhury, F.N., Norris, S.L., Horsley, T., Jack, L., Zhang, X., & Satterfield, D. (2007). Effectiveness of CHWs in the Care of People with Hypertension. *Am J Prev Med, 32(5):435–447.*

Brownstein, J.N., Hirsch, G.R., Rosenthal, E.L., & Rush, C.H. (2011). CHWs "101" for primary care providers and other stakeholders in health care systems. *J Ambulatory Care Manage*, 34(3), 210-220.

Buntin, J. (2011). Coordinating more care in Oregon: Interview with Mike Bonetto PhD. *Governing Magazine*.

Cantor, J., Cohen, L., Mikkelsen, L., Panares, R., Srikantharaja, J., & Valdovinos, E. (2011). Community-centered health homes. Prevention Institute.

Capitman, J., Gonzalez, A., Ramirez, M., & Pacheco, T.L. (2010). The effectiveness of a promotora health education model for improving Latino health care access in California's central valley. San Francisco, CA: Central Valley Health Policy Institute.

Cardarelli, K.M., Perkins, K.P., Beamon, M., Anderson, R., Vishwanatha, J.K., & Ransom, S.B. (2011). Community-based participatory approach to reducing perinatal disparities in Tarrant County: The Auntie-Tia Program. *TPHA Journal*, 63(2), 4-6.

Crump, S.R, Shipp, M.P.I., McCray, G.G., Morris, S.J., Okoli, J.A., Caplan, L.S., Thorne, S.L., & Blumenthal, D.S. (2008). Abnormal mammogram follow-up: do community lay health advocates make a difference? *Health Promotion Practice,* 9(2), 140-148.

Culica, D., Walton, J.W., Harker, K., & Prezio, E.A.(2008). Effectiveness of a CHW as sole diabetes educator: comparison of CoDE with similar culturally appropriate interventions. *J Health Care Poor Underserved,* 19(4), 1076-95.

Dohan, D., & Schrag, D. (2005). Using navigators to improve care of underserved patients: current practices and approaches. *Cancer*, 104, 848-55.

Dols, J. CHRISTUS Health Care Partners Program. [PowerPoint Presentation] (2010), Houston: Texas CHW.

Dower, C., Knox, M., Lindler, C., & O'Neil, E. (2006). Advancing CHW practice and utilization: the focus on financing. San Francisco (CA): National Fund for Medical Education.

Dwyer, A. Patient Navigation: The Colorado Experience. (2011) [powerpoint presentation; article name: Dwyer CDC_August11-Only].

Esperat, M. C., Flores, D., McMurry, L., Feng, D., Song, H., Billings, L., Masten, Y., (May 31, 2012) "Transformacion Para Salud: A Patient Navigation Model for Chronic Disease Self-Management" OJIN: The Online Journal of Issues in Nursing Vol. 17, No. 2, Manuscript 2.

Fedder, D.O., Chang, R.J., Curry, S., & Nichols, G. (2003). The effectiveness of a community health worker outreach program on health care utilization of west Baltimore City Medicaid patients with diabetes, with or without hypertension. *Ethnicity and Disease,* 13(1), 22-7.

Felix, H.C., Mays, G.P., Stewart, M.K., Cottoms, N., & Olson, M. (2011). Medicaid savings resulted when CHWs matched those with needs to home and community care. *Health Affairs*, 30(7), 1366-1374.

Findley, S., Rosenthal, M., Bryant-Stephens, T., Damitz, M., Lara, M., Mansfield, C., Matiz, A., Nourani, V., Peretz, P., Persky, V.W., Valencia, G.R., Uyeda, K., & Viswanathan, M.

(2008). Community-Based Care Coordination: Practical Applications for Childhood Asthma. *Health Promotion Practice*, 12, 52S-62S.

Findley, S.E., Sanchez, M., Mejía, M., Ferreira, R., Peña, O., Matos, S., Stockwell, M.S., & Irigoyen, M. (2005). REACH 2010: New York City. Effective Strategies for Integrating Immunization Promotion Into Community Programs. Health Prom Prac, 10(2), 128S-137S.

Flores, G., Abreu, M., Chaisson, C.E., Meyers, A., Sachdeva, R.C., Fernandez, H., Francisco, P., Diaz, B., Diaz, A.M., & Santos-Guerrero, I. (2005). A randomized, controlled trial of the effectiveness of community-based case management in insuring uninsured Latino children. *Pediatrics*, 116, 1433-1441.

Formicola, A.J., Ro, M., Marshall, S., Derksen, D., Powell, W., Hartsock, L., & Treadwell, H.M. (2004). Strengthening the oral health safety net: delivery models that improve access to oral health care for uninsured and underserved populations. *AJPH,* 94(5), 702-704.

Goodwin, K. & Tobler, L. (2008). CHWs: expanding the scope of the health care delivery system. National Conference of State Legislatures.

Griego, P.A. (2011). Senate Joint Memorial 2. 5th Legislature-State of New Mexico: First Session.

Harris, A.M., McArthur, K., Huang, C., Harcrow, M., & Dacso, C.C. (2008). *The Houston CHW survey: Unanticipated effects of certification.* CUExpo08 Proceedings. Abramson Center for the Future of Health, University of Houston and Methodist Hospital Research Institute.

Health Resources and Services Administration [HRSA], (2007). U.S. Department of Health and Human Services. CHW National Workforce Study [Internet].Rockville (MD): HRSA. Retrieved from http://bhpr.hrsa.gov/healthworkforce/chw

Hendren, S., Griggs, J.L., Epstein, R.M., Humiston, S., Rousseau, S., Jean-Pierr, P., Carroll, J., Yosha, A.M., Loader, S., & Fiscella, K. (2010). Study protocol: a randomized controlled trial of patient navigation-activation to reduce cancer disparities. *BMC Cancer*. 10, 551-562.

Ingram, M., Reinschmidt, K.M., Schachter, K.A., Davidson, C.L., Sabo, S.J., De Zapien, J.G., & Carvajal, S.C. (2011). Establishing a professional profile of CHWs: results from a national study of roles, activities and training. *J Community Health*, 37(2), 529-37.

Johnson, D., Saavedra, P., Sun, E., Stageman, A., Grovet, D., Alfero, C., Maynes, C., Skipper, B., Powell, W., & Kaufman, A. (2011). CHWs and Medicaid managed care in New Mexico. *J Community Health* [epub ahead of print].

Joshu, C.E., Rangel, L., Garcia, O., Brownson, C.A., & O'Tool, M.L. (2007). Integration of a *Promotora*-led self-management program into a system of care. *The Diabetes Educator*, 33(6), 151S-158S.

Kash, B.A., May, M.L., & Tai-Seale, M. (2007). CHW training and certification programs in the United States: findings from a national survey. *Health Policy,* 80, 32-42.

Lehmann, U. & Sanders, D. (2007). CHWs: What do we know about them? (report). Department of Human Resources for Health Geneva.

Liebman, J., Heffernan, D., & Sarvela, P. (2007). Establishing Diabetes Self-Management in a Community Health Center Serving Low-Income Latinos .*The Diabetes Educator,* 33(6), 132S-138S.

Lorig, K.R., Sobel, D.S., Ritter, P.L., Laurent, D., & Hobbs, M. (2001).Effect of a Self-Management Program on Patients with chronic disease. *Effective Clinical Practice, 4*(6).

Marín, A., Carrillo, L., Arcury, T.A., Grzywacz, J.G., Coates, M. L., & Quandt, S.A. (2009). Ethnographic evaluation of a lay health promoter program to reduce occupational injuries among Latino poultry processing workers. *Public Health Reports, 124,* 36-43.

Marina, R.A. (2011). Workers help navigate the medical maze: CHWs lead the way for patients in complex, confusing world. *San Antonio Express News.*

Martin, M.A., Catrambone, C.D., Kee, R.A., Evans, A.T., Sharp, L.K., Lyttle, C., Rucker-Whitacker, C., Weiss, K.B., & Shannon, J.J.(2009). Chicago Initiative to Raise Asthma Health Equity Investigative Team. Improving asthma self-efficacy: developing and testing a pilot community-based asthma intervention for African American adults. *J Allergy ClinImmunol,* 123, 153-9.

Martinez, J., Knickman, J.R. (2010). Community health workers: A critical link for improving health outcomes and promoting cost-effective care in the era of health reform (Rep.). New York: New York State Health Foundation.

Martinez, J., Ro, M., Villa, N., Powell, W., & Knickman, J. (2011).Transforming the Delivery of Care in the Post–Health Reform Era: What Role Will Community Health Workers Play? *Am J Public Health, December; 101(12),* e1-5.

Massachusetts Department of Public Health. (2009). CHWs in Massachusetts: Improving health care and public health (Report). Massachusetts Department of Public Health.

McElmurry, B.J., McCreary, L.L., Park, C.G., Ramos, L., Martinez, E., Parikh, R., & Fogelfeld, L. (2009). Implementing, outcomes, and lessons learned from a collaborative primary health care program to improve diabetes care among urban Latino populations. *Health Promotion Practice, 10*(2), 293-302.

Minnesota Department of Human Services (2008). MHCP to enroll CHWs (CHWs).MHCP Provider Update PHY-08-02R.

Nguyen, T.U.N., Tran, J.H., Kagawa-Singer, M., & Foo, M.A. (2011). A qualitative assessment of community-based breast health navigation services for Southeast Asian women in Southern California: recommendations for developing a navigator training curriculum. *Am J Public Health*, 101(1), 87-93.

Percac-Lima, S., Grant, R.W., Green, A.R., Ashburner, J.M., Gamba, G., OO, S., Richter, J.M., & Atlas, S.J. (2008). A culturally tailored navigator program for colorectal cancer screening in a community health center: a randomized, controlled trial. *J Gen Intern Med,* 24(2), 211-217.

Pratt-Chapman, M., Simon, M.A., Patterson, A.K., Risendal, B.C., & Patierno, S. (2011). Survivorship navigation outcome measures: a report from the ACS Patient navigation Working Group on Survivorship Navigation. *Cancer,* 117(15), 3575-3584.

Richter, R.W., Bengen, B., Alsup, P.A., Bruun, B., Kilcoyne, M.M., & Challenor, B.D. (1974). The CHW: a resource for improved health care delivery. *Am J Public Health,* 64(11), 1056-1061.

Rush, C. (2012). Return on investment from employment of CHWs. *J Ambulatory Care Manage* 2012:35:133-137.

Spencer, M.S., Roskand, A.M., Kieffer, E.C., Sinco, B.R., Valerio, M., Palmisano, G., Anderson, M., Guzman, R., Heisler, M. (2011). Effectiveness of a Community Health Worker Intervention Among African American and Latino Adults with Type 2 Diabetes: A Randomized Controlled Trial. *Am J Public Health.* Published online ahead of print June 16, 2011.

Stankaitis,, J.A.(2005) Reduction in neonatal intensive care unit admission rates in a Medicaid managed care program. *The American Journal of Managed Care,* 11(3), 166-172.

Swider, S.M., Martin, M., Lynas, C., & Rothschild, S. (2010). Project MATCH: training for a promotora intervention. *The Diabetes Educator,* 36(1), 98-108.

Viswanathan, M., Kraschnewski, J.L., Nishikawa, B., Morgan, L.C., Honeycutt, A.A., Thieda, P., Lohr, K.N., & Jonas, D.E. (2010). Outcomes and Costs of CHW Interventions: A Systematic Review. *Medical Care, 48 (9).*

Volkmann, K., Castañares, T. (2011). Clinical CHWs: linchpin of the medical home. *J Ambulatory Care Manage,* 34(3), 221-235.

Wang'ombe, J.K. (1984). Economic evaluation in primary health care: The case of Western Kenya community based health care project. *Soc Sci Med,* 18(5), 375-85.

Whitley, E., Valverde, P., Wells, K., Williams, L., Teschner, T., & Ya-Chen, T.S. (2011). Establishing common cost measures to evaluate the economic value of patient navigation programs. *Cancer*, 117(15), 3618-25.

Whitley, E.M., Everhart, R.M., & Wright, R.A. (2006). Measuring return on investment of outreach by community health workers. *J Health Care Poor Underserved,* 17(1), 6-15.