The Evaluation and Implications of the Diabetes Pilot Study in Los Angeles County Community Based Clinics Participating in the Public Private Partnership (PPP) Program

A dissertation submitted in partial satisfaction of the Requirements for the degree Doctor of Public Health

by

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ABSTRACT OF THE DISSERTATION

The Evaluation and Implications of the Diabetes Pilot Study in Los Angeles County Community Based Clinics Participating in the Public Private Partnership (PPP) Program

By

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Doctor of Public Health

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Professor Gerald Kominski, Chair

This study seeks to evaluate which reimbursement methodologies (capitation vs. fee-for-service) promoted better care management and health outcomes, as well as more cost-effective resource utilization in the care of non-institutionalized, acutely ill, diabetic patients enrolled in 20 community health centers participating in the Public Private Partnership (PPP) program in Los Angeles County, California.

Participating community health centers were randomly assigned to capitated intervention group (n = 10) or traditional FFS payment control group (n = 10). The capitated and FFS groups received $470 per patient per quarter and $94 per visit, respectively. Patients were risk stratified and clinic visits were documented over 10 months.
Patient health data was obtained by trained healthcare providers at each clinic through electronic data registries while billing data was acquired from email communication. OSHPD 2006 annual utilization data was available online. Chronic Care Model Assessment (CCMA) scores, which are structural measures of quality, were self-assessed and reported by the clinics using the CCMA tool. Results from provider interviews and patient satisfaction and knowledge surveys were also described in this report.

Select health outcome measures (HbA1c, LDL, and blood pressure) were analyzed using SAS version 9.3 to assess improvements in patient care and health. Evaluation of the equivalence between treatment groups utilized t-test to compare means and z-scores to compare proportions.

Study groups’ median CCMA scores did not differ significantly although the intervention clinics reported better CCMA scores in October of 2007 and this difference approached statistical significance (p = 0.0562). There was no evidence of harmful health effects to enrolling patients in capitated group clinics, at least under the conditions prevailing in this pilot study.

Patients in both groups appeared comparably satisfied with different dimensions of their care. However, intervention group patients showed markedly higher level of satisfaction in the time clinics took to return their phone calls and in their ability to schedule medical appointments for their diabetes when they needed one.

In terms of knowledge, patients from both study groups did not show marked difference except that more patients in the intervention group knew what their HbA1c level should be.
The dissertation of Helen Hyejin Jung is approved.

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Gerald Kominski, Committee Chair

University of California, Los Angeles
2012
I dedicate this dissertation to my wonderful parents- my mom, Ok Ju Jung and my dad, Sung Kyo Jung. Mom and dad, you have believed in me unwaveringly and I thank you every day for your endless love, support, and sacrifice.

I would also like to dedicate this work to my amazing brother, Steve Jung. Steve, I am lucky and proud to have you as my brother and you truly are the best brother in the universe.
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PRESENTATIONS

1.0 INTRODUCTION AND BACKGROUND

According to the 2010 US Census, Los Angeles County\textsuperscript{a} (LAC) is home to more than 9.8 million people.\textsuperscript{1} LAC is also one of California’s most densely populated counties with over 2,400 residents per square mile compared to California’s overall figure of 238.9 persons per square mile\textsuperscript{b}.

Latinos comprise almost half of the total population (47.7%), followed by non Hispanic Caucasians (27.8%), Asian Americans (13.7%), and African Americans (8.7%). Slightly more than half of the population is females (50.4%) with 64% of the population between the ages of 18 and 65. More than 56% speak languages other than English at home\textsuperscript{c} and 35.4% are foreign born.\textsuperscript{1}

3 out of 4 Los Angelinos are high school graduates (75.5%) while 1 in 4 holds a Bachelor’s degree or higher (28.4%)\textsuperscript{d}. Median household income is $54,375 (below California’s median income of $58,925) and 16% are below the poverty level (compared to California’s 14.2%).\textsuperscript{1} In 2009, 28.9% of individuals residing in Los Angeles County were uninsured for all or part of the year\textsuperscript{e}.\textsuperscript{2}

1.1 Organization, Financing, and Delivery of Los Angeles County Health Care

Safety Net: Brief Summary

The health care safety net in Los Angeles County encompasses public and private hospitals, clinics, private physicians, and other health care professionals that provide medical care to the uninsured or underinsured residents.

\textsuperscript{a} Los Angeles County, LAC, County of Los Angeles, the County are used interchangeably in this report.
\textsuperscript{b} Area of Los Angeles County is 4,060 square miles
\textsuperscript{c} Percent of persons age 5 and older
\textsuperscript{d} Percent of persons age 25 and older
\textsuperscript{e} Insurance status during the 12 months of 2009 for people ages 0-64
According to the California Office of Statewide Health Planning and Development’s (OSHPD) 2004 report, approximately 106 acute care hospitals\textsuperscript{f} and 155 clinics\textsuperscript{g} provided care to the low-income population of Los Angeles County.\textsuperscript{3} These indigent care facilities are generally funded by (in the order of contribution):

- Government sponsored health insurance programs such as Medi-Cal (California’s Medicaid program), Healthy Families (California’s State Children’s Health Insurance Program or SCHIP), and Healthy Kids
- Block grants (realignment funds) generated from state sales taxes and vehicle license fees
- Federal, state, and county/local grants and subsidies
- Revenues collected from health care services furnished to insured patients (e.g., payments from private payers as well as Medi-Cal and Medicare)
- Foundation and philanthropic donations

\textbf{1.1.1 Los Angeles County Department of Health Services}

Established in 1972 by the Board of Supervisors with a mission to improve health through leadership, service, and education, the Los Angeles County Department of Health Services (LACDHS) is the core safety net provider for the County’s low income residents.

With an annual budget of $3.3 billion, it is currently the second largest public health system in the nation, providing over 2.6 million ambulatory care visits and more than 300,000 emergency room visits annually.\textsuperscript{4}

The LACDHS operates four hospitals (LAC+USC Healthcare Network, Harbor-UCLA Medical Center, ValleyCare Olive-View UCLA Medical Center and Health Centers, and Rancho Los Amigos National Rehabilitation Center), \textbf{two} multi-disciplinary

\textsuperscript{f} 6 LACDHS owned, 44 investor owned, and 56 not for profit
\textsuperscript{g} LACDHS owned clinics do not report to OSHPD and thus excluded from the clinic count
ambulatory care centers (High Desert Health System in the Antelope Valley and the Martin Luther King, Jr. Multi-Service Ambulatory Care Center), and six comprehensive health centers (Roybal, Hudson, El Monte, Long Beach, Mid Valley, and Hubert H. Humphrey). The LACDHS also collaborates with over 100 privately run, community-based primary care sites through the Public Private Partnership (PPP) program.

1.2 The Social Security Act, Section 1115 Research and Demonstration Projects (Medicaid 1115 Waiver) for Los Angeles County

During the summer of 1995, LACDHS suffered from a $655 million deficit in an operating budget of $2.3 billion and was forced to consider scaling back services and close or plan for the closing of a number of its health care facilities.\

When President Clinton announced a federal fiscal relief package as part of the Social Security Act, Section 1115 Research and Demonstration Projects (also known as the Medicaid 1115 Waiver) in September of 1995, the State of California and the County of Los Angeles decided to seek assistance from the federal government.

Los Angeles County submitted its application for the Medicaid Demonstration Project to the Centers for Medicare and Medicaid Services (CMS) in February of 1996. CMS officially granted LACDHS Office of Ambulatory Care (OAC) its first five-year financial relief package under the Medicaid 1115 Waiver on April 15, 1996.

The five-year Medicaid 1115 Waiver for LAC covered July 1, 1995 through June 30, 2000. Los Angeles County received $1.2 billion over the course of the Waiver, with $0.2 billion of the funding allocated to mental health.

The demonstration project for Los Angeles was unique in that it was the only county in the nation to be awarded the Medicaid 1115 Waiver alongside states like
Minnesota, New York, Kentucky, and Vermont.

1.3 The Public Private Partnership (PPP) Program

Los Angeles County’s Medicaid 1115 Waiver sought to financially stabilize and restructure the County’s health care system by

1. Reducing the traditional emphasis on hospital care by decreasing inpatient beds in County hospitals, minimizing inappropriate emergency room visits, and initiating a system wide re-engineering processes to improve hospital efficiency

2. Increasing ambulatory care visits by building an integrated system of public and private clinics to provide community based primary, specialty, and preventive care

As such, the Public Private Partnership (PPP) program began in 1997 as a central initiative of the Medicaid Demonstration Project for Los Angeles County.6,7

Under this partnership, LAC integrated private community based health clinics into its network and expanded points of access for ambulatory care in Los Angeles without a large capital investment in building new facilities or hiring additional staff. The number of clinic sites expanded from 45 LACDHS operated non-hospital clinics to 132 County and PPP clinic sites8 in 2000.7

All uninsured persons residing in Los Angeles County with incomes less than 133% of the Federal Poverty Level (FPL) were eligible to participate in the PPP program. The program served 1.3 million patients and provided almost 4 million medical visits from 1997 to 2003.7

The PPP program benefited all stakeholders by extending the provision of County funded indigent ambulatory care to the private sector. The County of Los Angeles now had greater flexibility to contract, expand, and shift the distribution of providers based on

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8 PPP sites include non profit community clinics (FQHC, FQHC look alikes, and free clinics), private physician practices, and for profit clinics
its needs. For the providers, the PPP program paid for ambulatory care to the uninsured that was previously mostly uncompensated.

Prior to the PPP program, there was little or no coordination of care between the public and private clinics. Under the program, County and private providers collaborated to address barriers and enabled community-based planning to respond better to the needs of the community. Patients now benefited from the “system-ness” of ambulatory care.

The PPP program also improved services. By contracting with private Community Health Centers (CHC), LAC increased the availability of weeknight and weekend primary care, the number of clinics providing 24-hour phone consultations, the number of bilingual Spanish clinical staff, and the number of clinics with pharmacy or dispensary as well as radiology services on site.

1.4 The Public Private Partnership (PPP) Program after the Expiration of the Medicaid 1115 Waiver (July 1, 2005 - Present)

In October of 1999, LAC submitted a five-year Waiver extension proposal to CMS. Agreement for an extension was reached in June 2000 and was officially granted on January 17, 2001. This Medicaid 1115 Waiver extension subsidized LA County with approximately $1.6 billion\(^1\) over five years from July 1, 2000 to June 30, 2005.\(^5\) Since the expiration of the Medicaid 1115 Waiver on June 30, 2005, the PPP program has been funded solely by the County of Los Angeles.

Despite a 12% provider rate increase in 2006 and a subsequent allocation of $44.8 million in tobacco settlement for the program in October 2008, PPP clinics strained to meet the needs of the medically indigent. Only 8.5% of total PPP clinic visits were

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\(^1\) $900 million in federal funding, $300 million in combined federal and state funding for cost based reimbursements to County and private clinics, and $400 million in County funding primarily from the Tobacco MSA funds
reimbursed by LACDHS\textsuperscript{7} and resulted in approximately $17 million in annual loss to the clinics.\textsuperscript{7,8} PPP clinics were also subsidizing an average cost of $56/visit, costing nearly $33 million each year and placing further constraints in the clinic’s resources.\textsuperscript{7}

To sustain the PPP program, some advocates argued for a reallocation of the PPP funds, taking funds from some PPP clinics and redistributing them to areas deemed to be in higher need. LACDHS also proposed closing its County run clinics and transferring all primary care services to the PPP funded clinics in 2008. This, coupled with a nationwide recession and mounting state and local budget cuts, threatened to destabilize LAC’s healthcare safety net once again.

1.5 New Public Private Partnership (PPP) Contract and the Diabetes Pilot Study

To address this growing desire for a funding expansion, the Board of Supervisors voted to increase the funding by $46 million. This will increase PPP’s capacity to provide an additional 401,163 primary and specialty care encounters to the County’s medically underserved\textsuperscript{k}. The Board also authorized $54 million for the renewal of existing PPP contracts through June 2011 bringing the total to $100 million for the renewal and expansion of PPP contracts.\textsuperscript{7}

Prior to the PPP program, Los Angeles County’s health care delivery system stressed inpatient over outpatient primary care. Medical homes were scarce and outpatient visits were often single purpose and disease related.\textsuperscript{9}

Even after the introduction of the PPP program, providers were reimbursed an all-inclusive Fee-for-service (FFS) payment rate for face-to-face visits. The LACDHS felt that this encouraged provider centered visits over more cost-effective and sometimes

\textsuperscript{1} \text{or 584,343 visits out of 700,000 total PPP visits}
\textsuperscript{k} \text{This is an approval of the Community Clinic Expansion Program (CCEP) contracts for January 1, 2010 through December 31, 2012 for a total of $46 million}
more desirables types of care not reimbursed under the FFS system, such as group visits and telephone contacts. The Department also believed that the FFS reimbursement methodology did not focus on quality of care or improving patient health status.

In preparation for a new round of contract negotiations with the private clinics under the PPP program, LACDHS sought to explore other methods of reimbursement that do not rely entirely on the provision of a face-to-face visit.

Under this premise, the County convened the PPP Leadership Group with members representing the LACDHS, the Community Clinic Association of Los Angeles County (CCALAC), and PPP Strategic Partners in December, 2004. A Primary Care Subgroup consisting mainly of LACDHS and PPP clinicians was also established to advise the Leadership Group on clinical issues.

The PPP Leadership Group proposed to conduct a pilot study before initiating any substantial changes to either the existing PPP program or payment structure. The group recommended that the pilot focus on chronic rather than episodic care given that 1) chronically ill PPP users made an average of 4.6 visits compared to 2.1 visits for those without chronic diseases 2) 6 out of every 10 PPP visits were for patients with one or more chronic conditions. They further advised that the pilot study build upon the disease management infrastructure previously supported and funded by the Department and already in place at many PPP agencies.

As such, the Leadership Group decided that as a first step, the pilot project should focus on diabetes, since many PPP partners already have established diabetes management programs and electronic diabetes registries. Diabetes was significant in Los
Angeles because the direct and indirect costs of medical care associated with disability and lost productivity due to diabetes was estimated to be $5.6 billion in 2005.\textsuperscript{10}
2.0 EVALUATION DESIGN AND METHODS

The diabetes pilot study was initially an 18-month project designed to evaluate two different modes of payment: traditional fee-for-service (FFS) and capitation. The goals of the pilot study were to determine:

1. which reimbursement methodology promotes better care management,
2. which reimbursement methodology improves patient health outcomes,
3. which reimbursement methodology has more cost-effective resource utilization,
4. the feasibility of implementing a new payment methodology

The Los Angeles County Department of Health Services (LACDHS) Office of Ambulatory Care (OAC) distributed the Request to Participate (RTP) in the Diabetes Pilot Project in January of 2006. To participate, PPP clinics had to demonstrate:

- history of commitment to disease management,
- willingness and ability to collect data required to evaluate the project,
- ability to use computerized disease registries such as the Cardiovascular/Diabetes Electronic Management System (CVDEMS) or the Patient Electronic Care System (PECS) to manage the care of diabetic patients,
- at least 2 years of implementing the Chronic Care Model (CCM) of disease management,
- at least 65% of its diabetic patients enrolled in its registry,
- availability and commitment of their chronic care leadership team to the project,
- attendance of at least 70% of all CCALAC’s Clinical Advisory Group (CAG) meetings over the past 2 years, and
• full-time employment of Agency’s Chief Executive Officer (CEO), Medical Director, and Nursing Director with at least two of the three having held their positions for a minimum of 2 years.

Twenty PPP clinics in Los Angeles County meeting the above criteria were selected and randomly assigned to the capitated payment (intervention) group or the traditional fee-for-Service (FFS) payment (control) group.

Active membership in the Community Clinic Association of Los Angeles County (CCALAC) was one of the eligibility criteria for participation, because clinics must have attended at least 70% of all CCALAC’s CAG meetings in the 2 years preceding the study. Twenty clinics out of CCALAC’s 43 member clinics decided to participate in the pilot study.

Ten community clinics were assigned to each group. The chief distinction between the study groups was their differences in reimbursement. Clinics in the intervention group received a capitated rate of $470 per patient per quarter while clinics in the control group received their payments through fee-for-service billing at $94 per billable visit (Table 1).

For the clinics assigned to the control group, a “billable visit” was defined as a “face-to-face encounter between a patient and a licensed, registered, or certified health care professional that exercises independent judgment in the provision of preventive, diagnostic, or treatment services.”. For the intervention group, clinics were paid per “active” patient per calendar quarter. This capitated rate was five times the traditional FFS rate of $94 and covered additional services not included under “billable visits.” An “active” patient was “someone who had at least one contact (provider visit, phone call, group visit, prescription refill, etc.) with the clinic in the calendar quarter.”.
Table 1: Description of Control (FFS) Group and the Intervention (Capitated) Group.

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Intervention Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment Methodology</td>
<td>Fee-for-service (FFS)</td>
<td>Capitation</td>
</tr>
<tr>
<td>Payment Rate</td>
<td>$94</td>
<td>$470 (= $94 x 5)</td>
</tr>
<tr>
<td>Payment method Definition</td>
<td>Clinic paid $94 <em>per billable visit</em></td>
<td>Clinic paid $470 <em>per active patient per quarter</em></td>
</tr>
<tr>
<td>Definition</td>
<td>Billable visit: “face to face encounter between a patient and a licensed, registered, or certified healthcare professional that exercises independent judgment in the provision of preventive, diagnostic, or treatment services”</td>
<td>Active patient: someone who had at least one contact (provider visit, phone call, group visit, prescription refill, etc) with the clinic in the calendar quarter</td>
</tr>
<tr>
<td>Enrollment Limit</td>
<td>250 acutely ill patients</td>
<td>250 acutely ill patients</td>
</tr>
</tbody>
</table>

Each clinic participating in the pilot study was allowed to enroll up to 250 acutely ill diabetic patients. To qualify, patients had to be eligible to participate in the PPP program, have a high disease severity score as determined by physician assessments using the Diabetes Risk Stratification Worksheet (DRSW), and not be enrolled in the Countywide Disease Management (DM) program. A person must also complete a Certificate of Indigency (COI), supply proof of residency in Los Angeles County, and provide verification of uninsured status to participate in the PPP program.

Providers were paid a one-time-only reimbursement of $50 per enrolled pilot project patient for timely and complete collection and transfer of patient participation agreements, patient intake forms, electronic disease registry information, patient satisfaction surveys, and Chronic Care Model Assessment (CCMA) scores. Based on the enrollment of 250 patients, each clinic was to receive a maximum compensation of $12,500 for submitting the patient data to the Office of Ambulatory Care (OAC). Clinics were also paid $500 for each provider interview.
2.1 Patient Participation Agreement and Intake Forms

Patient Participation Agreement and Intake Forms were submitted one time for each enrolled patient at the time of their first visit.

2.2 Billing Data

Through email communication with LA County OAC, I obtained their billing data for the 10 months preceding the Diabetes Pilot Study (9/2006 – 6/2007) and the 10 months during the study (7/2007 – 4/2008). Billing data contained the names of participating agencies, claim number, visit date, amount paid, ICD9 codes, and CPT codes.

2.3 OSHPD Annual Utilization Data

The 2006 annual utilization data for primary and specialty care clinics was obtained from OSHPD. This dataset is available online and was retrieved on August 10, 2011.\(^1\)

2.4 Electronic Registries Data

Data from electronic registries were submitted once each month. Of the 20 clinics participating in the Diabetes Pilot Project, 16 clinics used PECS (Patient Electronic Care System) Version 3, 1 clinic used PECS version 1, 1 clinic used CVDEMS (Cardiovascular and Diabetes Electronic Management System), and 2 clinics converted to i2i Tracks registry from PECS. The two clinics using the i2i Tracks registry were AltaMed and East Valley, both in the intervention group.

Information provided in the registries included patient demographic information (height, weight date of birth, gender, zip, ethnicity, insurance status, homelessness, migrant status), other pertinent patient information (comorbidities, number of cigarettes, etc.).
smoked, emergency room visits, exercise frequency, vaccination status), blood pressure levels (diastolic and systolic), and lab values such as Hb1Ac, LDL, cholesterol, and creatinine levels.

Clinics participating in the PPP program had a pre-existing relationship with the Council of Community Clinics of San Diego (CCCSD). Raw data from electronic registries were transferred to the Office of Ambulatory Care (OAC), which would then forward the data to the CCCSD to extract and catalog for evaluation.

County funds lapsed in April of 2008, only 10 months into the study. At the time of this report, data for the remaining 8 months of the pilot were missing. Also missing were data from the i2i Tracks registry as funds were exhausted before CCCSD could begin data extraction. Because of this, registry data from AltaMed and East Valley were missing from the final analysis data set.

2.5 Chronic Care Model Assessment (CCMA) Scores

The Chronic Care Model Assessment (CCMA) tool evaluates the effectiveness of an agency in implementing the six basic elements of the Chronic Care Model. The CCMA scores were self-reported by the clinics and collected in six-month intervals, commencing within two weeks of the diabetes pilot study.

The Chronic Care Model (CCM) identifies six essential elements: community resources and policies, health care organization, self-management support, delivery system design, decision support, and clinical information systems.

1. *Community resources and policies* assess the clinic’s linkages to community-based resources that play an important role in the management of chronic illness such as peer support groups, patient education classes, and home care agencies. These services may be provided at local hospitals or specialty groups.
2. **Health care organization** measures an organization’s senior leader’s support of chronic illness care. It also measures having chronic illness improvement represented in an organization’s goals and business plans to encourage management’s involvement and support.

3. **Self-management support** is important because unlike acute illnesses, chronic illnesses are believed to be most successfully managed by the person living with the conditions. Therefore, self-management support involves teaching patients how to manage their illnesses through diets, glucometers, referrals to community resources, etc. This element emphasizes the patient’s role in maintaining health and function and the importance of setting goals, establishing action plans, identifying barriers, and solving problems to overcome barriers.

4. **Delivery system design** focuses on providing a management of chronic illness that is more than simply adding additional interventions to a current system focused on acute care. This includes having a clinical case manager, individual or group visits, telephone contacts for patient follow up, etc.

5. **Decision support** encourages evidence-based practice guidelines or protocols, specialty consultation, provider education, and activating patients to make provider teams aware of effective therapies to be woven into the fabric of patient care. These guidelines will be incorporated into the registry, flow sheets, and patient assessment tools to assist clinicians in providing the best care for chronically ill patients based on evidence based clinical practice guidelines.

6. **Clinical information systems** provide reminders that help providers to comply with evidence based guidelines for chronic illness. They provide feedback to clinician showing how each is performing on chronic illness markers. It also is used for registries for population based care. It can sort and identify patients that have hemoglobin A1c levels above 8.5 for follow-up and create capability for registry to produce treatment planning reports.

### 2.6 Patient Satisfaction and Knowledge Survey

Patient satisfaction surveys were collected on a quarterly basis. The Patient Satisfaction and Knowledge Survey used in the pilot study were adopted from the Bureau of Primary Health Care (BPHC) Patient Satisfaction Survey. The survey attempts to assess a patient’s experience with the healthcare services provided by the clinic and
report on patient’s knowledge about diabetes on a 5-point Likert scale (strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree).

The survey was examined in 2 parts: Satisfaction and Knowledge. Satisfaction measures incorporated patient satisfaction with clinic service coordination, physician availability, access to care, and attention from clinic staff. Knowledge measures gauged general patient knowledge on diabetes and self care.

The patient satisfaction section had 9 questions that were answered in a 5-point Likert scale from strongly agree to strongly disagree.

**Patient Satisfaction Questions**

S1. The time it takes the clinic to return my phone call is…

S2. I can get a medical appointment for my diabetes when I need one.

S3. Clinic staff understands what I tell them.

S4. Clinic staff takes enough time with me.

S5. Clinic staff explains what I want to know.

S6. The number of times that I see my doctor is enough.

S7. I receive information about my medication(s).

S8. My lab test results are explained to me.

S9. The number of times I come to the clinic for my diabetes is…

The patient knowledge section asked 5 questions. Except for the first question, patient knowledge items required a “yes” or “no” answer with respect to the following questions.
Patient Knowledge Questions

K1. My Hemoglobin A1c should be (please write in number) or don’t know.

K2. I know what to do when I have low blood sugar.

K3. I have a self-management/personal health goal.

K4. If I take my diabetes medications some of the time, I will be OK.

K5. Insulin can make people with diabetes go blind.

Please refer to Chapter 6.2 for a complete summary of survey results.

2.7 Provider Interviews

Informal provider interviews were conducted on a quarterly basis and collected 2 to 4 times on-site, depending on the demonstration group. Randomly selected physicians, mid-level providers, caseworkers, health educators, and program administrators were then interviewed to obtain their level of satisfaction and critique of the two payment models. At the time of the proposal, 8 interviews had been conducted with clinics in the intervention group and 6 interviews had been conducted with the control group.

Six control clinics were interviewed on varying dates: Central City CHC, Community Health Alliance of Pasadena (CHAP), Northeast Valley, Mission city, Queenscare, and Children’s Clinic. Eight intervention clinics were also interviewed: AltaMed, East Valley CHC, Eisner Pediatric & Family, El Proyecto del Barrio, Garfield, JWCH Institute, Inc., South Central Family HC, and Venice Family Clinic. Interviews were conducted onsite at each clinic. Eight central questions gauged provider and staff perspectives on agency’s diabetes care management program. Summary of interview responses are provided in Chapter 6.3.
The following questions were asked during the provider interviews:

1. What is your responsibility in the diabetes care management program?

2. What are the strengths of the diabetes care management program at your agency?

3. What are the weaknesses of the diabetes care management program at your agency?

4. Do providers have sufficient contact with diabetic patients to assure good quality care?

5. What are the issues that diabetic patients typically have that interfere with their ability to comply with self-care?

6. Overall, how would you assess the quality of patient care provided to diabetic patients?

7. To improve the quality of care that is provided, what would be required?

8. What else should we know about the diabetes care management program?
3.0 EVALUATION RESULTS

The dataset included quantitative and qualitative data from participating Public Private Partnership (PPP) clinics in addition to the California Office of Statewide Health Planning and Development’s (OSHPD) Annual Utilization Data for 2006.

Quantitative data came from computerized diabetes registries PECS (Patient Electronic Care System) and CVDEMS (Cardiovascular and Diabetes Electronic Management System), in addition to results from the Chronic Care Model Assessment (CCMA) tool. As explained in the previous section, i2i Track data for the intervention group’s AltaMed and East Valley Community Health Clinic were missing.

Qualitative data included findings from the Patient Satisfaction and Knowledge Survey and Provider Interviews. The dataset spanned over 10 months; data transmission to the Office of Ambulatory Care (OAC) began in July, 2007 and ended in April, 2008.

3.1 Participating (P) vs. Non-Participating (NP) Clinics

Not all clinics in Los Angeles County were eligible to participate in the Diabetes Pilot Study. When clinics that participated in the Diabetes Pilot Study were compared to the clinics that did not participate, I found that participating clinics were more likely to be classified as a Federally Qualified Health Center (FQHC).

Also, a larger proportion of non-participating clinics were single, stand-alone clinics whereas participating clinics operated multiple service sites. The median range of encounters for the participating clinics was 20,000 to 39,999 while that of the non-participating clinic was 10,000 to 19,999.

The majority of patients in the participating clinics were covered under the PPP program (37.1%) while almost 1 in 4 patients in the non-participating clinics were paying
out of pocket or on a sliding fee scale.

Participating clinics and non-participating clinics were similar in their number of encounters by principal service and the types of primary care staff employed full time. They were also identical in that their patients were generally Hispanic females, likely living below the 100% FPL. The median age range for both groups was 20-34 years. Chapter 6.1 provides further details on these clinics.

3.2 Participating Community Health Clinics Profile

Twenty community health agencies participated in the diabetes pilot study. These clinics were randomly assigned to the capitated intervention group or the traditional fee-for-service control group with ten clinics in each study group (Table 2). The intervention group received a capitated rate of $470 per patient per quarter while the control group received $94 per billable visit.

Shortly after the end of the trial in April of 2008, the LA Free Clinic was renamed the Saban Free Clinic. This report will continue using its earlier designation (LA Free Clinic) to avoid any confusion.

Table 2: List of community health centers assigned to the Control (FFS) Group and the Intervention (Capitated) Group.

<table>
<thead>
<tr>
<th>Control Group ($94/visit)</th>
<th>Intervention Group ($470/ pppq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Central City CHC</td>
<td>AltaMed</td>
</tr>
<tr>
<td>2 Oscar Romero</td>
<td>East Valley CHC</td>
</tr>
<tr>
<td>3 Community Health Alliance of</td>
<td>Eisner Pediatric &amp; Family</td>
</tr>
<tr>
<td>Pasadena (CHAP)</td>
<td></td>
</tr>
<tr>
<td>4 Mission City</td>
<td>El Proyecto del Barrio</td>
</tr>
<tr>
<td>5 Northeast Community</td>
<td>Garfield</td>
</tr>
<tr>
<td>6 Northeast Valley</td>
<td>JWCH Institute, Inc.</td>
</tr>
<tr>
<td>7 Queenscare</td>
<td>LA Free Clinic</td>
</tr>
<tr>
<td>8 Southbay Family</td>
<td>South Central Family HC</td>
</tr>
<tr>
<td>9 Tarzana Treatment</td>
<td>St. John’s</td>
</tr>
<tr>
<td>10 The Children’s Clinic</td>
<td>Venice Family Clinic</td>
</tr>
</tbody>
</table>
3.2.1 License Type and Classification

According to OSHPD, all 10 community health centers in the control group were licensed as community clinics in 2006. For the intervention group, 7 were community clinics, 1 organization was a free clinic (LA Free Clinic), and 2 were combined\(^1\) (St. John’s, Venice Family Clinic)(Figure 1).

The majority of clinics in the control and intervention groups were classified as a Federally Qualified Health Center (FQHC) or a FQHC Look-Alike. In the control group, 6 clinics were FQHC, 3 were FQHC Look-Alike, and 1 was neither\(^m\). In the intervention group, 8 clinics were FQHC and 2 were neither. There were no FQHC Look-Alike clinics in the intervention group (Figure 2).

\(^1\)Has many locations with some licensed as a free clinic while others were licensed as a community clinic

\(^m\)If FQHC status differed among service sites, the status of the main clinic was used.
3.2.2 Service Sites

Participating organizations operated single, stand-alone clinics or multiple service sites. Multiple service sites included satellite locations, mobile clinics, and school health centers.

Altogether, each study group managed a total of 35 service sites (Table 3). Control group’s Northeast Valley and intervention group’s AltaMed operated the most number of service sites with 8 and 10 service sites, respectively (Table 3).

The median number of service sites for the control group was 3 and the median number of service sites for the intervention group was 3.5.
Table 3: The number of service sites for each clinic in the control and intervention groups.

<table>
<thead>
<tr>
<th>Control Group ($94/visit)</th>
<th>Service Sites</th>
<th>Intervention Group ($470/pppq)</th>
<th>Service Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Central City CHC</td>
<td>1</td>
<td>AltaMed</td>
<td>10</td>
</tr>
<tr>
<td>2  Oscar Romero</td>
<td>2</td>
<td>East Valley CHC</td>
<td>2</td>
</tr>
<tr>
<td>3  Community Health Alliance of Pasadena (CHAP)</td>
<td>1</td>
<td>Eisner Pediatric &amp; Family</td>
<td>1</td>
</tr>
<tr>
<td>4  Mission City</td>
<td>3</td>
<td>El Proyecto del Barrio</td>
<td>4</td>
</tr>
<tr>
<td>5  Northeast Community</td>
<td>5</td>
<td>Garfield</td>
<td>1</td>
</tr>
<tr>
<td>6  Northeast Valley</td>
<td>8</td>
<td>JWCH Institute, Inc.</td>
<td>4</td>
</tr>
<tr>
<td>7  Queenscare</td>
<td>6</td>
<td>LA Free Clinic</td>
<td>3</td>
</tr>
<tr>
<td>8  Southbay Family</td>
<td>4</td>
<td>South Central Family HC</td>
<td>1</td>
</tr>
<tr>
<td>9  Tarzana Treatment</td>
<td>2</td>
<td>St. John’s</td>
<td>5</td>
</tr>
<tr>
<td>10 The Children’s Clinic</td>
<td>3</td>
<td>Venice Family Clinic</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35</strong></td>
<td><strong>Total</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

3.2.3 Encounters

According to the OSHPD 2006 Annual Utilization Report, control group clinics reported 393,946 encounters while intervention group clinics reported 354,102 encounters. Together, these clinics reported almost 750,000 encounters.

The median range of encounters for both control and intervention group was 20,000-39,999 (Figure 3). All clinics that participated in the Diabetes Pilot Study reported over 10,000 annual encounters.
Figure 3: Number of encounters for clinics in the control and intervention groups.

4.2.4 Encounters by Principal Service Provided

For both control and intervention groups, evaluation and management of established patients accounted for almost 60% of services provided. The top 3 service type encounters for these two groups are shown in the Table 4.

Table 4: Top 3 encounters by principal service provided for the control and intervention groups (shown in the order of significance).

<table>
<thead>
<tr>
<th>Control Group ($94/visit)</th>
<th>Intervention Group ($470/pppq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Evaluation and management of established patients (56.8%)</td>
<td>Evaluation and management of established patients (61.0%)</td>
</tr>
<tr>
<td>2 All other services (10.9%)</td>
<td>Evaluation and management of new patients (9.1%)</td>
</tr>
<tr>
<td>3 Evaluation and management of new patients (7.5%)</td>
<td>Dental (8.9%)</td>
</tr>
</tbody>
</table>
3.2.5 Primary Care Providers

The clinics in the control and intervention groups employed 99 and 98 full time primary care providers, respectively. Like other primary and specialty care clinics throughout Los Angeles County, physicians accounted for almost half of the full time workforce. The top 3 healthcare practitioners for these two groups are shown in the Table 5.

Table 5: Top 3 primary care providers for the control and intervention groups.

<table>
<thead>
<tr>
<th>Control Group ($94/visit)</th>
<th>Intervention Group ($470/pppq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Physicians (49.8%)</td>
<td>Physicians (50.6%)</td>
</tr>
<tr>
<td>2 Physician assistants (17.6%)</td>
<td>All other primary care providers (14.6%)</td>
</tr>
<tr>
<td>3 Family nurse practitioners (14.2%)</td>
<td>Physician assistants (12.9%)</td>
</tr>
</tbody>
</table>

3.2.6 Patient Demographics

According to the 2006 OSHPD Annual Utilization Data for Primary and Specialty Care Clinics, roughly the same number of patients visited the clinics in the study groups. The control group had a total of 102,265 patients and the intervention group had a total of 102,299.

Please note that the following data on gender, age, and race include ALL patients who visited these clinics and are not limited to the diabetic patients who participated in the Pilot Study.
3.2.6.1 Gender

In both study groups, there were more female patients visiting the clinic than male patients (Figure 4). Of the 102,265 patients, 64,638 patients (or 63.2%) were females in the control group. For the 102,299 patients in the intervention group, 60,001 or 58.7% were female patients.

**Figure 4:** Patient gender distribution between the control and intervention groups.

![Gender Distribution Chart]

3.2.6.2 Age

Again, the majority of patients visiting the control and intervention group clinics were between the ages of 20 to 64 (Figure 5). The median age range for both groups was 20 to 34 years of age.
**Figure 5**: Patient age distribution for clinics in the control and intervention groups.

![Patient Age Distribution](image)

3.2.6.3 Race

According to the 2006 OSHPD Annual Utilization Data, Hispanic patients accounted for almost 3 out of 4 patients in the control and intervention groups (Figure 6). Non-Hispanic White and Black patients composed about 20% of the patient population for both groups.

**Figure 6**: Race distribution of patients visiting the clinics in the control and intervention group.

![Race Distribution](image)
3.2.7 Economic Status and Insurance Coverage

The economic status was missing for 459 control group patients and available for the remaining 101,806 patients. The economic status was available for all 102,299 patients in the intervention group.

Again, the majority of patients for both study groups were below the 100% FPL. For the control group, 91% of patients were below the 200% FPL while in the intervention group, 94.9% of patients were below the 200% FPL (Figure 7).

In terms of patient coverage, the majority of control and intervention group patients were covered under the PPP program. Only a small number of patients in both groups were enrolled in Medicare or private insurance (Figure 8).

Figure 7: Economic status by Federal Poverty Level (FPL) for patients visiting clinics in the control and intervention groups.
**Figure 8**: Insurance Coverage for patients visiting clinics in the control and intervention groups.

3.2.8 Geographical Distribution

Los Angeles County is divided into 8 Service Planning Areas (SPAs). These SPAs are used for health planning purposes and each SPA has an Area Health Officer responsible for planning public health and clinical services.\(^4\) SPAs 1, 3, 6, 7, and 8 are considered “under equity” SPA areas. Figure 9 shows a map of Los Angeles County and its 8 SPA.

Clinics in the diabetes pilot study are dispersed throughout the SPA although none of the participating health clinics are located in SPA 1 (Antelope Valley). Table 6 lists the clinics and their SPA location.
Figure 9: Map of Los Angeles County Service Planning Area (SPA) and SPA Legend

![Map of Los Angeles County Service Planning Area (SPA) and SPA Legend]

Table 6: Los Angeles County Service Planning Areas (SPA) and locations of agencies participating in the Diabetes Pilot Project.

<table>
<thead>
<tr>
<th>SPA</th>
<th>Area</th>
<th>Control Group ($94/visit)</th>
<th># of control clinics</th>
<th>Intervention Group ($470/pppq)</th>
<th># of interv clinics</th>
<th># of total clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Antelope Valley</td>
<td>None</td>
<td>0</td>
<td>None</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>San Fernando Valley</td>
<td>Mission City, Tarzana Treatment, Northeast Valley</td>
<td>3</td>
<td>El Proyecto Del Barrio</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>San Gabriel Valley</td>
<td>Northeast Community, Community Health Alliance of Pasadena (CHAP)</td>
<td>2</td>
<td>East Valley CHC, Garfield</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Metro</td>
<td>Queenscare, Oscar Romero</td>
<td>2</td>
<td>St. John’s, LA Free Clinic, Eisner Pediatric &amp; Family, JWCH Institute, Inc.</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>West</td>
<td>None</td>
<td>0</td>
<td>Venice Family Clinic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>South</td>
<td>Central City</td>
<td>1</td>
<td>South Central Family HC</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>East</td>
<td>None</td>
<td>0</td>
<td>AltaMed</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>South Bay</td>
<td>Southbay Family, The Children’s Clinic</td>
<td>2</td>
<td>None</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Total: 10 10 20

Notes:

- inter = intervention
Clinics in the control group were found in SPA 2 (San Fernando Valley), 3 (San Gabriel Valley), 4 (Metro), 6 (South), and 8 (South Bay) (Table 6). There were no control group clinics in SPA 5 (West) and SPA 7 (East). Clinics in the intervention group were in SPA 2 (San Fernando Valley), 3 (San Gabriel Valley), 4 (Metro), 5 (West), 6 (South), and 7 (East) (Table 6, Figure 10). There were no intervention group clinics in SPA 8 (South Bay).

The highest number of control group clinics (3 sites) were located in San Fernando Valley (SPA 2) whereas the Metro area (SPA 4) had the highest cluster of intervention group clinics (4 sites) (Table 6, Figure 10).

Overall, SPA 1 (Antelope Valley), the least populous SPA in Los Angeles County, contained the least number of clinics in the pilot study (0 sites) whereas SPA 4 (Metro) contained the greatest concentration of clinics in the pilot study (6 clinics total). SPA 2 (San Fernando Valley) was the most populous SPA followed by SPA 3 (San Gabriel Valley). SPA 2 (San Fernando Valley) and SPA 3 (San Gabriel Valley) were also larger than the rest of the SPA other than SPA 1 (Antelope Valley) (Figure 9).
3.2.9 Patient Enrollment

Clinics reported data for a total of 2,405 diabetic patients. Table 7 shows the number of patients enrolled in each clinic in descending order of total enrollment.

In the control group, Queenscare enrolled the greatest number of patients by reporting data from 252 patients (25% of the total number of control group patients). South Bay subscribed 141 patients (14%) while Mission City and Tarzana both enrolled about 13% (135 and 129 patients, respectively). The remaining 6 clinics in the control group enlisted 10% or less. Central City, Oscar Romero, and Community Health Alliance of Pasadena (CHAP) only enrolled 3% of the total number of control group patients (Figure 11).

In the intervention group, El Proyecto del Barrio enrolled the most number of patients (261 individuals or 19% of the total number of patients in the intervention group). Venice Family Clinic and St. John both enlisted 239 and 231 patients (about 17%) while LA Free Clinic and South Central enrolled 226 (16%) and 204 (15%), respectively (Figure 11).

Table 7: Number of patients enrolled in Control (FFS) and Intervention (Capitated) groups. Clinics are ranked in the order of patient enrollment count.

<table>
<thead>
<tr>
<th>Control Group ($94/visit)</th>
<th>Intervention Group ($470/pppq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Queenscare</td>
<td>AltaMed N/A</td>
</tr>
<tr>
<td>2  Southbay Family</td>
<td>East Valley CHC N/A</td>
</tr>
<tr>
<td>3  Mission City</td>
<td>El Proyecto Del Barrio 261</td>
</tr>
<tr>
<td>4  Tarzana Treatment</td>
<td>Venice Family Clinic 239</td>
</tr>
<tr>
<td>5  Northeast Valley</td>
<td>St. John’s 231</td>
</tr>
<tr>
<td>6  The Children’s Clinic</td>
<td>LA Free Clinic 226</td>
</tr>
<tr>
<td>7  Northeast Community</td>
<td>South Central Family HC 204</td>
</tr>
<tr>
<td>8  Central City</td>
<td>Eisner Pediatric &amp; Family 89</td>
</tr>
<tr>
<td>9  Oscar Romero</td>
<td>Garfield 87</td>
</tr>
<tr>
<td>10 Community Health Alliance of Pasadena (CHAP)</td>
<td>JWCH Institute, Inc. 62</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
<tr>
<td>1006</td>
<td>1399</td>
</tr>
</tbody>
</table>
Figure 11: Proportion of patients enrolled in each clinic by study group.

<table>
<thead>
<tr>
<th>Clinic</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queenscare</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>Southbay Family</td>
<td>14%</td>
<td>17%</td>
</tr>
<tr>
<td>Mission City</td>
<td>13%</td>
<td>17%</td>
</tr>
<tr>
<td>Tarzana Treatment</td>
<td>13%</td>
<td>16%</td>
</tr>
<tr>
<td>Northeast Valley</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>The Children's Clinic</td>
<td>9%</td>
<td>6%</td>
</tr>
<tr>
<td>Northeast Community</td>
<td>7%</td>
<td>15%</td>
</tr>
<tr>
<td>Central City</td>
<td>3%</td>
<td>17%</td>
</tr>
<tr>
<td>Oscar Romero</td>
<td>3%</td>
<td>17%</td>
</tr>
<tr>
<td>CHAP</td>
<td>3%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Table 7 shows that there were a total of 1,006 patients in the control group (10 clinics) and a total of 1,399 patients in the intervention group (8 clinics). In the control group, only Queenscare enrolled more than 200 patients. Half of the clinics in the control group enrolled less than 100 patients with three of these clinics reporting results for 27 to 32 patients. In the intervention group, five clinics reported results for more than 200 patients. The remaining three clinics reported results ranging from 62 to 89 patients.
Patient enrollment was more evenly distributed in the intervention group than the control group (Figure 11).

Clinics in the intervention group enrolled on average more patients per clinic than clinics in the control group. Patient enrollment in the control group clinics averaged 100 patients per clinic (1,006 total patients/10 control clinics = 100.6 patients/clinic). Patient enrollment in the intervention group clinics averaged 175 patients per clinic (1,399 total patients/8 intervention clinics = 174.8 patients/clinic).

Since clinics have been randomly assigned to a study group, it is reasonable to assume that differences in patient enrollment did not arise from differences in clinic size. Rather, I contend that clinics receiving capitated payments (intervention group) likely had greater financial incentive to enroll a higher number of patients than those in the control group. Given that capitation reimbursed clinics based on the number of patients enrolled each quarter, more patients meant greater payments for intervention clinics. On the other hand, enrolling a greater number of patients would not be as meaningful to the clinics in the control group who were reimbursed on a fee-for-service basis (i.e., paid for each billable patient visit).

3.2.10 Study Participation

The assertion above is further supported by the amount of participation the clinics demonstrated in returning their Patient Satisfaction and Knowledge Surveys and CCMA scores. Clinics received a one-time-only reimbursement of $50 per enrolled pilot project patient for timely and complete collection and transfer of Patient Satisfaction and Knowledge Surveys and Chronic Care Model Assessment (CCMA) scores regardless of what study group they were in (i.e., reimbursement methodology).
The clinics in the control group submitted 645 Patient Satisfaction and Knowledge Surveys. All nine clinics in the control group, except Mission City, submitted surveys. The clinics in the intervention group submitted 687 Patient Satisfaction and Knowledge Surveys. All nine clinics in the intervention group, except Venice Family Clinic, submitted surveys.

All 20 clinics in the pilot study submitted their CCMA scores for the first round of Chronic Care Model Assessments. For the second round, only 8 control group clinics and 7 intervention clinics submitted their CCMA scores.

Participation of control and intervention clinics in submitting patient survey results and CCMA scores did not differ much since both were paid a flat rate of $50 for submitting these data to the Office of Ambulatory Care (OAC).

3.3 Chronic Care Model Assessment (CCMA) Scores

I examined results from the Chronic Care Model Assessment (CCMA) tool to evaluate a clinic’s ability to implement the six basic elements (community resources and policies, health care organization, self-management support, delivery system design, decision support, and clinical information systems) of the Chronic Care Model (CCM). Chronic Care Model Assessment (CCMA) scores were collected in July 2007 and again in October 2007.

Twelve components of the CCMA assessed the six basic elements of the CCM. For each component, clinics were asked to select a point value of 1 to 12 that best describes the level of care currently provided to the diabetes patients at that clinic. A higher score indicated that the actions described in that component have been implemented more fully. Average scores were interpreted as follows:¹³
Average score between 1 and 3 = Limited support of good chronic illness care,
Average score between 4 and 6 = Basic support of good chronic illness care,
Average score between 7 and 9 = Excellent Support of good chronic illness care,
and
Average score between 10 and 12 = Fully developed support of good chronic illness care.

Overall, CCMA scores evaluated the structure and provider practices of an organization in the general management of chronic illness— in this case, diabetes. These scores were self assessed and self reported by the clinics.

Scores from the Chronic Care Model Assessment (CCMA) tool’s 12 components were averaged to get the CCMA score for a particular clinic. The individual clinic CCMA score was then tallied to obtain the averaged CCMA score for that group.

All community clinics submitted their baseline CCMA scores for review in July 2007 (Table 8). For the intervention group, the median CCMA score was 8.075; 50% of the clinics in this group scored between 7.71 and 8.62. For the control group, the median CCMA score was slightly lower at 7.81; 50% of the control clinics scored between 7.05 and 8.14. There was no significant statistical difference between the median CCMA scores of the intervention and control group (z=1.0603, p=0.2890).

Another set of CCMA scores were collected 3 months later in October 2007 (Table 8). At that time, 7 clinics from the intervention group and 8 clinics from the control group submitted their CCMA scores. For the intervention group, the median
Table 8: Median CCMA scores for intervention and control groups.

<table>
<thead>
<tr>
<th></th>
<th>Median CCMA scores collected July 2007</th>
<th>Median CCMA scores collected October 2007 *</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td>8.075 (n=10)</td>
<td>9.57 (n=7)</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>7.81 (n=10)</td>
<td>7.81 (n=8)</td>
</tr>
</tbody>
</table>

* = Difference between median CCMA scores of control and intervention is significant at the p=0.0562 level.

CCMA score was higher at 9.57 with 50% of the clinics in this group scoring between 7.52 and 10.43. For the control group, the median CCMA score remained unchanged at 7.81 with 50% of the clinics in the control group scoring between 7.07 and 8.31. For the second round, the median CCMA score for the intervention group was higher than that of the control group (9.57 vs. 7.81) and the difference between the CCMA scores approached statistical significance (z=1.9095, p=0.0562).

3.4 Patient Case Mix

Patient information such as gender, race/ethnicity, zip code, and homelessness were not available. Only Garfield reported this information on their 87 patients. As a result, age and co-morbidity are the only demographic measures summarized in this report for the diabetic patients who participated in the Pilot Study.

3.4.1 Age

Participating clinics enrolled a total of 2,405 patients in the diabetes pilot study. Six patients younger than 5 years of age were deleted from the dataset, bringing the total number of patients to 2,399. The control and intervention group each had 1,004 (41.85%) and 1395 (58.15%) patients, respectively (Table 9).

In the dataset, some patients shared a common date of birth. These patients were assumed to be different individuals because they had different patient identifiers and were enrolled at different clinic sites. Patient overlap among clinics was also assumed to be
minimal as each clinic was generally a medical home for these patients.

The mean age of the control group was 55 years. The youngest in the group was 25 while the oldest was 90. Fifty percent of the patients were between the ages of 48 and 62.5 years.

For the intervention group, the mean age was 54.6 years. The youngest patient was 22 years of age while the oldest was 89. Fifty percent of the patients belonging to the intervention group were between the ages of 48 and 62 years.

The patients in the control and intervention group were very similar in average age (Table 9). In fact, there was no significant difference between the ages of the intervention and the control group \(z=1.2448, p=0.2132\).

### 3.4.2 Co-Morbidities

Information on co-morbidity came from the electronic data registries. Less than 1% of patients in both groups suffered from co-morbidities such as anemia iron deficiency (0.8% of intervention group, 0% for control), coronary heart failure (0.07% for intervention, 0.1% for control), coronary artery disease (1% for intervention, 0.9% for control), hepatitis C (0.7% for intervention, 0.8% for control), and minor depression (0.35% for intervention, 0% for control) (Table 9).

Prevalence of asthma, depression, and obesity were greater. A total of 88 patients suffered from asthma; by study group, 3% of the intervention patients and 4.6% of the control patients had asthma. There was no significant difference between the rates of asthma in the intervention and control \(z=1.951, p=0.255\). A greater number of patients suffered from depression and obesity. In the intervention group, 7% had depression while 11.8% were obese. In the control group, 6.6% suffered from depression and 8.7%
from obesity. There was no significant difference between the rates of depression in the intervention and the control group ($z=0.302$, $p=0.382$). There was a statistically significant difference between the rates of obesity in the intervention and the control group ($z=2.521$, $p=0.006$) (Table 9).

**Table 9**: Patient case mix for control and intervention groups.

<table>
<thead>
<tr>
<th></th>
<th>Control Group ($94/visit)</th>
<th>Intervention Group ($470/pppq)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total number of patients (n)</strong></td>
<td>1004 (41.85%)</td>
<td>1395 (58.15%)</td>
</tr>
<tr>
<td><strong>Mean age as of January 2011 (+ std. dev)</strong></td>
<td>55 years (+10.21)</td>
<td>54.6 years (+10.08)</td>
</tr>
<tr>
<td><strong>Anemia Iron Deficiency</strong></td>
<td>0 (0%)</td>
<td>11 (0.8%)</td>
</tr>
<tr>
<td><strong>Coronary Heart Failure</strong></td>
<td>1 (0.1%)</td>
<td>1 (0.07%)</td>
</tr>
<tr>
<td><strong>Coronary Artery Disease</strong></td>
<td>9 (0.9%)</td>
<td>14 (1%)</td>
</tr>
<tr>
<td><strong>Hepatitis C</strong></td>
<td>8 (0.8%)</td>
<td>10 (0.7%)</td>
</tr>
<tr>
<td><strong>Minor Depression</strong></td>
<td>0 (0%)</td>
<td>5 (0.35%)</td>
</tr>
<tr>
<td><strong>Asthma</strong></td>
<td>46 (4.6%)</td>
<td>42 (3%)</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td>66 (6.6%)</td>
<td>98 (7%)</td>
</tr>
<tr>
<td><strong>Obesity</strong></td>
<td>88 (8.7%)</td>
<td>165 (11.8%)</td>
</tr>
</tbody>
</table>

*Denotes significant statistical difference between the control and intervention group.

### 3.5 Health Outcome Measures

I examined hemoglobin A1c (HbA1c), low density lipoprotein (LDL), and blood pressure (BP) levels to measure the health outcome performance of the control and intervention groups. For each patient, HbA1c, LDL, and BP levels were measured up to 5 times. However, the number of patient visits notably declined after the 3rd visit. First visit health outcome levels were regarded as baseline. Student’s t-test was used to compare mean outcomes and a p-value less than 0.05 was considered statistically significant.
3.5.1 Hemoglobin A1c (HbA1c) Levels

First visit HbA1c levels were available for 1031 intervention patients and 696 control patients. The mean HbA1c level was higher for the intervention patients at 9.0422% compared to the control’s 8.6899%. This difference was statistically significant (p = 0.0012).

Second visit HbA1c levels were available for 325 intervention patients and 248 control patients. Differences in mean HbA1c levels for intervention and control (8.5751% vs. 8.1899%) were statistically significant (p = 0.0172).

Third visit HbA1c levels were available for 47 intervention patients and 40 control patients. Mean HbA1c level for control patients (7.7450%) still remained less than the mean HbA1c level for intervention patients (8.4936%) but the difference was not statistically significant (p = 0.0688).

HbA1c levels for visit four and five were not analyzed since results for these visits were only available for 9 patients.

I also looked at the within-group differences of mean HbA1c levels. For both groups, there was a decrease in mean HbA1c levels from first to second visit (Figure 12). For the control group, the mean HbA1c level decreased from 8.6899% to 8.1899% (reduction of 0.5 points) and this was found to be statistically significant (p = 0.001). The mean HbA1c level for the intervention patients decreased 0.467 points from 9.0422% to 8.5751% (p = 0.001). Although the mean HbA1c levels lessened from second to third visit, this decrease was found not to be statistically significant for either group (p = 0.174 for control; p = 0.784 for intervention).
Table 10: Mean Hemoglobin A1c (HbA1c) levels at each visit.

<table>
<thead>
<tr>
<th>Visit</th>
<th>Control Mean HbA1c (%)</th>
<th>Intervention Mean HbA1c (%)</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit 1*</td>
<td>8.6899</td>
<td>9.0422</td>
<td>0.0012</td>
</tr>
<tr>
<td>Visit 2*</td>
<td>8.1899</td>
<td>8.5751</td>
<td>0.0172</td>
</tr>
<tr>
<td>Visit 3</td>
<td>7.7450</td>
<td>8.4936</td>
<td>0.0688</td>
</tr>
</tbody>
</table>

*Denotes significant statistical difference between the control and intervention group.

Figure 12: Changes in mean Hemoglobin A1c (HbA1c) levels over patient visits.

When HbA1c levels from all visits were pooled together, the mean HbA1c level was 8.9% for the intervention group and 8.6% for the control group. This difference was statistically significant (p = 0.027).

3.5.2. Low Density Lipoprotein (LDL) Cholesterol Levels

First visit LDL levels were available for 779 intervention patients and 531 control patients. The mean LDL level for the intervention group was slightly lower by 2.1 points at 111.3 mg/dL compared to the control group’s 113.4 mg/dL. The difference was not statistically significant (p = 0.3259).
Second visit LDL levels were available for 135 intervention patients and 145 control patients. The mean LDL level for the intervention group was still lower at 105.4 mg/dL while that of the control group was 113.4 mg/dL and the difference approached statistical significance (p = 0.0596).

Third visit LDL levels were available for 12 intervention patients and 17 control patients. The mean LDL level for the control patients was 118.2 mg/dL and the mean LDL level for the intervention patients was 103.9 mg/dL. This difference was not significant (p = 0.3139) although this estimate may be statistically unstable since there were less than 20 patients for the third visit.

Fourth visit LDL values were only available for 1 control patient and no intervention patients. Fourth visit results are not considered for this report.

Over the 3 visits, the mean LDL levels of intervention group patients decreased steadily (Figure 13). There was a reduction of 5.9 mg/dL from first (111.3 mg/dL) to second (105.4 mg/dL) visit. There was an additional reduction of 1.5 mg/dL from second (105.4 mg/dL) visit to third (103.9 mg/dL) visit. These differences were not statistically significant (p = 0.094 and p = 0.888).

Table 11: Mean Low Density Lipoprotein (LDL) Cholesterol levels at each visit.

<table>
<thead>
<tr>
<th>Visit</th>
<th>Control LDL (mg/dL)</th>
<th>Intervention LDL (mg/dL)</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit 1</td>
<td>113.4</td>
<td>111.3</td>
<td>0.3259</td>
</tr>
<tr>
<td>Visit 2</td>
<td>113.4</td>
<td>105.4</td>
<td>0.0596</td>
</tr>
<tr>
<td>Visit 3</td>
<td>118.2</td>
<td>103.9</td>
<td>0.3139</td>
</tr>
</tbody>
</table>
**Figure 13:** Changes in mean Low Density Lipoprotein (LDL) Cholesterol levels over patient visits.

The mean LDL levels for the control group patients remained the same for the first two visits (113.4 mg/dL) then increased by 5.1 mg/dL on the third visit (118.2 mg/dL). These differences were also not significant (p = 0.546 and p = 0.578).

The combined mean LDL level for all visits in the intervention group was 110.5 mg/dL while that of the control group is 112.5 mg/dL. This difference was not statistically significant at (p = 0.3099).

### 3.5.3 Systolic and Diastolic Blood Pressure (BP) Levels

First visit systolic blood pressure (SBP) levels were available for 1281 intervention patients and 874 control group patients. The baseline SBP for intervention group patients was lower at 125.8 mmHg compared to 129.1 mmHg of control group patients. The difference was statistically significant (p = 0.0001).

Second visit SBP levels were available for 1045 intervention patients and 654 control group patients. The SBP level for intervention patients was 126.3 mmHg and
127.8 mmHg for control patients. The difference was not statistically significant (p = 0.1080).

Third visit SBP levels were available for 787 intervention patients and 386 control group patients. The mean SBP levels for the intervention and control groups were the same at 127.3 mmHg.

Fourth visit SBP levels were available for 545 intervention patients and 191 control group patients. The mean SBP level for the intervention group was 127.4 mmHg compared to the control group’s 124.6 mmHg. The difference was not statistically significant (p = 0.0656).

Fifth visit SBP levels were available for 358 intervention patients and 116 control group patients. For the intervention patients, mean SBP level was 128.5 mmHg while that of the control patients was 126.6 mmHg. The difference was not statistically significant (p = 0.3490).

For the control group, mean SBP levels decreased from 129.1 mmHg (first visit) to 126.6 mmHg (last visit). For the intervention group, mean SBP levels increased from 125.8 mmHg (first visit) to 128.5 mmHg (last visit) (Figure 14).

For both study groups, mean DBP level changes from one visit to the next were not statistically significant at p = 0.05. However, first visit mean SBP of intervention group’s 125.8 mmHg and last visit mean SBP of 128.5 mmHg were statistically different (p = 0.020). First visit mean SBP level and the last visit mean SBP level were not found to be statistically different (p = 0.213) for the control group.

The mean total systolic pressure for the intervention group (117.8 mmHg) was significantly lower than the control group (122 mmHg) (p = 0.0001).
First visit diastolic blood pressure (DBP) levels were available for 1281 intervention patients and 862 control patients. The mean DBP was 74.7674 mmHg for the intervention group patients was and 75.6879 mmHg for the control group patients. This difference approached statistical significance (p = 0.0527).

**Table 12**: Mean Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) levels.

<table>
<thead>
<tr>
<th>Visit</th>
<th>Control SBP (mmHg)</th>
<th>Interven. SBP (mmHg)</th>
<th>P Values</th>
<th>Control DBP (mmHg)</th>
<th>Interven. DBP (mmHg)</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit 1</td>
<td>129.1</td>
<td>125.8</td>
<td>0.0001*</td>
<td>75.6879</td>
<td>74.7674</td>
<td>0.0527</td>
</tr>
<tr>
<td>Visit 2</td>
<td>127.8</td>
<td>126.3</td>
<td>0.1080</td>
<td>74.4219</td>
<td>74.8889</td>
<td>0.3611</td>
</tr>
<tr>
<td>Visit 3</td>
<td>127.3</td>
<td>127.3</td>
<td>0.9397</td>
<td>73.4648</td>
<td>75.2010</td>
<td>0.0059*</td>
</tr>
<tr>
<td>Visit 4</td>
<td>124.6</td>
<td>127.4</td>
<td>0.0656</td>
<td>71.6649</td>
<td>74.5541</td>
<td>0.0007*</td>
</tr>
<tr>
<td>Visit 5</td>
<td>126.6</td>
<td>128.5</td>
<td>0.3490</td>
<td>72.65</td>
<td>74.986</td>
<td>0.0429*</td>
</tr>
</tbody>
</table>

*Denotes significant statistical difference between the control and intervention group.

**Figure 14**: Changes in mean Systolic Blood Pressure (SBP) levels over patient visits.

* Denotes significant statistical difference between the control and intervention group.
Second visit DBP levels were available for 1044 intervention patients and 647 control group patients. Mean DBP for intervention patients was 74.8889 mmHg and that of the control group was 74.4219 mmHg. The difference was not significant (p = 0.3611).

Third visit DBP levels were available for 786 intervention patients and 383 control group patients. Mean DBP level was 75.2010 mmHg for the intervention and 73.4648 mmHg. This difference was statistically significant (p = 0.0059).

**Figure 15:** Changes in mean Diastolic Blood Pressure (DBP) levels over patient visits.

* denotes significant statistical difference between the control and intervention group.

Fourth visit DBP levels were available for 545 intervention patients and 191 control group patients. Mean DBP levels for both intervention (74.5541 mmHg) and control group patients (71.6649 mmHg) decreased since the third visit and this difference between the two groups was found to be statistically significant (p = 0.0007).

Fifth visit DBP levels were available for 357 intervention patients and 116 control group patients. There was a slight increase in mean DBP levels in both groups since the fourth visit. The mean DBP level was 74.986 mmHg for the intervention group and
72.65 mmHg for the control group. The difference between the two groups was statistically significant (p = 0.0429).

None of the changes in the DBP levels from one visit to subsequent visits were statistically significant for the intervention group. For the control group, first visit mean DBP level of 75.6879 mmHg was reduced to 74.4219 mmHg during the second visit and this difference was found to be statistically significant (p = 0.021). Following changes in the DBP level in subsequent visits were not statistically significant at p = 0.05.

The total mean diastolic pressure for the intervention group was 74.6 mmHg while the total mean diastolic pressure for the control group was 75.2 mmHg. This difference was not statistically significant (p = 0.1458).

3.6 Average Cost Per Patient

Based on the billing data provided (7/2007 – 4/2008), there were 18,967 total visits for the control group clinics.

18,967 visits x $94/visits = $1,782,898

Since there were 1,006 patients enrolled in the control group,

$1,782,898/1,006 patients = $1,772.26/patient (Fee for Service, control)

The billing data did not provide sufficient information to calculate an exact average cost per patient for the intervention group. However, it can be estimated that since the study lasted for 10 months,

10 months x 1 quarter/3 months = 3.333 quarters

$470/pppq x 3.333 quarters = $1566.51/patient (Capitated, intervention)

Therefore, capitation is expected to produce $205.75 in savings per patient.

$1,772.26/patient - $1566.51/patient = $205.75
3.7 Patient Satisfaction and Knowledge Survey

A total of 1,332 patients participated in the Patient Satisfaction and Knowledge Survey. Control clinics had 645 respondents while intervention clinics had 687 respondents. Responses were collected from 18 clinics because Mission City (control group) and Venice Family Clinic (intervention group) did not participate.

3.7.1 Patient Satisfaction

Survey responses are provided in Section 4.4.3. Patients in both groups appeared comparably satisfied with different dimensions of their care. However, intervention patients showed markedly higher level of satisfaction in the time their clinics took to return their phone calls. A large proportion of intervention group patients (64.3%) considered the time for the clinics to return their phone call “always short” or “usually short”. Far less patients in the control group (49.6%) felt that the time for the clinics to return their phone call “always short” or “usually short”.

When asked “I can get a medical appointment for my diabetes when I need one”, 41.6% of intervention patients answered “yes” while only 24.7% of control patients answered “yes”. Many patients (70.2% in control and 55.6% in intervention group) elected to leave this question blank. This is notable since the rate of omission for other questions ranged from 1.6 to 6.5%. One possible explanation is that patients may have felt uneasy about answering negatively and returning the finished survey to clinic staff since their care is free. Anonymous surveys may be a way to remove this limitation.
3.7.2 Patient Satisfaction Results Chart

1. The time it takes the Clinic to return my phone call is…

![Patient Satisfaction Results Chart 1](chart1.png)

2. I can get a medical appointment for my diabetes when I need one.

![Patient Satisfaction Results Chart 2](chart2.png)
3. Clinic staff understands what I tell them.

![Bar chart showing responses to the statement about clinic staff understanding what the respondents tell them. The chart compares responses from Control and Intervention groups.]

4. Clinic staff takes enough time with me.

![Bar chart showing responses to the statement about clinic staff taking enough time with the respondents. The chart compares responses from Control and Intervention groups.]

49
5. Clinic staff explains what I want to know.

6. The number of times that I see my doctor is enough.
7. I receive information about my medication(s).

8. My lab test results are explained to me.
3.7.3 Patient Knowledge

Patients from both study groups did not show marked difference except more patients in the intervention group knew what their HbA1c level should be.

3.7.4 Patient Knowledge Results Chart

1. My Hemoglobin A1C should be _________ (please write in number) or (check box for don’t know).

![Chart showing the number of respondents for different HbA1c levels in control and intervention groups.]

2. I know what to do when I have low blood sugar.

![Chart showing the number of respondents who know what to do when they have low blood sugar in control and intervention groups.]

52
3. I have a self-management/personal health goal.

4. If I take my diabetes medications some of the time, I will be OK.
5. Insulin can make people with diabetes go blind. *
3.8 Provider Interviews

Provider interviews were conducted by Gary Bess Associates, a consulting firm commissioned by the Office of Ambulatory Care (OAC) to conduct the pilot study. I was provided an abridged summary of interview results for review and thus limited in our ability to analyze the contents in-depth.

3.8.1 Provider Interview Findings

Question 1: What is your responsibility in the diabetes care management program?

Responses to this question varied. Some interviewees described their roles in the program while others reported job functions of all members in the diabetes program not necessarily in attendance at the time of the interview. Control group clinics identified 29 staff members; 9 were nurses, 8 were case managers, 7 were physicians, 3 were nutritionists or dental manager, and 2 were office managers.

Intervention clinics identified 24 staff members. There were 6 nurses, 7 case managers, 4 physicians, 2 nutritionists, 3 office managers, 1 social worker, 1 promotora, and 1 IT manager.

In both groups, physicians were generally the team lead and championed the diabetes management program. Nurses included Physician Assistants (PA), Nurse Practitioners (NP), Registered Nurses (RN), Medical Assistants (MA), and Licensed Vocational Nurses (LVN). Physicians, Nurse Practitioners, and Physician Assistants acted as general practitioner, providing evaluation assessments, treatment plan, and insulin planning. Registered Nurses often were diabetes educators. Medical Assistants and Licensed Vocational Nurses
reinforced education, explained goals set for the patients, and conducted most one on one counseling.

Case managers or care coordinators enrolled patients into electronic registries, consulted on benefits, scheduled various visits and exams, followed up with patients, worked with other team members (e.g., pharmacy), participated in patient education, and made referrals to specialists. Nutritionists gave dietary counseling and were often part time employees or volunteers. Some case managers were nurses or nutritionists.

Office managers included the Director of Chronic Diseases, Director of Client Services and Cultural Competency, and project coordinators who attended collaborative meetings. Only one intervention clinic (JWCH) staffed a medical social worker who administered the nine item depression scale of the Patient Health Questionnaire (PHQ-9) on new patients.

Question 2: What are the strengths of the diabetes care management program at your agency?

To analyze the results, responses were grouped into 6 themes: support from leadership, diabetes care services, staff characteristics, clinic characteristics and resources, patient characteristics, and resources available to patients. Remarks that only relate tangentially to the strengths of the program were disregarded.

- **Support from leadership** included organizational support from clinic management that facilitate greater emphasis on diabetes care as well as strong leadership from physician champions.
- **Diabetes care services** cataloged coordination of care, standardization of care, and team approach to care.

- The **staff characteristics** described low staff turnover, dedicated, well trained, culturally competent, or bilingual staff, and staff attributes such as a diabetic promotor or a pharmacist diabetes educator.

- **Clinic characteristics and resources** ranged from good location in the neighborhood to possession of equipments and resources like the Electronic Medical Registries (EMRs), retinal cameras, hemoglobin machines, screening tools, and the PHQ-9 instrument.

- **Patient characteristics** incorporated traits like loyalty to provider, trust in provider, and patient compliance to care regimen.

- **Available patient resources** included free prescription drugs, in kind glucose test strips, diabetes education visuals, patient education, group visits, and food vouchers.

Control clinics most often identified staff characteristics (n = 5) and clinic characteristics and resources (n = 5) as strengths of their diabetes care management program. Diabetes care services (n = 4) and resources available to patients (n = 4) were next, followed by support from leadership (n = 2) and patient characteristics (n = 2). Of the 4 clinics that identified resources available to patients as strength, 3 clinics named patient education.

Interviewees from the intervention clinics also most frequently identified competent staff as their strength (n = 7). Resources available to patients (n = 6) was next, followed by clinic characteristics and resources (n = 5), diabetes care services (n = 5), management and leadership support (n = 4), and patient characteristics (n = 3).

For both groups, staff characteristics were most frequently identified as strength of the diabetes care management program.
Question 3: What are the weaknesses of the diabetes care management program at your agency?

Responses were categorized into 9 weakness areas. These are: lack of funding, limited staff, limited access to specialists, inadequate staff training, insufficient clinic space, restricted availability of resources to patients (support groups, patient education), limited screening tools and other clinic equipments, information technology (IT), and miscellaneous (e.g., transportation, increased number of homeless patients, low patient compliance).

Limited staff (n = 5) and miscellaneous (n = 6) were two weaknesses most frequently mentioned by respondents in the control group. Miscellaneous weakness included noncompliant patients (n = 3), transportation (n = 1), homeless patients (n = 1), and migrant patients (n = 1). Interestingly, 3 clinics identified IT as a weakness. All 3 clinics expressed their discontent with the PECS system. Respondents stated that 1) input into PECS required more patients coming in for different types of testing 2) PECS cannot interface with other systems and 3) PECS was too slow to load up.

Intervention clinics listed lack of funding (n = 7) and access to specialists (n = 5) as top weaknesses of their diabetes care management program. In fact, clinics in both groups cited lack of access to a mental health professional as a weakness (2 in control, 3 in intervention). Lack of access to cardiologists, podiatrists, ophthalmologists, and to a lesser extent, nutritionists and endocrinologists were also cited as a weakness by the clinics.
Question 4: Do providers have sufficient contact with diabetic patients to assure good quality care?

Five intervention clinics and three control clinics responded to this question. Although the frequency at which patients were seen by clinics varied widely, there seemed to be a general consensus that patients have sufficient contact with providers or clinic staff to assure good quality of care. A respondent in the intervention clinic stated that patients were more comfortable with case managers or promotores than physicians. Another intervention clinic interviewee stated that they saw patients too frequently in order to turn over money. Control group clinics felt that although the number of patient visits may be sufficient, the duration of those visits may not be long enough.

Question 5: What are the issues that diabetic patients typically have that interfere with their ability to comply with self-care?

Issues that interfere with diabetes self-care were divided into 5 broad areas: financial issues, cultural issues, health issues, education issues, and issues with staff.

- **Financial issues** included inability to afford healthier foods, glucose test trips, or medications, lack of transportation to clinics or ER, failure to take time off work to visit clinics during office hours, not being able to afford child care, having no home or address, and not being able to exercise due to work or lack of place to work out.

- **Cultural issues** included misconceptions about diabetes or insulin, language barriers, food cultures (consumption of rice and beans as staple), placing needs of family before patient’s, and lack of family support.

- **Health issues** included depression, substance abuse, and presence of other chronic illnesses.
Education issues included illiteracy, low literacy, poor understanding, and low level of education.

Staff issues included poor interaction with care providers and difficulty with scheduling appointments.

Top concerns for the control group were cultural and financial. Misconceptions about diabetes or insulin was the most often identified issue that interfered with patient compliance in control clinics (n = 6). Many patients avoided insulin because they believe insulin caused blindness. Another issue was financial. Control clinics cited lack of transportation (n = 5) and inability to afford healthier foods (n = 4) as impediments to patient self care.

The situation with intervention groups was similar. Inability to afford healthier foods (n = 4), lack of transportation (n = 4), and misconceptions about diabetes and insulin (n = 4) were all identified as leading issues that interfered with patient self care.

Question 6: Overall, how would you assess the quality of patient care provided to diabetic patients?

When averaged, control clinics rated their patient care as 7.66 and intervention clinics rated their patient care as 7.92 on a scale of 1 to 10. Intervention group clinics rated their quality of patient care slightly higher than those in the control group.

Question 7: To improve the quality of care that is provided, what would be required?

Responses were grouped into 8 themes: leadership of physician champion, care process change, information technology, reimbursement, personnel,
improved resources/services, patient support of staff, and legislative policy change.

- **Leadership of physician champions** meant greater physician and clinical leadership of the diabetes care management program.

- **Care process change** included implementing the Chronic Care Model (CCM) more, greater integration of existing programs, having better charts, and individualizing care plans.

- **Information technology** referred to electronic registries.

- **Reimbursement** included compensation for services not covered under the PPP program, financial rewards for clinics that do well, and raising provider compensation.

- **Personnel** represent hiring more staff (including specialists, case managers, and dieticians) and training providers.

- **Improved resources/services** included more vaccinations, medications, and glucose test strips; transportation; more office space; starting a patient library, expanding clinic hours, and implementing more peer group visits and patient education.

For clinics in both groups, personnel and improved resources/services were the most frequently mentioned areas that needed improvements.

**Question 8: What else should we know about the diabetes care management program?**

No respondents from participating agencies answered this question.
3.8.2 Provider Interview Results Chart

1. What is your responsibility in the diabetes care management program?

![Chart showing responsibilities of various healthcare professionals]

2. What are the strengths of the diabetes care management program at your agency?

![Chart showing strengths of diabetes care management program]

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3a. What are the weaknesses of the diabetes care management program at your agency?

3b. What specialists are needed?
4. Do providers have sufficient contact with diabetic patients to assure good quality care?

5. What are the issues that diabetic patients typically have that interfere with their ability to comply with self-care?
6. Overall, how would you assess the quality of patient care provided to diabetic patients?

![Bar chart showing provider assessed quality of care score for control and intervention groups.](chart)

7. To improve the quality of care that is provided, what would be required?

![Bar chart showing various factors required to improve quality of care.](chart)
3.9 Summary of Results

When clinics that participated in the Diabetes Pilot Study were compared to the clinics that did not participate, participating clinics were more likely to be classified as a Federally Qualified Health Center (FQHC).

Also, a large proportion of non-participating clinics were single, stand-alone clinics whereas participating clinics operated multiple service sites. The median range of encounters for the participating clinics was 20,000 to 39,999 while that of the non-participating clinic was 10,000 to 19,999.

It should also be noted that the majority of patients in the participating clinics were covered under the PPP program (37.1%) while almost 1 in 4 patients in the non-participating clinics were paying out of pocket or on a sliding fee scale. This difference in patient coverage may have been the driving force behind a clinic’s decision to participate in the Diabetes Pilot Study.

Nonetheless, participating clinics and non-participating clinics were similar in their number of encounters by principal service and the types of primary care staff employed full time. They were also similar in that their patients were generally Hispanic females, likely living below the 100% FPL. The median age range for both groups was 20-34 years.

When comparing the clinics assigned to the control and intervention groups, I observed that the clinics were distributed fairly evenly throughout the Service Planning Areas (SPA) of Los Angeles County.

The Chronic Care Model Assessment (CCMA) evaluated the structure and practices of an agency in managing the care of diabetic patients. CCMA scores were
collected in July of 2007 and in October of 2007. Both groups did not differ significantly in terms of their median CCMA scores although the intervention clinics reported better CCMA scores in October of 2007 and this difference approached statistical significance (p = 0.0562).

On average, 8 clinics in the intervention group enrolled 75 patients more per clinic than the 10 clinics in the control group. I believe that clinics in the intervention group had greater financial incentive to enroll more patients since these clinics were reimbursed through capitation. Control and intervention clinics did not differ appreciably in submitting patient survey results and CCMA scores because the clinics were paid a flat rate of $50 for submitting these data to the Office of Ambulatory Care (OAC).

Demographic information on patients enrolled in the study was limited. Information such as patient gender, race/ethnicity, zip code, marital or homeless status was not provided for evaluation. All patients participating in the pilot study were uninsured residents of Los Angeles County with incomes less than 133% of the Federal Poverty Level (FPL) since those were the eligibility requirements to qualify for the PPP program.

Patients in the control and intervention group clinics did not differ statistically in age or presence of co-morbidities such as asthma or depression. Intervention group clinics enrolled a greater number of obese patients than control group clinics (p=0.006).

The diabetes pilot study hypothesized that capitation will improve health outcomes by promoting the provision of care management services (such as group visits and telephone calls) not reimbursed under the traditional FFS system. The study assumed that a greater level of care management will improve health outcomes, mediated by
improvements in patient understanding of disease and awareness of self care management techniques. Three health outcome measures were examined- Hemoglobin A1c (HbA1c), Low Density Lipoprotein (LDL) Cholesterol, and Blood Pressure (Systolic and Diastolic).

To determine whether these health outcomes had any clinical significance beyond statistical significance, I consulted the Standards of Medical Care for Patients with Diabetes Mellitus by The American Diabetes Association (ADA). In it, the ADA recommended treatment goals of HbA1c levels lower than 7%, LDL cholesterol levels lower than 100 mg/dL, and blood pressure targets less than 130/80 mmHg.

For the first visit, 307 out of 779 patients (39.4%) in the intervention group and 197 out of 531 patients (37.1%) in the control group had LDL levels less than or equal to the ADA recommended treatment goal of 100 mg/dL. For the second visit, in the intervention group, 60 out of 135 patients (44.4%) had LDL levels less than or equal to 100 mg/dL while in the control group, 55 out of 145 patients (37.9%) had LDL levels less than or equal to 100 mg/dL. For the third visit, 8 out of 12 intervention patients (66.7%) and 4 out of 17 control patients (23.5%) had LDL levels lower than or equal to 100 mg/dL.

228 out of 1031 patients (22.1%) in the intervention group and 163 out of 696 patients (23.4%) in the control group had HbA1c levels less than or equal to the ADA recommended treatment goals of 7% for the first visit,. For the second visit, 24.6% (80 out of 325) intervention group patients and 31.9% (79 out of 248) control group patients had HbA1c levels lower than the ADA treatment goal. For the third visit, 11 out of 47 intervention group patients (23.4%) and 20 out of 40 control group patients (50%) had HbA1c levels lower than or equal to 7%.
Generally, mean HbA1c levels for the intervention group were higher than those of the control group. When the mean HbA1c levels for all 3 visits were averaged, the resulting HbA1c level for the intervention group (8.9%) was significantly higher than that of the control group (8.6%). Although not always statistically significant, both groups showed a decreasing trend of HbA1c levels over time.

The mean HbA1c levels for both treatment groups well exceeded the recommended ADA levels and indicated a need for better glycemic control in the clinics. The mean HbA1c between the intervention and control group clinics differed by 0.3523 points (first visit) and 0.3852 points (second visit) and although statistically significant, it is unclear whether this is considered clinically meaningful. Patients with higher HbA1c levels have a greater risks of developing complications related to diabetes and every percentage point drop in HbA1c test results (e.g., from 8 to 7%) can reduce the risk of microvascular complications (eye, kidney, and nerve diseases) by 40%.15,16

Control clinics and intervention clinics did not differ in mean LDL Cholesterol levels with any statistical significance and their mean LDL levels exceeded ADA recommendations. Hence, LDL treatment goal of 100 mg/dL were unmet by clinics in both groups.

Although it is conventional to study the systolic blood pressure levels when determining risk,17 I decided to examine both systolic and diastolic blood pressure. Control group baseline mean blood pressure levels were higher than the intervention group. However, control group SBP and DBP levels decreased over time whereas intervention group’s SBP increased while their DBP remained relatively constant.
Mean SBP and DBP levels for control and intervention groups were below the ADA recommended level of 130/80 mmHg and met the treatment goal. This is unsurprising since it is difficult to address and control a patient’s glycemic, lipid, and blood pressure needs simultaneously. Only about 7% of diabetic patients in the US meet the ADA treatment goal for all three outcomes.18

Patients in both groups appeared comparably satisfied with different dimensions of their care. However, intervention patients showed markedly higher level of satisfaction in the time their clinics took to return their phone calls and in their ability of scheduling medical appointments for their diabetes when they needed one.

In terms of knowledge, patients from both study groups did not show marked difference except that more patients in the intervention group knew what their HbA1c level should be.
4.0 DISCUSSION

The Diabetes Pilot Study sought to determine which reimbursement methodologies (capitation vs. fee-for-service) promoted better care management and health outcomes, as well as more cost-effective resource utilization in the care of non-institutionalized, acutely ill diabetic patients.

Twenty community clinics participating in the Public Private Partnership (PPP) program in Los Angeles County, California were the unit of randomization in the study. The capitated intervention and FFS control groups received $470 per patient per quarter and $94 per visit, respectively. Patients were risk stratified and clinic visits were documented over 10 months.

Study groups did not differ significantly in terms of their median CCMA scores although the intervention clinics reported better CCMA scores in October of 2007 and this difference approached statistical significance (p = 0.0562). There was no evidence of harmful health effects to enrolling patients in capitated group clinics, at least under the conditions prevailing in this pilot study.

Patients in both groups appeared comparably satisfied with different dimensions of their care. However, intervention group patients showed markedly higher level of satisfaction in the time their clinics took to return their phone calls and in their ability of scheduling medical appointments for their diabetes when they needed one.

In terms of knowledge, patients from both study groups did not show marked difference except that more patients in the intervention group knew what their HbA1c level should be.

The next section discusses several limitations of the Diabetes Pilot Study.
4.1 Limitations

1. **Lack of monitoring.** First and most importantly, the pilot study assumed that capitation would produce changes in the provision of services. Yet no technique was implemented to monitor a clinic’s model of care to certify if there were successful deliveries of payment benefits resulting from capitation (e.g., hiring more nurses and case managers, more phone lines to answer patient questions, developing education materials, etc). Since I cannot ascertain whether the intervention resulted in different delivery of care in intervention clinics compared to control clinics, I cannot verify that the few outcome differences that emerged between the treatment groups resulted from the intervention.

2. **Capitation rate was not risk-adjusted.** This is important because capitation is expected to have the largest effect on the heaviest users of the system. To qualify for the pilot study, patients must have met a high disease severity score as determined by a physician using the Diabetes Risk Stratification Worksheet (DRSW). Patients who scored less than 4 points were not eligible for the pilot study. Patients who were too ill were referred to the Countywide Disease Management (DM) program and were not eligible to participate in the pilot study. Therefore, it is unclear whether or not the outcomes of this study will be replicated in a population with varying severity of diabetes.

3. **Missing data.** Demographic information such as gender, ethnicity, area of residence, education, and employment are missing. Pertinent information such as duration of diabetes, visit to the ER, hospitalization rates are also missing from the dataset. I do not know if pregnant women were enrolled in the program.
Also missing are the i2i Tracks data from the two clinics in the intervention group.

4. **Relatively short follow-up.** Due to funding issues, the pilot study was discontinued after 10 months. If there were any changes in the services provided due to the intervention, care management systems may have been slow to develop and 10 months may not have been enough to observe its affects. Observed differences may have been due to pre-existing pattern of use between different clinics and not a result of the conversion to capitation. There also could be issues of sustainability of effects.

5. **No standardized provision of care.** The care that was provided was inconsistent across clinic sites. Outcome differences may not have resulted from capitation but from differences in the health programs or communities from which the sample was drawn.

4.2 **Recommendations to County**

A pilot study is essentially a feasibility study designed to test logistics and gather information prior to conducting a larger study. In the case of the PPP program, the Diabetes Pilot Study was undertaken to explore different reimbursement methods before implementing any substantial changes to the existing PPP program or payment structure.

The Diabetes Pilot Study articulated a clear list of objectives within a formal framework to encourage methodological thoroughness. However, aspects of the pilot study were not always implemented as planned due to practical and fiscal restrictions. Successful implementation is crucial as it directly influences the type, amount, and quality of the information collected which in turn affects the findings of the evaluation.
In the pilot, participating agencies were required to submit quarterly and monthly data reports. Yet the quality and amount of the data reported by the clinics varied and certain segments of information were missing altogether from the dataset. For example, demographic information was missing due to patient privacy issues, clinical data was unavailable from the clinics using i2i Tracks registry, and some clinics reported less than 30 patients for the duration of the study while others reported more than 200.

Further, the Diabetes Pilot Study assumed capitation would produce changes in the provision of services but did not measure actual changes in patient care under capitation (e.g., reducing ER visits, increasing group meetings, hiring more nurses and case managers, adding more phone lines to answer patient questions, developing education materials, etc). This created a serious weakness in the evaluation design, making it difficult to determine whether the observed changes were a direct function of the intervention or from differences in the health programs or communities from which the sample was drawn.

Billing data for the 10 months preceding the study (9/2006 – 6/2007) and the 10 months during the study (7/2007 – 4/2008) were requested. Reasons for this were twofold: 1) Differences in the number of patient visits between clinics paid under fee-for-service versus capitation might indicate change due to capitation 2) cost of reimbursement may be calculated for each payment model.

Billing data for both control (fee-for-service) and intervention (capitated payment) groups contained agency names, visit dates, claim number, amounts paid ($94 vs. $470), RA date, ICD9 Code, Code Description, and CPT code.
Below is a sample of the Billing Data:

A) CONTROL GROUP before and during the pilot study & INTERVENTION GROUP before the study

<table>
<thead>
<tr>
<th>Agency/Site Name</th>
<th>Visit Date</th>
<th>Claim #</th>
<th>Amount Paid</th>
<th>RA Date</th>
<th>ICD9 Code</th>
<th>Code Description</th>
<th>CPT Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency ABC</td>
<td>10152007</td>
<td>0002</td>
<td>094</td>
<td>11/15/07</td>
<td>250</td>
<td>Diabetes Mellitus</td>
<td>99213</td>
</tr>
<tr>
<td>Agency ABC</td>
<td>08252007</td>
<td>0002</td>
<td>094</td>
<td>10/08/07</td>
<td>250</td>
<td>Diabetes Mellitus</td>
<td>99213</td>
</tr>
<tr>
<td>Agency ABC</td>
<td>10162007</td>
<td>0002</td>
<td>094</td>
<td>11/15/07</td>
<td>250</td>
<td>Diabetes Mellitus</td>
<td>99213</td>
</tr>
</tbody>
</table>

.. ..

B) INTERVENTION GROUP during the pilot study

<table>
<thead>
<tr>
<th>Agency/Site Name</th>
<th>Visit Date</th>
<th>Claim #</th>
<th>Amount Paid</th>
<th>RA Date</th>
<th>ICD9 Code</th>
<th>Code Description</th>
<th>CPT Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency DEF</td>
<td>03042008</td>
<td>0004</td>
<td>470</td>
<td>04/29/08</td>
<td>250</td>
<td>Diabetes Mellitus</td>
<td>99213</td>
</tr>
<tr>
<td>Agency DEF</td>
<td>07092007</td>
<td>0001</td>
<td>470</td>
<td>11/15/07</td>
<td>250</td>
<td>Diabetes Mellitus</td>
<td>99213</td>
</tr>
<tr>
<td>Agency DEF</td>
<td>06242008</td>
<td>0007</td>
<td>470</td>
<td>08/15/08</td>
<td>250</td>
<td>Diabetes Mellitus</td>
<td>99213</td>
</tr>
</tbody>
</table>

.. ..

As suspected, intervention clinics received a lump sum per patient per quarter and billing data for the capitated group did not provide the number of patient visits. Further, the cost of reimbursement could not be calculated since the billing data did not provide the number of unique patients enrolled in each fiscal quarter over the course of the study.

In view of these and other limitations described in the previous section, it would be premature to offer policy recommendations without further corroborative analysis. Therefore, several recommendations are proposed in this regard for any future work.

Recommendation 1:

There were a total of 1,006 patients in the control group (10 clinics) and a total of 1,399 patients in the intervention group (8 clinics). In the control group, only Queenscare enrolled more than 200 patients. Half of the clinics in the control group enrolled less than 100 patients with three of these clinics reporting results for 27 to 32 patients. In the intervention group, five clinics reported results for more than 200 patients. The remaining three clinics reported results ranging from 62 to 89 patients.
Because community health centers vary in their capacity for data collection, it may be beneficial to outline minimum, not just maximum, data requirements that all clinics must meet in order to participate. For instance, the County should set the minimum number of patients to be enrolled by the clinics as well as the maximum. Setting the upper limit is easy since this decision is guided by funding restrictions.

Establishing the lower limit may not be as straightforward since the clinics vary in size. Instead of an absolute number, clinics should enroll a fixed percentage of patients from their diabetes disease registries to allow for the differences in clinic size. Under-performing clinics should submit an action plan to remedy the causes of poor performance.

**Recommendation 2:**

Raw data from electronic registries were transferred from the clinics to the Council of Community Clinics of San Diego (CCCSD) to extract and catalog for evaluation. The pilot study underscored the importance of a data liaison within the County to maintain regular communications with CCCSD and manage the dataset through periodic status and quality checks. Under-performing clinics should be asked to submit an action plan to remedy the underlying causes of poor performance if necessary.

**Recommendation 3:**

For future large-scale studies, decide at the outset how to assess changes under capitation. Did capitation stimulate innovations in the provision of services? Improve service offerings? Hire additional staff? These data may be captured for analysis through interviews, surveys, plans for improvement, or record examinations.
• **Pre and Post Interview:** Staff members from participating clinics may be invited for an open-ended interview before and after the study. The interview may incorporate questions regarding the current care model, service offerings, sufficiency in funding and personnel, etc. Pre and Post interviews from each clinic may then be evaluated for any changes in the care of diabetes. Even if there are no plans for a larger study, this type of interview may be ideal to compensate the design flaw in the Diabetes Pilot Study. Respondents may be re-sampled from the intervention group and interviewed to investigate any linkages between capitation and changes in diabetes care.

• **Web based surveys:** If interviews are too time consuming and resource intensive, a shorter, web based survey like Survey Monkey can be administered at regular intervals. Participants may be asked to estimate whether there was an increase/no change/decrease in support and educational group meetings, nurses and case managers, number of phone lines to answer patient questions, developing education materials for diabetic patients, etc. Respondents may remain anonymous; indicating only the study group the participant belongs to.

• **Improvement Plans:** Clinics may be asked to draft and submit a plan for service improvements with the additional funding under capitation. At the end of the study, clinics can self assess this plan and gauge whether these goals were met. These can then be evaluated for changes in care.

• **Record Examinations:** If options listed above are not viable, County is encouraged to examine patient data to explore a patient’s contact with the clinic such as provider visits, phone calls, group visits, prescription refills, etc. This information may also
help in obtaining the cost of reimbursement for clinics in the intervention group. If available, patient ER visits also provide information on the level of care provided to the patients since participating patients were already risk stratified.

**Recommendation 4:**

Patients must have met a high disease severity score as determined by a physician using the Diabetes Risk Stratification Worksheet (DRSW) to qualify for the pilot study. Patients who scored less than 4 points were not eligible for the pilot study. Patients who were too ill were referred to the Countywide Disease Management (DM) program and were not eligible to participate in the pilot study. Capitated clinics received 5 times the FFS rate for treatment of their diabetic patients.

For the next phase, it is important to determine the correct capitation rate for patients who were determined to be moderately ill. What utilization rate is appropriate for diabetic patients in this risk stratum? Would it be necessary to scale down the capitation rate to fit the services that are being offered? What are the advantages of a “per patient per quarter” (PPPQ) payment over “per member per month” (PMPM)? What is the expected volume of patients for each clinic? All these questions need to be considered before deciding on a capitation rate.

**4.3 Recommendations to Evaluators**

A number of lessons have been distilled from the evaluation of the Diabetes Pilot Study. These lessons can help improve in planning, designing, and conducting of future evaluation efforts.

1. **Actively participate during the planning phase.** If possible, ask to attend any and all meetings and discussions associated with the project/study to be evaluated.
Actively participate in the planning process; i.e., assessing project feasibility, identifying objectives, establishing theoretical basis, translating and applying theories, shaping objectives into evaluation questions, and collecting measurable and observable data. As an external observer, you may be able to discover what those within the organization may have overlooked.

2. **Build a good working relationship with your organizational contact.** Your organizational contact often has authority and access to the information and resources you need. Support from your organizational contact is imperative in the success of your evaluation project. Garner support from your organizational contact by explaining how your interests align with those of the organization. Share your work plan and inform them of your progress. Your contact may also facilitate your understanding of the project and clearly define the needs of the organization.

3. **Maintain neutrality.** As a student evaluator, you will generally be perceived as politically neutral. Maintaining neutrality is important as this may afford you access to competing sides, particularly in a politically charged environment. If you did not participate in the planning or implementation of the project, be diplomatic when discussing project design flaws or voicing your concerns as this may be taken as criticism.

4. **Clearly understand evaluation objectives.** Confer with your organizational contact to determine your evaluation scope and objectives. It is critical that you understand the intended uses of the evaluation and the decisions that are under consideration.
5. **Assure the quality of evaluation data.** Identify factors that may interfere with the successful implementation of the project or impact its outcome. If you were engaged in the planning phase, suggest appropriate remedies. If you were commissioned after the conclusion of the project, find possible means to circumvent them. Identify all sources of your data and make sure you have access to baseline data. Sometimes, you may not have access to the information you need because it either portrays the organization in a bad light or is confidential. In the case of the Diabetes Pilot Study, clinics did not report patient demographic information due to confidentiality issues. Be creative in identifying sources of your data.

6. **Evaluate the implementation process.** Once the project is completed, begin to evaluate whether the project was implemented and conducted as planned. If you were engaged after its completion, request copies of all communication over the course of the project (e.g., meeting minutes, memos, emails, interviews, press releases, etc). These documents will provide deeper insight into the development and implementation of the study.

7. **Inspect data.** Once you obtain your data, check to make sure you have the appropriate information. Decide what to include or exclude to answer your evaluation questions and examine it to make sure it is consistent and accurate. Descriptive statistics are often helpful in detecting data entry or coding errors. This can also help you determine what statistical techniques to use (e.g., parametric vs. non-parametric). Identify plausible ranges for values and confirm that your data values fall within this range (e.g., someone cannot be 20 ft. tall).
Make sure you know the units of measurement for each variable. Poor quality in data may lead to unproductive evaluation efforts.

8. **Expect change.** This is one of the most important lessons learned. The Diabetes Pilot Study is a good illustration that real world implementation requires flexibility and adaptability regardless of how well the study was planned. External and internal factors often influence the implementation process and outcomes of a project. These factors may be financial, technical, political, systematical, or organizational. The Diabetes Pilot Study ended prematurely because the level of funds allotted for the study was insufficient to implement, manage, and complete the project as designed. Also, during the course of the project, the consensus and cooperation among partners or interested parties may have diminished. Persons who initially championed the project may have left their positions. In the case of the Diabetes Pilot Study, all the staff who were intimately involved either left their positions or were no longer in the department by the time the evaluation efforts had begun.

9. **Anticipate delays.** There may be delays in the evaluation due to project postponements, lost data, long vacations, staff changes, etc. Receiving data may take longer than expected when multiple data sources are involved. If you are given a time frame for your evaluation to help inform key decisions, request your organizational contact to assist in communication between data sources and plan for sufficient time for exchange between entities for evaluation review and input.
5.0 CONCLUSION

Patients with diabetes often have complex needs that are difficult to fulfill in brief problem focused office visits.\textsuperscript{19} Capitation generally can provide better continuity and coordination of care than fee-for-service. Providers under capitation can operate within more stable and predictable budgets and plan for more cost effective treatment strategies. However, capitation also runs the risks of under treatment and result in poorer treatment outcomes by placing financial risks and incentives on the community clinics that are already financially strained.

In the Diabetes Pilot Study, I sought to determine whether different payment methodologies have an affect on patient health outcomes and the provision of health care services. This pilot study was limited in that there was no system in place to check whether capitation produced changes in the delivery of diabetes care that met these needs of the patients.

Despite its limitations, the pilot study provided encouraging support for capitation. The strength of the Diabetes Pilot Study was that it offered opportunity and resource for intervention clinics to change their model of care for diabetes. Capitation appeared to produce $205.75 in savings per patient. Patients in the experimental group showed a markedly higher level of satisfaction in the time their clinic took to return their phone calls and in their ability to scheduling medical appointments for their diabetes when they needed one though I will never know the exact reason. Also, more patients in the experimental group knew what their HbA1c level should be.

There was no evidence of harmful effects to enrolling patients in capitated group clinics at least under the conditions prevailing in this pilot study. To determine whether
these findings also apply for settings with sicker patients or in longer term, further studies should be conducted.
6.0 SUPPORTING DOCUMENTS
6.1 A Closer Look at Primary and Specialty Care Clinics in Los Angeles County

According to the California Office of Statewide Health Planning and Development’s (OSHPD) Annual Utilization Data for 2006, there were 203 health centers in Los Angeles County. These clinics collectively reported 2,933,656 encounters for 925,955 patients. This report examined the final data from 2006 since recruitment for the Diabetes Pilot Study occurred in 2006.

6.1.1 Participating (P) vs. Non Participating (NP) Clinics

Not all clinics in Los Angeles County were eligible to participate in the Diabetes Pilot Study. Active membership in the Community Clinic Association of Los Angeles County (CCALAC) was required for participation. To become a member of CCALAC, an organization must

- be not for profit, 501(c)(3), tax-exempt
- be licensed by the State of California as a “community clinic” or “free clinic”
- be located in Los Angeles county, or, show at least 51% of the organization’s primary care patients residing in Los Angeles County
- provide primary medical care for low income and or uninsured families and individuals
- have a written policy of non-discrimination based on ability to pay and a sliding fee scale based on income and family size or, alternatively, a policy of no charge
- be governed by a board of directors which has written bylaws and which meets at least quarterly
- not be so closely affiliated with a hospital, health care system, or plan
- share CCALAC’s mission to advocate for health services for medically underserved people, and have a corporate mission to serve medically underserved people as demonstrated by the organization’s mission, history, and programs
- provide enabling services (e.g., transportation, translation) in addition to primary care
- demonstrate community involvement
- participate with government funded health care programs
- be nominated by at least 2 members in good standing located in the same

LACDHS owned clinics did not report to OSHPD. Clinics ‘Not in Operation’ were excluded. Clinic sites included mobile clinics and school health centers.
Service Planning Area (SPA)
- be approved by a majority of the CCALAC Board

Table 13 lists 46 current CCALAC members. Three CCALAC member clinics - Antelope Valley Community Clinic, Herald Christian Health Center, and Los Angeles Christian Health Centers - were not in existence in 2006\(^9\).

Therefore, the remaining 43 CCALAC member clinics were examined. Twenty clinics were categorized under P for participation in the pilot study and 23 clinics were categorized under NP for opting out.

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\(^9\) These clinics began reporting to OSHPD in 2009
**Table 13:** List of CCALAC members that participated (P) in the diabetes pilot study and those that did not (NP). Highlighted clinics did not operate in 2006.\(^1\)

<table>
<thead>
<tr>
<th>Clinics that did not participate (NP)</th>
<th>Clinics that participated (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control</strong></td>
<td><strong>Intervention</strong></td>
</tr>
<tr>
<td>1. All for Health, Health for All</td>
<td>URDC/Bill Moore Community Health Clinic</td>
</tr>
<tr>
<td>2. American Indian Healing Center</td>
<td>Jeffrey Goodman Special Care Clinic</td>
</tr>
<tr>
<td>3. Antelope Valley Community Clinic</td>
<td>Korean Health, Education, Information &amp; Research Center</td>
</tr>
<tr>
<td>5. Asian Pacific Health Care Venture</td>
<td>Meet Each Need with Dignity (MEND)</td>
</tr>
<tr>
<td>6. Chinatown Service Center</td>
<td>Our Savior Center/Cleaver Family Wellness Clinic</td>
</tr>
<tr>
<td>7. City Help Wellness Center</td>
<td>Planned Parenthood of Los Angeles</td>
</tr>
<tr>
<td>8. Comprehensive Community Health Centers, Inc.</td>
<td>St. Anthony Medical Centers</td>
</tr>
<tr>
<td>9. Family Health Care Centers of Greater LA</td>
<td>T.H.E Clinic, Inc.</td>
</tr>
<tr>
<td>10. Harbor Community Clinic</td>
<td>UMMA Community Clinic</td>
</tr>
</tbody>
</table>
6.1.2. License Type and Classification

CCALAC requires clinics to be licensed by the State of California either as a community clinic or a free clinic. According to CCALAC, a community clinic is licensed to provide health services and may charge patients a fee based on the patient’s income and ability to pay. A free clinic is licensed to provide health services but never charges patients for services or medicines.\(^2\)

All 23 NP organizations were licensed as community clinics in 2006. For the participating group, 1 organization was a free clinic, 2 were combined, and 17 were community clinics (Figure 16).

Clinics can also be a Federally Qualified Health Center (FQHC) or a FQHC Look-Alike. FQHC are public and private non-profit, community based, and patient-driven organizations that serve high need populations and are governed by a community board composed of a majority (51% or more) of health center patients.\(^2\)

FQHC provide comprehensive health care as well as supportive services that promote access to care and are funded under the Health Center Program (Section 330 of the Public Health Service Act). FQHC Look-Alike clinics meet the definition of Federally Qualified Health Center but do not receive grant funding under the Health Center Program.

\(^2\) Has many locations with some licensed as a free clinic while others were licensed as a community clinic.
**Figure 16:** License type for clinics that participated (P) in the Diabetes Pilot Study and clinics that did not participate (NP).

**Figure 17:** Federally Qualified Health Center (FQHC) Classification for Participating (P) and Non Participating (NP) organizations.

In the NP group, there were 5 FQHC, 10 FQHC Look-Alikes, and 8 that were neither FQHC nor FQHC Look-Alike. In the P group, 14 were FQHC, 3 were FQHC Look-Alikes, and 3 were neither* (Figure 17). The majority of the clinics in the NP group

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*If FQHC status differed among service sites, the status of the main clinic was used.
were FQHC Look-Alikes (10) whereas the majority of clinics in the P group were FQHC (14).

6.1.3. Service Sites

Some CCALAC organizations were single, stand-alone clinics while others operated multiple service sites. Multiple service sites included satellite locations, mobile clinics, and school health centers.

In the NP group, 16 organizations were stand-alone clinics (Figure 18). The remaining 7 organizations had more than 2 sites. Planned Parenthood of Los Angeles had a notably large number of service sites compared with others in the NP group with 13 locations. The next highest was 5 service sites. When combined, 23 clinics in the NP group operated a total of 50 service sites. When 16 stand-alone organizations and Planned Parenthood of Los Angeles were removed, 6 NP organizations owned an average of 3.5 service sites per organization.

In the P group, 5 organizations were stand-alone clinics while 15 organizations had 2 or more service sites (Figure 18). In fact, 20 organizations that participated in the pilot study pooled a total of 70 service sites, 20 service sites more than the NP group’s 50 service sites. On average, 15 organizations in the P group (excluding 5 stand-alone organizations) managed an average of 4.3 service sites per organization.

The median number of service sites for the organizations in the NP group was 1 whereas the median number of service sites for the organizations in the P group was 3. In general, organizations in the P group operated multiple service sites whereas organizations that did not participate in the Diabetes Pilot Study tended to be stand-alone clinics.
6.1.4. Encounters

An encounter occurs when a licensed practitioner\(^1\) independently examines or treats a patient then records their findings in the patient’s chart.\(^3\)

In 2006, 203 primary and specialty care clinics in Los Angeles County reported over 2.9 million encounters. In the same year, 43 CCALAC member clinics reported 1,287,487 encounters. CCALAC members, who make up 21.2% of total clinics in LA County, administered over 43.9% of the total number of encounters.

Within the CCALAC, the 23 member clinics in the NP group, with 50 service sites, had 539,439 encounters. This averaged to approximately 10,789 encounters per service site.

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\(^1\) A licensed practitioner may be a medical, mid level medical, dental, or mental health professional.
The 20 member clinics in the P group operated 70 service sites and reported 748,048 encounters in 2006. This averaged to approximately 10,686 encounters per service site. However, the number of encounters within the groups varied. When examined at clinic level, 8 clinics in the NP group reported less than 9,999 encounters. All 20 clinics in the P group reported more than 10,000 encounters. Median encounter was 10,000 to 19,999 for the NP group and 20,000-39,999 for the P group (Figure 19).

Figure 19: Number of encounters for clinics in the Participating (P) and Non Participating (NP) Group.

u Highest encounter tally was used when there is more than 1 service site.
6.1.5. Encounters by Principal Service Provided

The 2006 OSHPD Annual Utilization Data provided encounters for 14 principal services:

1. Evaluation and management of established patients
2. Evaluation and management of new patients
3. Hospital related services
4. Case management services
5. Medicine- special services
6. Preventive medicine for infant, child, and adolescent
7. Preventive medicine for adults
8. Counseling
9. Integumentary system
10. Maternity care and delivery
11. Pathology/laboratory
12. Family planning “Z” codes
13. Dental encounters (CDT codes)
14. All other services not included above

For the 203 primary and specialty care clinics in Los Angeles County, the top 3 encounters by principal service were (in the order of significance):

- Evaluation and management of established patients (53.2%)
- Evaluation and management of new patients (9.4%) and
- Family planning (6.1%)\(^v\)

\(^v\) This excluded the “all other services” category (10.8%).
The top 2 principal services for CCALAC member organizations were also evaluation and management of established and new patients. However, the third most utilized service for CCALAC members was dental (Table 14).

**Table 14:** Top 3 encounters by principal service in order of significance for all clinics in Los Angeles County, Non Participating (NP) Group Clinics, and Participating (P) Group Clinics.

<table>
<thead>
<tr>
<th>All Clinics in Los Angeles County (n=203)</th>
<th>CCALAC Member Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non Participating (NP) Group Clinics (n=23)</td>
</tr>
<tr>
<td>1 Evaluation and management of established patients (53.2%)</td>
<td>Evaluation and management of established patients (59.3%)</td>
</tr>
<tr>
<td>2 Evaluation and management of new patients (9.4%)</td>
<td>Evaluation and management of new patients (9.1%)</td>
</tr>
<tr>
<td>3 Family planning (6.1%)</td>
<td>Dental (5.9%)</td>
</tr>
</tbody>
</table>

**6.1.6. Primary Care Providers**

The category of primary care providers tallied in the 2006 OSHPD report were:

- Physicians
- physician assistants
- family nurse practitioners
- certified nurse midwives
- visiting nurses
- dentists
- all other primary care providers not already mentioned
Figure 20: Distribution of full time primary care providers for all clinics in Los Angeles County.

Overall, the 203 clinics in Los Angeles County employed a total of 967 full time primary care providers. The 23 clinics in the NP group employed 180 full time primary care providers while the 20 clinics in the P group employed 197.

For all clinics in Los Angeles County, physicians, physician assistants, and family nurse practitioners were 67.3% of full-time employees and were the key care providers at the clinics, providing over 82% of care (Figure 20). Of these, physicians comprised 43% of the 967 primary care providers and managed 52.3% of encounters. The top 3 primary care providers were physicians, all other primary care providers, and family nurse practitioners (Table 15).

The provider distribution for CCALAC member clinics was similar to that of the overall clinics in Los Angeles County. Within the CCALAC members, clinics in the NP
Table 15: Top 3 primary care providers by order of significance for all clinics in Los Angeles County, Non Participating (NP) Group Clinics, and Participating (P) Group Clinics.

<table>
<thead>
<tr>
<th>All Clinics in Los Angeles County (n=203)</th>
<th>CCALAC Member Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non Participating (NP) Group Clinics (n=23)</td>
</tr>
<tr>
<td>1</td>
<td>Physicians (42.7%)</td>
</tr>
<tr>
<td></td>
<td>All other primary care providers (24.0%)</td>
</tr>
<tr>
<td>2</td>
<td>Family nurse practitioners (14.3%)</td>
</tr>
<tr>
<td></td>
<td>Physician assistants (15.3%)</td>
</tr>
</tbody>
</table>

Group employed more family nurse practitioners (15.8%) than physician assistants (10.6%) whereas clinics in the P group employed more physician assistants (15.3%) than family nurse practitioners (11.9%)(Figure 21). For both NP and P groups, no midwives were employed.

Figure 21: Distribution of full time primary care providers for all clinics in Los Angeles County, Non Participating (NP) Group Clinics, and Participating (P) Group Clinics. Data are shown in percentages.
6.1.7. Patient Demographics

According to the 2006 OSHPD Annual Utilization Data, a typical primary and specialty care patient in Los Angeles County would be a Hispanic female between the ages of 20 to 64, living below 100% of the Federal Poverty Level (FPL).

6.1.7.1 Gender

Patients visiting these clinics were overwhelmingly female. For all clinics in Los Angeles County, including CCALAC and non-CCALAC members, females generally accounted for over 2/3 of the total clinic population (Table 16).

Table 16: Gender distribution of patients visiting all clinics in Los Angeles County, Non Participating Group (NP) Clinics, and Participating (P) Group Clinics.

<table>
<thead>
<tr>
<th>Gender</th>
<th>All Clinics in Los Angeles County (n=925,955)</th>
<th>CCALAC Member Clinics (n=370,936)</th>
<th>Non Participating (NP) Group Clinics (n=166,372)</th>
<th>Participating (P) Group Clinics (n=204,564)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>34.4 %</td>
<td>33.7 %</td>
<td>39.1 %</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>65.6 %</td>
<td>66.3 %</td>
<td>60.9 %</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td></td>
</tr>
</tbody>
</table>

6.1.7.2 Age

Most users of the primary and specialty care clinics in Los Angeles County were adults between the ages of 20 to 64 (63.3%); adolescents and children under the age of 19 were 32.8% of the patients while patients over the age of 65 who may qualify for Medicare accounted for almost 4% of the patients. These trends continued across all 3 groups (all clinics in LA County, NP group clinics, and P group clinics) (Table 17).

OSHPD reported patient age in 9 categories: under 1 year, from 1 to 4 years, from 5 to 12 years, from 13 to 14 years, from 15 to 19 years, from 20 to 34 years, from 35 to 44 years, from 45 to 64 years, and 65 years and older.
Since an upper limit was not reported, mean age for these groups could not be obtained. However, the median age range for patients in all 3 groups was 20 to 34 years.

**Table 17**: Age range of patients visiting all clinics in Los Angeles County, Non Participating Group (NP) Clinics, and Participating (P) Group Clinics.

<table>
<thead>
<tr>
<th>Age</th>
<th>All Clinics in Los Angeles County (n=925,955)</th>
<th>CCALAC Member Clinics (n=370,936)</th>
<th>Non Participating (NP) Group Clinics (n=166,372)</th>
<th>Participating (P) Group Clinics (n=204,564)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 19</td>
<td>32.8 %</td>
<td>26.4 %</td>
<td>34.6 %</td>
<td></td>
</tr>
<tr>
<td>20 - 64</td>
<td>63.3 %</td>
<td>67.5 %</td>
<td>61.8 %</td>
<td></td>
</tr>
<tr>
<td>65 +</td>
<td>3.9 %</td>
<td>6.1 %</td>
<td>3.6 %</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td></td>
</tr>
</tbody>
</table>

### 6.1.7.3 Race

The majority of patients in all 3 groups were Hispanic. For both NP and P groups, Hispanics, Blacks and Non-Hispanic Whites were the top 3 service users (Table 18). The racial distribution of primary and specialty care patients in Los Angeles County is shown in Figure 22.

**Table 18**: The top 3 racial groups of patients visiting all clinics in Los Angeles County, Non Participating Group (NP) Clinics, and Participating (P) Group Clinics.

<table>
<thead>
<tr>
<th>All Clinics in Los Angeles County (n=925,955)</th>
<th>CCALAC Member Clinics (n=370,936)</th>
<th>Non Participating (NP) Group Clinics (n=166,372)</th>
<th>Participating (P) Group Clinics (n=204,564)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hispanic (60.7 %)</td>
<td>Hispanic (55.3 %)</td>
<td>Hispanic (65.1 %)</td>
<td></td>
</tr>
<tr>
<td>2 Other/Unknown (15.2 %)</td>
<td>African American (13.9 %)</td>
<td>Non Hispanic White (9.2 %)</td>
<td></td>
</tr>
<tr>
<td>3 Non Hispanic White (7.4 %)</td>
<td>Non Hispanic White (12.9 %)</td>
<td>African American (9 %)</td>
<td></td>
</tr>
</tbody>
</table>
Figure 22: Racial distribution of patients visiting all clinics in Los Angeles County, Non Participating Group (NP) Clinics, and Participating (P) Group Clinics.

6.1.8. Economic Status and Insurance Coverage

The economic status for a considerable portion of patients in the NP group was reported as unknown (15.43%) whereas in the P group, only 4.2% of patient economic status was reported as unknown (Figure 23).

In all 3 groups, the majority of patients were classified to be below the 100% FPL. In the NP group, over 80% of patients were below the 200% FPL whereas in the P group, over 90% of patients were below the 200% FPL (Figure 23).

Figure 24 shows patient coverage for the provision of primary and specialty care in Los Angeles County. OSHPD identified 10 sources of funding for these patients:

1. Medicare
2. Medicare-Managed Care
3. Medi-Cal
4. Medi-Cal-Managed Care
5. Healthy Families
6. Private Insurance
7. LA County PPP Program
8. Self-Pay/Sliding Fee
9. Free
10. All Other Payers

**Figure 23:** Economic status by Federal Poverty Level (FPL) for patients visiting all clinics in Los Angeles County, Non Participating Group (NP) Clinics, and Participating (P) Group Clinics.
Figure 24: Coverage for patients visiting all clinics in Los Angeles County, Non Participating Group (NP) Clinics, and Participating (P) Group Clinics.

Table 19: Top 3 payment sources for patients visiting all clinics in Los Angeles County, Non Participating Group (NP) Clinics, and Participating (P) Group Clinics.
Not surprisingly, 37.1% of patients visiting P group clinics were covered by the PPP program. This is significantly higher than the County’s overall figure of 19% and the NP group’s 15.9% (Figure 24).

The top 3 payment sources for patients visiting primary and specialty care in Los Angeles County are provided in Table 19. For the clinics that chose not to participate in the Diabetes Pilot Study, almost a quarter of their patients paid out of pocket or on a sliding scale for the services they received (Figure 24). Only 9.2% of patients visiting P group clinics paid out of pocket (Figure 24).

The OSHPD Annual Utilization Data reported patients under Medi-Cal and Medi-Cal Managed Care separately. When Medi-Cal and Medi-Cal Managed Care patients are combined, Medi-Cal accounts for almost a third of patient coverage for all groups.

Nonetheless, in the P group clinics, the number of patients covered by the PPP program was still slightly higher than the number of patients covered under Medi-Cal (37.1% PPP program vs. 36.3% Total Medi-Cal).

In all 3 groups, there were only a few patients enrolled in Medicare, Medicare Managed Care and Healthy Families. Since clinics in the NP and P group were relatively similar in all aspects except patient coverage, patient payment source may have been a driving force behind a clinic’s decision to participate in the Diabetes Pilot Study.
6.2 Result Summary: Patient Satisfaction and Knowledge Survey

**A. SATISFACTION**

1. The time it takes the Clinic to return my phone call is...

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Always Long (1)</th>
<th>Usually Long (2)</th>
<th>Sometimes short, Sometimes Long (3)</th>
<th>Usually Short (4)</th>
<th>Always Short (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control (%)</strong></td>
<td>63 (9.8)</td>
<td>22 (3.4)</td>
<td>30 (4.7)</td>
<td>168 (26)</td>
<td>147 (22.8)</td>
<td>173 (26.8)</td>
<td>42 (6.5)</td>
<td>645</td>
</tr>
<tr>
<td><strong>Expt (%)</strong></td>
<td>57 (8.3)</td>
<td>29 (4.2)</td>
<td>24 (3.5)</td>
<td>97 (14.1)</td>
<td>158 (23)</td>
<td>284 (41.3)</td>
<td>38 (5.5)</td>
<td>687</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td>51</td>
<td>54</td>
<td>265</td>
<td>305</td>
<td>457</td>
<td>80</td>
<td>1332</td>
</tr>
</tbody>
</table>

2. I can get a medical appointment for my diabetes when I need one.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control (%)</strong></td>
<td>159 (24.7)</td>
<td>33 (5.1)</td>
<td>453 (70.2)</td>
<td>645</td>
</tr>
<tr>
<td><strong>Intervention (%)</strong></td>
<td>286 (41.6)</td>
<td>19 (2.8)</td>
<td>382 (55.6)</td>
<td>687</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>445</td>
<td>52</td>
<td>835</td>
<td>1332</td>
</tr>
</tbody>
</table>

3. Clinic staff understands what I tell them.

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree, Nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control (%)</strong></td>
<td>5 (0.8)</td>
<td>9 (1.4)</td>
<td>8 (1.2)</td>
<td>79 (12.2)</td>
<td>218 (33.8)</td>
<td>316 (49)</td>
<td>10 (1.6)</td>
<td>645</td>
</tr>
<tr>
<td><strong>Expt (%)</strong></td>
<td>7 (1)</td>
<td>9 (1.3)</td>
<td>15 (2.2)</td>
<td>35 (5.1)</td>
<td>207 (30.1)</td>
<td>403 (58.7)</td>
<td>11 (1.6)</td>
<td>687</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12</td>
<td>18</td>
<td>23</td>
<td>114</td>
<td>425</td>
<td>719</td>
<td>21</td>
<td>1332</td>
</tr>
</tbody>
</table>
4. Clinic staff takes enough time with me.

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree, Nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>10 (1.6)</td>
<td>8 (1.2)</td>
<td>16 (2.5)</td>
<td>73 (11.3)</td>
<td>223 (34.6)</td>
<td>307 (47.6)</td>
<td>8 (1.2)</td>
<td>645</td>
</tr>
<tr>
<td>Expt (%)</td>
<td>3 (0.4)</td>
<td>10 (1.5)</td>
<td>21 (3.1)</td>
<td>42 (6.1)</td>
<td>214 (31.1)</td>
<td>378 (55)</td>
<td>19 (2.8)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>18</td>
<td>37</td>
<td>115</td>
<td>437</td>
<td>685</td>
<td>27</td>
<td>1332</td>
</tr>
</tbody>
</table>

5. Clinic staff explains what I want to know.

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree, Nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>5 (0.8)</td>
<td>7 (1.1)</td>
<td>13 (2)</td>
<td>71 (11)</td>
<td>206 (31.9)</td>
<td>329 (51)</td>
<td>14 (2.2)</td>
<td>645</td>
</tr>
<tr>
<td>Expt (%)</td>
<td>3 (0.4)</td>
<td>20 (2.9)</td>
<td>15 (2.2)</td>
<td>44 (6.4)</td>
<td>174 (25.3)</td>
<td>418 (60.8)</td>
<td>13 (1.9)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>27</td>
<td>28</td>
<td>115</td>
<td>380</td>
<td>747</td>
<td>27</td>
<td>1332</td>
</tr>
</tbody>
</table>

6. The number of times that I see my doctor is enough.

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree, Nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>6 (0.9)</td>
<td>10 (1.6)</td>
<td>11 (1.7)</td>
<td>49 (7.6)</td>
<td>224 (34.7)</td>
<td>330 (51.2)</td>
<td>15 (2.3)</td>
<td>645</td>
</tr>
<tr>
<td>Expt (%)</td>
<td>11 (1.6)</td>
<td>12 (1.7)</td>
<td>19 (2.8)</td>
<td>31 (4.5)</td>
<td>190 (27.7)</td>
<td>414 (60.3)</td>
<td>10 (1.5)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>22</td>
<td>30</td>
<td>80</td>
<td>414</td>
<td>744</td>
<td>25</td>
<td>1332</td>
</tr>
</tbody>
</table>
7. I receive information about my medication(s).

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree, Nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>5 (0.87)</td>
<td>9 (1.4)</td>
<td>6 (0.9)</td>
<td>48 (7.4)</td>
<td>224 (34.7)</td>
<td>341 (52.9)</td>
<td>12 (1.9)</td>
<td>645</td>
</tr>
<tr>
<td>Expt (%)</td>
<td>5 (0.7)</td>
<td>13 (1.9)</td>
<td>18 (2.6)</td>
<td>52 (7.6)</td>
<td>169 (24.6)</td>
<td>413 (60.1)</td>
<td>17 (2.5)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>22</td>
<td>24</td>
<td>100</td>
<td>393</td>
<td>754</td>
<td>29</td>
<td>1332</td>
</tr>
</tbody>
</table>

8. My lab test results are explained to me.

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree, Nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>8 (1.2)</td>
<td>17 (2.6)</td>
<td>15 (2.3)</td>
<td>59 (9.1)</td>
<td>225 (34.9)</td>
<td>310 (48.1)</td>
<td>11 (1.7)</td>
<td>645</td>
</tr>
<tr>
<td>Expt (%)</td>
<td>17 (2.5)</td>
<td>21 (3.1)</td>
<td>25 (3.6)</td>
<td>50 (7.3)</td>
<td>179 (26.1)</td>
<td>382 (55.6)</td>
<td>13 (1.9)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>38</td>
<td>40</td>
<td>109</td>
<td>404</td>
<td>692</td>
<td>24</td>
<td>1332</td>
</tr>
</tbody>
</table>

9. The number of times I come to the Clinic for my diabetes is

<table>
<thead>
<tr>
<th></th>
<th>Don’t know (0)</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree, Nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>4 (0.6)</td>
<td>21 (3.3)</td>
<td>31 (4.8)</td>
<td>481 (74.6)</td>
<td>None</td>
<td>4 (0.6)</td>
<td>104 (16.1)</td>
<td>645</td>
</tr>
<tr>
<td>Expt (%)</td>
<td>1 (0.1)</td>
<td>22 (3.2)</td>
<td>56 (8.2)</td>
<td>528 (37.6)</td>
<td>4 (0.6)</td>
<td>2 (0.3)</td>
<td>74 (10.8)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>43</td>
<td>87</td>
<td>1009</td>
<td>4</td>
<td>6</td>
<td>178</td>
<td>1332</td>
</tr>
</tbody>
</table>
B. KNOWLEDGE

1. My Hemoglobin A1C should be ________ (please write in number) or (check box for don’t know).

<table>
<thead>
<tr>
<th></th>
<th>Gave valid HbA1c level</th>
<th>Gave Invalid HbA1c level</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>177 (27.44)</td>
<td>4 (0.62)</td>
<td>464 (71.94)</td>
<td>645</td>
</tr>
<tr>
<td>Intervention (%)</td>
<td>277 (40.32)</td>
<td>10 (1.46)</td>
<td>400 (58.2)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>454</td>
<td>14</td>
<td>864</td>
<td>1332</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Checked “Don’t Know Box”</th>
<th>Did not check “Don’t Know Box”</th>
<th>Invalid answers</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>229 (35.50)</td>
<td>395 (61.24)</td>
<td>2 (0.31)</td>
<td>19 (2.95)</td>
<td>645</td>
</tr>
<tr>
<td>Intervention (%)</td>
<td>275 (40.03)</td>
<td>392 (57.06)</td>
<td>1 (0.15)</td>
<td>19 (2.77)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>504</td>
<td>777</td>
<td>3</td>
<td>38</td>
<td>1332</td>
</tr>
</tbody>
</table>

2. I know what to do when I have low blood sugar.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>538 (83.4)</td>
<td>82 (12.7)</td>
<td>25 (3.9)</td>
<td>645</td>
</tr>
<tr>
<td>Intervention (%)</td>
<td>558 (81.2)</td>
<td>97 (14.1)</td>
<td>32 (4.7)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>1096</td>
<td>179</td>
<td>57</td>
<td>1332</td>
</tr>
</tbody>
</table>

3. I have a self-management/personal health goal.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>563 (87.3)</td>
<td>56 (8.7)</td>
<td>26 (4)</td>
<td>645</td>
</tr>
<tr>
<td>Intervention (%)</td>
<td>551 (80.2)</td>
<td>110 (16)</td>
<td>26 (3.8)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>1114</td>
<td>166</td>
<td>52</td>
<td>1332</td>
</tr>
</tbody>
</table>
4. If I take my diabetes medications some of the time, I will be OK.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>281 (43.6)</td>
<td>296 (45.9)</td>
<td>68 (10.5)</td>
<td>645</td>
</tr>
<tr>
<td>Intervention (%)</td>
<td>330 (48)</td>
<td>302 (44)</td>
<td>55 (8)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>611</td>
<td>598</td>
<td>123</td>
<td>1332</td>
</tr>
</tbody>
</table>

5. Insulin can make people with diabetes go blind.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (%)</td>
<td>143 (22.2)</td>
<td>400 (62)</td>
<td>102 (15.8)</td>
<td>645</td>
</tr>
<tr>
<td>Intervention (%)</td>
<td>148 (21.5)</td>
<td>469 (68.3)</td>
<td>70 (10.2)</td>
<td>687</td>
</tr>
<tr>
<td>Total</td>
<td>291</td>
<td>869</td>
<td>172</td>
<td>1332</td>
</tr>
</tbody>
</table>
6.3 Result Summary: Provider Interview

1. What is your responsibility in the diabetes care management program?
   - Control
     a. 29 staff (9 nurses, 8 case managers, 7 doctors, 3 dietician or dental manager, 2 office managers)
   - Intervention
     b. 24 staff (7 case managers, 6 nurses, 4 doctors, 3 office managers, 2 nutritionists, 1 social worker, 1 promotor, 1 IT manager)

2. What are the strengths of the diabetes care management program at your agency?

<table>
<thead>
<tr>
<th>Management and leadership support</th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Care Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(coordinated team approach, standardized care, effective patient education classes)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Staff characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(well trained, bilingual, culturally competent, low turnover, diabetic promotora, pharmacist patient educator)</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Clinic characteristics and resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(PHQ-9, hemoglobin machines, retinal camera, EMRs, good location in neighborhood)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Patient characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(loyal to provider, trust in provider, compliant)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Available resources for Patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(free medicines, visuals, food vouchers, free strips)</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

3. What are the weaknesses of the diabetes care management program at your agency?

<table>
<thead>
<tr>
<th>Lack of funding</th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited number of staff</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Limited access to specialists</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Lack of staff training</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Inadequate clinic space</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Lack of resources for patients</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>(support groups, classes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(screening tools)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>EMR/IT</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(social marketing, transportation, homeless patients, low compliance)</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>
Clinics need…
- cardiologist- Intervention : 2
- Podiatrist- Control: 2, Intervention: 2
- Ophthalmologist- Control: 2, Intervention: 2
- Mental health professional- Control: 2, Intervention: 3
- Nutritionist- Control: 1
- Endocrinologist- Intervention: 1

4. Do providers have sufficient contact with diabetic patients to assure good quality care?

Intervention: 5 clinics answered this question. Patients were seen sufficiently.

Control: 3 clinics answered this question. They felt that although the frequency is sufficient, the duration of the appointments may not be long enough.

5. What are the issues that diabetic patients typically have that interfere with their ability to comply with self-care?

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can’t afford healthier foods (no grocery store in neighborhood)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Can’t afford glucose test strips/medication</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Transportation</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Taking time off work</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Childcare</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>No homes/address</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Can’t exercise</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Cultural Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Misconceptions about diabetes/insulin</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Food cultures</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Language barrier</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Needs of family before theirs/family support</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Health Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other chronic illness</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Education Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiteracy, low literacy, language barrier</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Poor understanding, education</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction with provider (unsympathetic MDs)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Access to appointments</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
6. Overall, how would you assess the quality of patient care provided to diabetic patients?

Control: average = 7.66

Intervention: average = 7.92

7. To improve the quality of care that is provided, what would be required?

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician champion leadership</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Care process change</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Information Technology</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>reimbursement</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Personnel</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Improved resources/Services</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Patient support of staff</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Legislative policy change</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
6.4 Acronyms and Abbreviations

In alphabetical order:

1. ADA: The American Diabetes Association
2. BP: Blood Pressure
3. BPHC: the Bureau Primary Health Care
4. CAG: Clinical Advisory Group
5. CCALAC: The Community Clinic Association of Los Angeles County
6. CCCSD: The Council of Community Clinics of San Diego
7. CCM: The Chronic Care Model
8. CCMA: Chronic Care Model Assessment
9. CEO: Chief Executive Officer
10. CHAP: The Community Health Alliance of Pasadena
11. CHC: Community Health Centers
12. COI: Certificate of Indigency
13. CMS: The Centers for Medicare and Medicaid Services
14. CVDEMS: Cardiovascular and Diabetes Electronic Management System
15. DBP: Diastolic Blood Pressure
16. DM: Countywide Disease Management program
17. DRSW: Diabetes Risk Stratification Worksheet
18. EMR: Electronic Medical Registries
19. FFS: Fee-for-service
20. FPL: Federal Poverty Level
21. HbA1c: Hemoglobin A1c
22. IT: Information Technology
23. JWCH: John Wesley County Hospital
24. LACDHS: Los Angeles County Department of Health Services
25. LDL: Low Density Lipoprotein
26. OAC: Office of Ambulatory Care
27. OSHPD: Office of Statewide Health Planning and Development
28. PECS: Patient Electronic Care System
29. PPP: Public Private Partnership
30. PHQ-9: 9 item depression scale of Patient Health Questionnaire
31. RTP: Request to Participate
32. SBP: Systolic Blood Pressure
33. SCHIP: State Children’s Health Insurance Program
34. SPA: Service Planning Area
7.0 REFERENCES


http://www.oshpd.ca.gov/hid/Products/Hospitals/Utilization/PC_SC_Utilization.htm

http://www.thesabanfreeclinic.org/index.php?option=com_content&task=view&i

d=2&Itemid=56


http://diabetes.webmd.com/guide/glycated-hemoglobin-test-hba1c


