**Abstract**

Traditional primary care models for medically vulnerable populations such as the homeless and injection-drug users do not deliver optimal and efficient medical care. We propose an integrated model for the delivery of primary care to a vulnerable population emphasizing open access, outreach, groups, and a team approach to care.

**Methods:** We monitored the health care use patterns of a group of 408 injection-drug users during a five-year period at Puentes Clinic, an integrated primary care site within a larger county health care system, Santa Clara Valley Health and Hospital System of California. We specifically compared use patterns before and after the inception of this new primary care site.

**Results:** Emergency Department and urgent care visit rates decreased from 3.8 visits in the 18 months prior to the clinic’s opening to 0.8 visits in the first 18 months of the clinic’s operation. Simultaneously, primary care visits increased from 2.8 visits per 18 months prior to the clinic’s operation to a current use rate of 5.9 visits per 18 months.

**Conclusion:** This changing health care use pattern after the implementation of an integrated primary care model suggests that a “medical home” for a vulnerable population can influence the way that populations interact with a larger health care system.

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**Clinical Vignette**

Mr S is a monolingual Hispanic man aged 50 years with a history of injection-drug use and alcoholism who is now sober after recent discharge from prison. Other than addiction, his primary medical condition is hepatitis C. Liver-function tests revealed transaminitis, reflecting a process of inflammation occurring in his liver. Mr S expresses motivation to begin treatment for his liver condition. He works multiple day-labor jobs in the rural part of our county’s catchment area and is homeless. Mr S takes his meals at a community soup kitchen, sleeps outside, and struggles with the daily issues of finding shelter and food.

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**Introduction**

Individuals with a history of homelessness and/or injection-drug use are examples of medically vulnerable populations with increased burdens of illness and poor access to care. Traditional primary care settings have had difficulty accommodating the competing priorities and psychosocial needs of these underserved populations. The medical needs of injection-drug users are well documented and include high rates of hepatitis C, hepatitis B, HIV, and soft-tissue infections. Injection-drug users and the homeless also have higher rates of chronic medical conditions when compared with other people living in poverty. Studies have also documented that homeless patients and injection-drug users delay treatment for their conditions, resulting in higher rates of Emergency Department (ED) use and low rates of primary care and preventive services. It is no wonder that the five-year mortality rate among the chronically homeless in one study in Boston was as high as 28% and that the average age of death for a homeless individual in a survey of three major cities across the US was age 45 years.

The Santa Clara Valley Health and Hospital System (SCVHHS) in California opened Puentes Clinic, a primary care clinic for patients with a history of injection-drug use, in mid-2002 with a pilot grant...
from the Health Trust, a nonprofit organization in Silicon Valley. Colocated with an outpatient methadone clinic, Puentes Clinic’s goal was to provide comprehensive, high-quality primary care access to active and recovering injection-drug users in Santa Clara County. The desired outcome of the clinic’s creation was to reduce potential harm to these patients and the community. In 2005, the clinic was incorporated under a federal Public Health Services Act (formerly Health Care for the Homeless Section 330(h)) grant supported by the Health Resources and Services Administration’s Bureau of Primary Health Care. This grant broadened the scope of Puentes Clinic to include the primary care of homeless patients. As part of the Valley Homeless Healthcare Program (VHHP), Puentes Clinic’s mission evolved to become a “safety net for the safety net,” providing primary care to vulnerable populations by integrating addiction, mental health, and medical services.

This article represents five-year quantitative outcome data for our integrated model of primary care and qualitatively describes the operating principles and interventions practiced in our clinic.

<table>
<thead>
<tr>
<th>Table 1. The members of the Puentes Clinic direct care team</th>
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<tbody>
<tr>
<td>Ninoska Casillas</td>
</tr>
<tr>
<td>Mercy Egbujor, RNP</td>
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<tr>
<td>Christine Finn, RN</td>
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<tr>
<td>Kim Fredericks, RN</td>
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<tr>
<td>Lorna Lindo, MSW</td>
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<tr>
<td>Mike Lipman, MBA</td>
</tr>
<tr>
<td>Terry Osback, MD</td>
</tr>
<tr>
<td>Bayardo Parrales, MA</td>
</tr>
<tr>
<td>Amy Pasternack, MSI</td>
</tr>
<tr>
<td>Sergio Salazar</td>
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<tr>
<td>María Serrano, MA</td>
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<tr>
<td>Psychology Practicum Students</td>
</tr>
</tbody>
</table>

**Methodology**

**The Model**

VHHP is composed of a team of health care professionals, including physicians, nurses, psychologists, social workers, drivers, and administrators, generating more than 5000 visits per year, seeing patients in homeless shelters, mobile medical units, and the Puentes Clinic. Table 1 indicates the members of the Puentes Clinic direct care team. VHHP is embedded in a much larger county outpatient clinic network consisting of seven outpatient clinics generating approximately 700,000 visits per year. VHHP targets care to the most vulnerable patients within the county medical system.

Puentes Clinic is a “medical home” for individuals with a history of injection-drug use or a recent history of homelessness. Along with traditional general medical care, our on-site services include hepatitis C treatment, psychology and psychiatry services, and a pain clinic. Plans for future services include buprenorphine treatment for opiate dependency and functional assessments for helping qualified patients obtain disability benefits. All services at the Puentes Clinic are provided in a nonjudgmental environment.

**Measurement: Comparative Use**

We monitored the clinical use patterns of 408 patients who accessed services at the Puentes Clinic between August 2002 and February 2004. Use patterns within the entire SCVHHS of these 408 patients were monitored through June 2007. We measured average health care visit rates in our study population sampling 18-month periods starting January 2000 and ending June 2007, with the exception of the period from February 2004 to July 2004, for which there are unfortunately no data available. Our data were obtained from SCVHHS’s INVISION databases (Siemens Financials, Munich, Germany). Visit data between February 2004 and July 2004 had been archived and were unavailable for this study. Clinical visits were categorized into three types: primary care (mostly at the Puentes Clinic), urgent care, and ED visits. Use patterns for these patients in the two years prior to the inception of Puentes Clinic were used as historical controls for the data analysis.

**Results**

Demographic data revealed a higher percentage of men than women in our study population. Fifty-eight percent of the patients were men with an average age of 49 years (range, 26–72 years); 42% were women with an average age of 45 years (range, 22–71 years). All patients in the study group had a history of active or recovering injection-drug use. This finding was consistent with the initial mission of the Puentes Clinic, to provide primary care to patients with an injection-drug use history. The most common diagnoses at the Puentes Clinic were cellulitis and hepatitis C.

Of the 408 patients initially seen in the first two years of the clinic’s existence in 2002, 323 patients (79%) were seen in the SCVHHS in the two years prior to the inception of the clinic. The clinical use patterns of these 323 patients served as historical controls. Of the original 408 patients, 230 (56%) continue to be monitored by our county health care system in the most recent 18-month sampling in 2007. Clinical use patterns are detailed both in Table 2 and Figure 1.
We found a marked decrease in ED and urgent care visits that paralleled a concomitant increase in primary care use. Before accessing the Puentes Clinic, patients on average were seen in the ED 2.6 times within an 18-month sampling period and in urgent care 1.2 times within that same period, for a total of 3.8 visits per 18 months for both. After this population was seen at Puentes Clinic, its average ED and urgent care visit rates dropped to 0.5 and 0.3 times, respectively, for a total of 0.8 visits per 18 months, whereas the average primary care visit rate increased to 5.6.

The most noticeable decrease in ED and urgent care visits occurred in the first two years of the Puentes Clinic’s inception. Before the opening of the Puentes Clinic in August 2002, the subset of historical control study subjects who visited the ED (237 of the 408) generated 836 ED visits, with an average rate of 3.5 visits to the ED per 18-month period. In the first 18 months of the clinic’s existence between August 2002 and January 2004, only 100 of the 408 patients visited the ED, generating 186 visits, with an average visit rate of 1.9. Sixty percent of the sample population stopped using the ED once Puentes was established. Those patients who continued to use the ED decreased their visit rate by almost half. Subsequent years show the rate of ED and urgent care visits remaining stable and primary care use increasing.

**Discussion**

**Analysis of the Data**

This is a use analysis of a clinically challenging population and its response to the introduction of an integrated primary care clinic. In our study, we found that the inception of the Puentes Clinic, a primary care clinic for patients with a history of injection-drug use, dramatically affected health care use patterns. Patients who began to seek primary care at Puentes subsequently decreased visits to both the ED and urgent care. More than half of the patients who began to access primary care at Puentes still regularly use its services five years later, implying that the clinic functions as a “medical home” for this population. In the setting of a busy, urban public hospital’s ED, which serves as a major level I trauma center, these data have definite ramifications. Our findings suggest that a primary care clinic like Puentes can change the way a vulnerable population interacts with a larger health care system.

On the other hand, 44% of the original sample population no longer accessed the county health care system in the most recent 18-month sample. The high mortality rate in this population could account for some of this trend. In addition, patient history and anecdotal data reveal migratory patterns, with patients often moving frequently among various cities. Further study would be required to clarify this.

**The Model**

We believe that the success of the Puentes Clinic and the VHHP was a result of several key operating principles and concepts in addition to providing quality primary care:

- **Outreach:** Outreach embodies the concept of meeting patients “where they are.” Examples include meeting patients in community settings, such as at a syringe-exchange site, soup kitchens, and shelters.
- **Open access and a “chat room:** Patients are seen on a first-come, first-served basis during listed clinic hours and are given the option to wait in a “chat room.”
- **Specialty groups:** Patients with specific medical conditions have an opportunity to participate in facilitated group discussions as a therapeutic adjunct to individual sessions in a clinic room.

### Table 2. Health care utilization patterns before and after opening of Puentes Clinic

**Utilization patterns before opening, January 1, 2000–July 30, 2002**

<table>
<thead>
<tr>
<th>Health care delivery site</th>
<th>No. of visits</th>
<th>No. of patients</th>
<th>Average visit rate&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care</td>
<td>897</td>
<td>151</td>
<td>2.78</td>
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<tr>
<td>Emergency Department</td>
<td>836</td>
<td>237</td>
<td>2.59</td>
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<tr>
<td>Urgent care</td>
<td>407</td>
<td>177</td>
<td>1.26</td>
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</table>

**Utilization patterns after opening, August 1, 2002–January 31, 2004**

<table>
<thead>
<tr>
<th>Health care delivery site</th>
<th>No. of visits</th>
<th>No. of patients</th>
<th>Average visit rate&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care</td>
<td>1528</td>
<td>408</td>
<td>3.75</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>186</td>
<td>100</td>
<td>0.46</td>
</tr>
<tr>
<td>Urgent care</td>
<td>107</td>
<td>64</td>
<td>0.26</td>
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**Utilization patterns after opening, July 1, 2004–December 31, 2005**

<table>
<thead>
<tr>
<th>Health care delivery site</th>
<th>No. of visits</th>
<th>No. of patients</th>
<th>Average visit rate&lt;sup&gt;c&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>Primary care</td>
<td>1374</td>
<td>215</td>
<td>5.07</td>
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<tr>
<td>Emergency Department</td>
<td>154</td>
<td>95</td>
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<tr>
<td>Urgent care</td>
<td>137</td>
<td>79</td>
<td>0.51</td>
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**Utilization patterns after opening, January 1, 2006–June 30, 2007**

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<tr>
<th>Health care delivery site</th>
<th>No. of visits</th>
<th>No. of patients</th>
<th>Average visit rate&lt;sup&gt;d&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>Primary care</td>
<td>1350</td>
<td>191</td>
<td>5.90</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>137</td>
<td>72</td>
<td>0.60</td>
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<tr>
<td>Urgent care</td>
<td>71</td>
<td>47</td>
<td>0.31</td>
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</tbody>
</table>

<sup>a</sup>Of the 408 patients studied, 323 received services from Santa Clara Valley Health and Hospital System (January 2000–July 2002) before Puentes Clinic opened in August 2002.

<sup>b</sup>Average visit rate = number of site visits divided by number patients surveyed.

<sup>c</sup>The sample population is distinct patients at Puentes Clinic between January 2000–February 2004.

<sup>d</sup>Of the 408 original patients, 178 were no longer receiving care as of January 2006–June 2007.
• Integrated treatment team: VHHP and the Puentes Clinic are composed of a team of health care professionals with distinct areas of expertise who work together to treat the whole patient.

Outreach

Mr S from the clinical vignette was a real patient whom we initially met in our mobile medical unit parked in the rural area of our county. The clinical times of operation of this medical mobile unit coincided with the timing of food service at a local soup kitchen. Mr S had just been released from prison and, at the time of his first encounter, was still abusing methamphetamines. Over the course of a year, he would visit the mobile unit for various urgent issues, all the time expressing a desire to treat his hepatitis C, rehabilitate himself, and reunite with his family in Arizona. Mr S was ultimately able to stop his substance abuse. He and we gained enough trust in one another to begin evaluating him for hepatitis C treatment.

With a history of limited access to and poor experiences with medical care, many of our patients have developed a lack of trust in the health care system. Meeting patients in settings where trust has already been established has been an important way to begin a therapeutic relationship. Our two-room mobile medical unit gives us the flexibility to couple our care with preexisting social services, including a syringe-exchange site in downtown San Jose (urban setting) and a soup kitchen in Gilroy (rural setting). Similarly, our fixed-site primary care clinic at a major shelter in San Jose treats patients who are seeking food and shelter who might not otherwise have had the opportunity to seek care in a physician’s office.

Open Access and the Chat Room

Mr S was told to return to the Puentes Clinic in San Jose during our hepatitis C clinic for evaluation. No appointment was given. He was told to show up on any Monday afternoon whenever he had time.

With the many competing priorities of our patients, it was not surprising that our no-show rate at the inception of the Puentes clinic was more than 50%. Many of our patients’ complaints required immediate attention, and a follow-up appointment with a specific day and time was often forgotten. As a result, the Puentes Clinic, shelter clinic, and mobile units do not have appointments. Clinic hours are listed and patients are seen on a first-come, first-served basis. Nurses triage patients to assess the severity of their illness and need. Although this open access requires a higher level of nursing skill at the beginning of clinic hours and increases wait times, it keeps our clinic doors open and matches our method of care delivery to our patients’ patterns for seeking out care. As in Mr S’s case, matching this pattern became an important way for us to establish continuity.

In an attempt to create a welcoming environment for our waiting patients at Puentes Clinic, we opened a separate waiting room with food and coffee, affectionately called the Chat Room. Upon patients’ arrival at the clinic, a psychologist or psychology practicum student gives patients the opportunity to wait in a group room. Because this group has different members each time it meets, it does not fit any traditional group-therapy model. Facilitators are participant-observers and discussions are patient-driven. Patients come and go throughout the four hours of Chat Room time.

Given the multiplicity of needs that are often overwhelming to both patients and clinicians, the role of the facilitator is to identify the interplay of the medical, psychiatric, and psychosocial factors for each patient and to provide guidance toward resolution. By initiating conversations among patients, managing patient perceptions of their health care, and providing resources and referrals, the facilitator helps the patients more clearly understand how to address presenting issues. Additionally, the information gained during the group is disseminated to the multidisciplinary treatment team, so they gain a more comprehensive picture of each patient. The Chat Room also offers the opportunity for team members to participate in an experience that is not offered in traditional settings—they interact with patients on a more personal level and can provide information and support in a less directive, more informal atmosphere. Patients and clinicians alike have found the Chat Room beneficial. Patients have reported greater satisfaction with each visit, and clinicians report increased effectiveness in their delivery of treatment services to this complex population.

Figure 1. Health care use patterns before and after Puentes Clinic, January 2000 to June 2007. ED = Emergency Department.

Meeting patients in settings where trust has already been established has been an important way to begin a therapeutic relationship.
**Specialty Groups**

Prior to treatment, Mr S was able to see and hear from other patients experiencing the difficult side effects of hepatitis C treatment with pegylated interferon and ribavirin. As a care team, we observed how consistent and committed he was to his treatment. As he started taking the medications, despite having to work through a translator, Mr S was an active part of the hepatitis C group, asking questions about his care and offering advice and support to other patients.

Over time, the clinic has evolved to delivering part of its care in group settings. We have found that facilitated group discussions with patients provide an important adjunct to clinic visits. We have groups within our hepatitis C clinic and pain clinic. We are considering a group for our future buprenorphine clinic.

Each of our specialty groups has been designed primarily from a cognitive behavioral perspective. For these groups, the facilitator provides psycho-education about symptoms and treatment, along with encouragement for treatment compliance. Group members are also encouraged to discuss their personal successes and failures with their regimen, which helps other group members have more realistic expectations for their own treatment.

The development and structure of our groups continually evolve on the basis of our patients’ needs and direct feedback. For example, in our hepatitis C group, we used the Brief Symptom Inventory as a weekly evaluation tool for depression. Over time, we discovered that patients would consistently underreport symptoms, even when in obvious distress. So that we could develop a more accurate evaluation, we modified the Brief Symptom Inventory questions. Group members acknowledged a belief that if they reported severe symptoms, treatment would be discontinued. The questionnaire was changed to elicit yes or no responses rather than severity ratings, and group members were then questioned during group about positively endorsed items. This change led to greater interactions between group members and more accurate information about changes in group members’ mental health.

Despite this evolving group structure and nontraditional approach to group therapy, we have found therapeutic outcomes and factors similar to those reported in more traditional, structured group settings, including the engendering of hope, the impartation of information, imitative behavior, the development of socializing techniques, and catharsis.

**Integrated Treatment Team**

“I am sleeping en el parque, is okay?” Mr S would say in his trademark Spanglish. With no place to store his medications and no walls to separate him from the drug and alcohol abuse he had so recently left behind, he would have been a challenging patient for a lone physician to treat for hepatitis C. Mr S demonstrated a remarkable commitment to treatment, regularly commuting two hours each way on a bus to the clinic. The integrated team at Puentes was able to match Mr S’s enthusiasm and brainstorm effective solutions to the logistical challenges in his care. Our nurse agreed to help him with his weekly injections of pegylated interferon, our social worker helped find him housing, and the physicians believed that they could monitor and treat his adverse side effects with weekly primary care and attendance at the hepatitis C group.

The Puentes Clinic uses an integrated treatment team approach, which can be defined as a team of clinicians and staff with distinct areas of expertise together treating all aspects of a person. In contrast, traditional health care is often structured as a set of clinicians and staff with distinct areas of expertise separately treating a patient’s symptoms. Jim O’Connell, MD, the president of Boston Health Care for the Homeless Program and one of our heroes, writes: “The care of homeless people is so complex that to put that burden on one person would be impossible. What is impossible in a traditional system is a joy in a system where the care is shared by the team.”

Patients at the Puentes Clinic interact with a wide range of staff members, one or more at a time, during their clinic visits. It is not uncommon for the psychiatrist, primary care physician, and/or psychologist to see the patient in the examination room at the same time. We have found that all clinicians gain useful and important information that is often not shared in traditional settings where specialties are separate. Because each specialist views a given illness from a different perspective, an integrated evaluation allows for a more thorough assessment. In seeing patients simultaneously, we have found that we have a greater understanding of the whole patient and thereby deliver better care.

A shared office space, nicknamed The Bullpen, has also been critical in fostering this team approach to care. In a traditional practice model, a physician has his or her own office space, which is physically separate from nursing and ancillary staff space. In the Puentes team model, clinical staff are housed in the same physical room, with the primary work area for the medical assistant, nurse, primary care physician, psychologist, and psychiatrist located together. Although this creates problems with noise and highlights our need for larger rooms, it also nurtures an ongoing discussion about more difficult cases and a constant and informal sharing...
of perspectives on patients’ treatment plans.

More formally, the Puentes integrated approach includes case conferences after every team primary care clinic, before every specialty clinic, and as part of a resident teaching rotation. Nursing, psychology, psychiatry, and primary care specialties meet together after the clinic has closed to discuss the patients seen that day. We have found that each member of the clinical team obtains diverse and relevant information about our patients, including medical conditions, behavior, and life stressors. These conferences provide a forum for discussing difficult cases, as well as an opportunity to teach residents and psychology students our respective professional viewpoints of how to best care for the patient.

Conclusion

Mr S showed up to most weekly group appointments and successfully completed his treatment. Over the course of the year, our social worker found him temporary housing, our psychiatrist and psychologist helped treat his depression, and our nurse provided weekly injections of pegylated interferon. He periodically visits the hepatitis C group to report his status and provide testimony and support to other hepatitis C patients.

The medical care of the medically vulnerable patient requires creative approaches that accommodate the burdens of mental health and substance abuse as well as the competing priorities of shelter and a warm meal. If we do not address the competing priorities of food, housing, substance abuse, and mental illness, health care becomes a distant priority for our patients. For us, an integrated team approach is the critical component in our ability to develop effective treatment for our patients. At the Puentes Clinic, we are fortunate to work as part of a dedicated team of nursing, primary care, psychiatry, psychology, social work, and support staff. Because we work so closely, we recognize the unique contributions of each discipline. As a team, we share the demands of treating the whole patient, allowing each of us to focus on our specialty and simultaneously collaborate with others to treat problems outside our individual domains. The patient–team relationship has been the cornerstone for our trusting and ultimately therapeutic primary care interventions.

We believe that this team approach, along with open access and aggressive outreach, could be applied to the care of any medically vulnerable population and is, in fact, the foundation of good general primary care.

Acknowledgment

Katharine O’Moore-Klopf of KOK Edit provided editorial assistance.

References


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