

Running head: BENNETT HEALTH CLINIC: INCREASING PCM CONTINUITY

Bennett Health Clinic: Increasing Continuity  
with Primary Care Managers through Modified Advanced Access

CPT Cynthia Childress

Fort Hood, Texas

Graduate Management Project

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## Abstract

The purpose of this study was to determine whether a two fold modification, consisting of increasing the daily percentage of same day appointments to 70% for all full-time primary care managers (PCM) and enforcing appointment booking with assigned PCM with the patient appointment service clerks, would increase continuity of care at the Bennett Health Clinic, Darnall Army Community Hospital, Fort Hood, Texas. The research question was, “how can Darnall measure and improve continuity of care?” This study was a time series quasi-experimental design. Continuity, defined as visits with the assigned PCM, was measured before and after the modification. The percentage of primary care visits with the PCM for Bennett enrollees significantly increased from 34.8% to 59.5% after the modification [ $\chi^2 (1) = 716.82$ ,  $p < .00001$ ]. The mean daily percentage of a provider’s schedule being filled with his or her own enrollees significantly increased from 53% to 79% after the modification [ $U (1) = 9075$ ,  $p < .00001$ ]. Changing provider templates to increase same day appointments and enforcing appointment booking with assigned PCM increased continuity of care at the Bennett Health Clinic. A request to modify the current information system has been recommended to facilitate the measurement of continuity.

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## Introduction

Fort Hood is the largest Army post in the continental United States. It houses two divisions as well as elements of a corps support command. The sheer size of the installation and the number of active duty families cause providing health support to this region to be a challenging task. Darnall Army Community Hospital's mission of providing health care to the beneficiaries of its catchment area has become increasingly difficult with its given resources. The TRICARE Prime enrollment goal of 95,000 was surpassed last year. The pressure at Fort Hood has been to maximize enrollment to Darnall so that active duty family members may avoid the copayment associated with care received in the civilian network<sup>1</sup>. The result of this pressure has been high enrollment, even though enrollment to the hospital base has been restricted to active duty and active duty family members. The enrollment figures, as of 15 October 2000, show that Darnall had 99,715 TRICARE Prime enrollees (Fort Hood Prime Enrollment to DACH & Network, 2000). By 1 April 2001, the numbers had risen to 103,618 TRICARE Prime enrollees to Darnall (Fort Hood Prime Enrollment to DACH & Network, 2001).

### Current Conditions

The high enrollment numbers have hindered Darnall's ability to meet the published TRICARE access standards (Darnall PRIME Enrollment Capacity Status, 2000). The standards are: a) 24 hours for urgent care, b) 7 days for routine care, and c) 4 weeks for wellness and specialty care (United States General Accounting Office, 1999; TRICARE Management Activity News Release, 2000). In an effort to see all patients who request care, patients are given appointments with any available provider within their assigned clinic. This practice has led to

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<sup>1</sup> Copayments for outpatient visits to non-military treatment facility providers were discontinued May 1, 2001.

patients seeing many different providers and reduced patient satisfaction with primary care provided at Darnall.

In December 1999, The Assistant Secretary of Defense for Health Affairs, Dr. Sue Bailey, disseminated “Policy Memorandum – Individual Assignments to Primary Care Manager by Name” which directed that each enrollee be assigned a specific primary care manager (PCM) (Bailey, 1999). In essence, all primary care managers would have a panel of patients assigned individually. The policy’s purpose was to increase continuity of care and to make primary care managers responsible for the continuum of care for their assigned patients, i.e. urgent care to wellness care. There are two functions of the PCM; the PCM monitors the care needed and provided to his or her enrollees, and the PCM actually provides care to his or her enrollees. All facilities were tasked to assign an individual primary care manager to every enrollee by the end of September 2000 (Bailey, 1999). Ninety-five percent of Darnall’s TRICARE Prime enrollees had been assigned a specific primary care manager by 1 October 2000.

Even with this new Health Affairs policy in place, continuity has not significantly improved at Darnall. Part of the problem is the sheer volume of calls coming into the patient appointment system (PAS) each morning. The PAS is busiest from 0700 to 0900 each morning. When a patient calls, the PAS operator attempts to schedule an appointment with the patient’s primary care manager. However, if there are no appointments remaining with the PCM, or the patient cannot make the available appointment time with the PCM, then the patient is given any open appointment within the same clinic. This practice leads to shortages in appointments with all PCMs because available appointments are filled on a first come first served basis regardless of PCM assignment. This method of patient management is to achieve customer service and access standards. A convenient appointment time for the patient is given, regardless of

continuity with a specific provider because an urgent problem has to be seen within 24 hours of the request to meet the TRICARE access standards.

The focus of the military health system (MHS) has been on access standards. The TRICARE Access Imperatives Website (2000) states that the “implementation of processes that improve access to care in the Military Health System (MHS) is one of the top priorities of the TRICARE Management Activity....” Toward that end, there were measurement tools in place or in development to assist the TRICARE Management Activity (TMA) in monitoring access standards on its TRICARE Operations Center website. The Army Medical Command (MEDCOM) has a tool called the Health Care Access Metric (HCAM), which calculates the time from the appointment request to the actual date of the appointment (PASBA, 2000). These times were compared to the access standards to determine the percentage of time each MTF met its access standards. However, there are no corporate level tools to measure continuity at TMA, Lead Agent, or MEDCOM level. Additionally, with the assignment of a specific PCM, an implied access standard of seeing the assigned PCM has been created. As Darnall strived to comply with the intent of Dr. Bailey’s policy of “Individual Assignments to Primary Care Manager by Name,” the problem statement became, “How can Darnall measure and increase continuity of care?”

### Literature Review.

The definition of health care access has evolved through the years. Studies have used different definitions of access such as insurance coverage, inability to obtain care, or poor health with no associated office visit, usually referring to the uninsured or the underserved (Berk & Schur, 1998). Another definition is the timely receipt of care by the insured and enrolled population (General Accounting Office, 1999; Murray & Tantau, 1999). The measurement of



timely access has been a cornerstone of TRICARE since its inception (Strait, 1998). At the corporate level, the Army Medical Command has been trying to measure access, defined as appointment timeliness, with HCAM, which uses data gathered directly from CHCS at the MTF level. The information measured by HCAM incorrectly portrayed Darnall's ability to meet the access standards because Darnall used the appointment type or name "PRIME" for both routine and acute appointments. The PAS clerks must look at the field, "Slot Comment," in order to determine whether or not the appointment was meant to be a same day appointment or a routine one. Since the HCAM only looked at the appointment type, routine and acute appointments were analyzed together, even though there were two different standards (one day versus seven days). Darnall either had very few acute appointments and met access standards, or it had very few routine appointments and did not meet access standards. The GAO Report on Appointment Timeliness had identified the same problem. "A critical weakness of the CHCS data for appointment-measuring purposes is that the appointment names used in the MTF's appointment scheduling system ... could not be linked to only one appointment timeliness standard. For example, at one MTF the appointment name "PRIME" was used to book acute, routine, and well primary-care appointments, which are each subject to different access standards" (GAO, 1999). In an effort to remedy this problem, the MHS appointed the Appointment Standardization Integrated Program Team, which recommended standardization of appointment types across the Department of Defense (TRICARE Access Imperatives Website, 2000). Health Affairs disseminated the Policy for Standardized Appointment Types, which put forth nine MHS standard appointment types and associated access standards, to resolve the problem identified by GAO (Bailey, 2000-b).

As our managed care system matures, the policy makers at Health Affairs have noted the need for increasing continuity of care and the effectiveness of care, even though emphasis had been placed on access standards and access measurement tools in the past. Treatment facilities within the MHS are experimenting with ways to increase both continuity of care and accessibility standards. One of the poster sessions on display at the 2001 TRICARE Conference in Washington, DC was an initiative by the Family Practice Clinic at Madigan Army Medical Center (MAMC). The clinic at MAMC created an Acute Care Team staffed by two physician assistants, one clinic physician, and one triage/supervisory physician. The intent of this team was to remove the acute care burden from the PCM. To ensure continuity, patients were referred back to the PCM for follow-up care. This initiative led to an improvement in meeting TRICARE access standards for acute and routine care, as well as increased continuity with PCM for routine care (Krueger & Padden, 2000). However, there was no continuity of acute care with this system. The purpose of the PCM as monitor for comprehensive health care needs was met, but the purpose of the PCM as the actual provider of primary care was not met.

Continuity of care has many definitions, also. Most people would agree that it may be defined as “care from one doctor spanning an extended time and more than one episode of illness ... with its implied personal relationship” (Freeman & Hjortdahl, 1997). Although being empanelled to one provider and being able to obtain primary care visits with the same provider is associated with high patient satisfaction (Murray & Tantau, 1999; Weyrauch, 1996), Freeman and Hjortdahl (1997) introduced another definition of continuity called “personal continuity” versus the previous definition of “longitudinal continuity.” They claim that personal continuity involves both empathy and personal responsibility, and it is harder to measure than longitudinal continuity. One measure could be the willingness of the patient to wait for one particular doctor.

Continuity for the purposes of this project will be defined as primary care from the assigned PCM. The first step toward emphasizing continuity of care for the MHS was the Policy Memorandum – Individual Assignments to Primary Care Managers by Name (Bailey, 1999). “Enrollment to an individual, named primary care provider represents the best means for meeting our patient’s needs, assuring continuity of care and improving the effectiveness and efficiency of services” (Bailey, 1999, p. 1). The next step, to improve provider availability and to improve MTF enrollment capacity, was outlined in the Policy to Improve Military Treatment Facility (MTF) Primary Care Manager Enrollment Capacity (Bailey, 2000-a).

In September 2000, an article, “Same Day Appointments: Exploding the Access Paradigm,” appeared in *Family Practice Management* (Murray & Tantau, 2000). In this article, the authors emphasized “doing today’s work today.” Murray and Tantau describe three models of access: a) traditional model, b) carve-out model, and c) advanced access model. In the traditional model, the provider’s appointments are previously booked with routine appointments, and urgent appointments are wedged into an already full schedule. The double booking leads to long wait times and longer hours for the clinicians. In the carve-out model, a certain percentage of appointments is held for urgent appointments depending on the demand. Some of the drawbacks are that routine care continues to be delayed, and patients are sometimes told to call back on the day they wish to be seen. In the advanced access model, 65% - 75% of the provider’s schedule is completely open for booking appointments the same day. “Advanced access eliminates the distinction between urgent and routine” (Murray & Tantau, 2000, p. 47). In the advanced access model, patients are offered appointments on the day they call regardless of the reason for the visit. The uniqueness of this concept is that it does not differentiate among categories, such as urgent, routine, and wellness; therefore, it is not necessary to partition

appointments into different types. This leads to a single type of demand, which in turn leads to few wasted appointments. The authors also emphasized that not taking up appointment slots in advance would increase access to care and continuity of care. This model is based on the premise that demand is not infinite. The probability of the patient seeing his or her own PCM increases with the advanced access model (Murray & Tantau, 2000). The advanced access model could provide the answer to Darnall's past sacrifices in continuity for the sake of meeting access standards.

### Purpose

Although the idea of eliminating the distinction of urgent versus routine appointments was tantalizing, the practical considerations of space, support staff, and telephone support necessitated a modified advanced access model at Darnall. Most providers have 20-minute appointments, but a Pap smear requires a 30-minute appointment. Therefore, the researcher decided to use a modified advanced access model where a distinction was still made for some wellness appointments, which were booked in advance. The procedural intervention consisted of a) increasing the daily percentage of same day appointments to 70% for all full-time PCMs and b) enforcing appointment booking with assigned PCM with the PAS clerks.

The purpose of this project was to determine whether the procedural intervention a) would increase continuity of care from the enrollees' perspective and b) would increase continuity of care from the providers' perspective at the Bennett Health Clinic.

### Enrollees' Perspective.

The objects of interest were primary care visits. The independent variable (X) was the intervention, a dichotomous variable coded 1 for after the intervention and 0 for before the intervention. The dependent variable (Y<sub>1</sub>) was the visit with PCM, a dichotomous variable

coded 1 for PCM seen for primary care visit and 0 for any other provider seen for primary care visit.

The hypothesized functional relationship was that the intervention would have an effect on continuity of care as defined by an enrollee seeing his or her assigned PCM for primary care visits. If this relationship was significant, then the hospital leadership might consider expanding the project to other primary care clinics. The null hypothesis ( $H_0$ ) was that the intervention ( $X$ ) would not affect visit with PCM ( $Y_1$ ). The alternate hypothesis ( $H_a$ ) was that the intervention ( $X$ ) would affect visit with PCM ( $Y_1$ ). The alpha probabilities were set at the  $p = .05$  level for analysis.

#### Providers' Perspective.

The objects of interest were scheduled days by PCM. The independent variable ( $X$ ) was the intervention, a dichotomous variable coded 1 for after the intervention and 0 for before the intervention. The dependent variable ( $Y_2$ ), an ordinal variable, was the daily percentage of appointments scheduled with enrollees. The hypothesized functional relationship was that the intervention would have an effect on the percentage of a PCM's daily appointment schedule being filled by his or her assigned enrollees. The null hypothesis ( $H_0$ ) was that the intervention would not have an effect on the daily percentage of appointments scheduled with enrollees. The alternate hypothesis ( $H_a$ ) was that the intervention would have an effect on the daily percentage of appointments scheduled with enrollees. The alpha probabilities were set at the  $p=.05$  level for analysis.

## Methods And Procedures

### Study Design

Bennett Health Clinic was the subject of the study, and a time series quasi-experimental design was used. Bennett Health Clinic consisted of an active duty health clinic and a family member health clinic. Only enrollees and PCMs assigned to the primary care clinic for family members, named “Bennett Health Clinic1” in the hospital level computer system called the Composite Health Care System (CHCS), were part of the study. In October, Bennett Health Clinic had four contract providers (two family practitioners and two pediatricians), two active duty family nurse practitioners, one active duty family practitioner, two part-time active duty family practitioners, one government service pediatrician, one part-time gynecology nurse practitioner, one physicians assistant, and one locum tenens (family practitioner). By the end of the study, the mix and number of providers had changed.

Baseline data before the intervention were gathered for October and November. Test data after the intervention were gathered for January and February. In October and November, 39% to 61% of daily appointments for full time providers were same day appointments. In January, the Bennett Health Clinic’s PCM appointment templates were changed to at least 70% same day appointments, with a range from 70% to 78%. The study compared the two dependent variables between the two data collection periods. In the enrollees’ perspective, the chi square analysis was conducted. In the providers’ perspective, a Mann-Whitney rank sum analysis was conducted. As noted earlier, a modified advanced access model was used to continue booking some wellness visits like Pap smear (PAP) and well baby (WB), vasectomy (VAS) appointments, and medical evaluation board (MEB) appointments in advance because of the need for preparation and assistance from the patient and support staff.

In December, PAS clerks were briefed on their role by the researcher and the Officer in Charge of the Bennett Health Clinic. The appointment clerks were instructed to book patients only with their assigned primary care manager. The new Managed Care Program (MCP) module in CHCS facilitated this because the initial screen only showed the schedule for the PCM assigned to the enrollee. In the event that the PCM was not available, or the PCM had no more available appointments, the appointment clerks were given the names of providers who were not assigned enrollees (overflow providers) with whom they could book appointments. This would keep other PCM's schedules open for their own enrolled patients. At such a time when there were no appointments with the PCM or the overflow providers, the clerks would forward the request to the clinic for resolution. Then, it would be the clinic's responsibility to determine the disposition of the patient. The clinic receptionists would track how many calls were forwarded from PAS on a Microsoft Excel spreadsheet.

#### Standardized Appointment Types

Appointment types were changed to facilitate data collection and analysis. The appointment types used came from the Policy for Standardized Appointment Types (Bailey, 2000-b). Our current CHCS system had some limitations, especially in the different data fields and their corresponding use in standardized reports. "Appointment Name" and "Appointment Type" are synonymous, but they should not be confused with the "Slot Comment" field and the "Appointment Reason" field. The appointment type was the name of the appointment that the clinic staff had decided to call an appointment such as "PAP" for Pap smear or "VASC" for Vasectomy Counseling. The "Slot Comment" was additional information about the appointment slot that the appointment booking clerks should know about. The "Slot Comment" only appeared on the appointment booking screen, and it did not appear in any standardized reports.

At the time of CHCS development, the appointment type or name served the function of informing the clinic support staff what special equipment was needed for the provider to expediently see the patient. With the use of the standardized appointment types, which did not provide that level of specification, the details for the appointment were captured in the “Slot Comment.” Although the “Slot Comment” field did not appear in standardized reports, the “Appointment Reason” field was part of a standardized report called clinic or provider roster, which printed the details of all appointments for a certain day. The “Appointment Reason” field was a free text field that the appointment booking clerk could relay information to the clinic staff and the provider about why the patient needed the appointment. The clerks usually entered information such as “back pain for three weeks” or “annual Pap” to identify why the patient wanted an appointment. Since the clinics usually printed out the clinic roster the night before so that the provider and the support staff knew what to expect the next day, it was important for the appointment booking clerks to enter the information found in the “Slot Comment” field into the “Appointment Reason” field to reduce confusion.

For the project, the appointment types named in Table 1 were utilized. The scheduling clerks received cues for booking from the “Slot Comment” field. The slot comments further broke down these appointment types to clarify restrictions, such as 0-17 years for pediatric appointments. The slot comments also identified the type of wellness appointment (Pap smear, well baby), procedure (vasectomy), and specialty appointment (medical board). Then, the PAS clerks also had to identify the type of wellness and procedure appointments in the “Appointment Reason” field when they booked the appointment in order to alert the support staff for preparation specific to that appointment.



Table 1

Appointment Type Names Used in Study

Appointment Type	Definition and Access Criteria	Examples for the Study
ACUT	Acute (24 hours)	Physicals, recurring pain, urgent appointments
EST	Established patient follow-up (provider designated duration)	Routine follow up, patient request for certain date
WELL	Wellness, health promotion (30 days)	WB: Well Baby PAP: Pap Smear
PROC	Procedure with designated time allotment (30 days)	VAS: Vasectomy
SPEC	Initial specialty care only (30 days)	MEB: Medical Evaluation Board

Note: The names in column 1 and definition and criteria in column 2 are from “Policy for Standardized Appointment Types,” by S. Bailey, 2000, Office of the Assistant Secretary of Defense for Health Affairs.

Finding a Tool to Measure Continuity

The Composite Health Care System had standardized reports in the PCM Report Menu, but these reports were geared toward assisting in compliance with PCM by name and assigning patients to providers. One report called PCM Activity Report (Appendix A) seemed promising, but it did not specify how many total visits were made by the enrollees, the denominator in determining the percentage of enrollee visits with the PCM. The Tri-Service Medical System Support Center (2000) had an existing ad hoc report on its website called “Appts with Other than Assigned PCM” (Appendix B). The report was close to what the researcher needed. The

researcher modified this ad hoc report to identify all visits to the MTF by Bennett Health Clinic enrollees within a specified time period. The following data elements were captured: Assigned PCM, Patient Name, FMP, Sponsor SSN, Appt Date/Time, Appt Type, Clinic Seen, Appt Status, Provider Seen. If the “Assigned PCM” matched “Provider Seen,” then visit with PCM ( $Y_1$ ) or appointment scheduled with PCM was coded 1. The modified ad hoc report used a lot of resources in CHCS when it was run, so it was run only at night or on the weekends to keep from interrupting normal daily operations.

The modified ad hoc report was run at the end of the month; however, PCM assignment changes occurred throughout the month. This introduced a systematic source of error because CHCS does not capture the PCM assignment at the time of the appointment like it captures other information in the patient appointment file. The “Provider Seen” and “Clinic Seen” are data elements captured as a snapshot in time and remain in the CHCS database regardless of whether the provider leaves or the clinic name is changed. However, the PCM information is the PCM at the time the report is run. If a PCM field could be added to the patient appointment file, retrieving accurate information with regard to whether the patient saw his or her own PCM for an appointment would be easier.

The resulting report was captured as a text file that was imported into Microsoft Access. Then, for the first hypothesis, the enrollees’ perspective, the researcher sorted the data to exclude enrollees not assigned to “Bennett Health Clinic1”. Then the data were sorted again to exclude non-primary care visits. Although the internal medicine clinic and the pediatric clinic were primary care sites, visits to these clinics were excluded because of their additional role as referral clinics for specialty care. Therefore, any enrollee visit to one of five family care clinics was defined as a primary care visit, the object of interest. A sample data set is in Appendix C. Then,

data files were imported into the Statistical Package for the Social Sciences (SPSS) to conduct descriptive and inferential statistics.

The same modified ad hoc report was then sorted differently to test the second hypothesis, the providers' perspective. The researcher sorted the data to include all scheduled visits in which the providers seen were PCMs in the study. This resulted in scheduled visits with the PCMs in the study. To transform the data into daily percentage of same day appointments by days by PCM, the data were entered into SPSS to be cross-tabulated by date. A sample data set is in Appendix D. Three PCMs were not available either before or after the intervention, and a comparison was not possible. Their 45 cases were omitted. Then, 44 cases where daily percentage of same day appointments was greater than 90% were omitted. Only when the PCM was either a triage doctor or a contractor working during a training holiday was the daily percentage of same day appointments greater than 90%. This is due to the schedule consisting of acute appointments only. Then, the data files by date were imported into SPSS to conduct descriptive and inferential statistics.

## Results

Table 2 contains the descriptive statistics for both variables tested in this study.

Table 2

### Descriptive Statistics for Dependent Variables by Group

Group	Primary Care Visit with PCM (Y <sub>1</sub> )			Percent Visit with Enrollee (Y <sub>2</sub> )		
	<u>N</u>	<u>Mean</u>	<u>St Dev</u>	<u>n</u>	<u>Mean</u>	<u>St Dev</u>
Before Intervention	5698	.348	.48	216	.53	.23
After Intervention	5989	.595	.49	238	.79	.20

### Enrollees' Perspective

Mean visit with PCM ( $Y_1$ ) increased from .348 to .595 after the intervention. Thus, the percentage of enrollees to Bennett seeing his or her own provider for primary care visits increased from 34.8% to 59.5% (See Figure 1). This includes all enrollees assigned to Bennett Health Clinic1 during the time period of the study. One PCM left before the intervention, and two PCMs arrived after the intervention. Enrollees assigned to these providers, as well as the 1500 not assigned to an individually named provider, were included in this aggregate view from the enrollees' perspective.

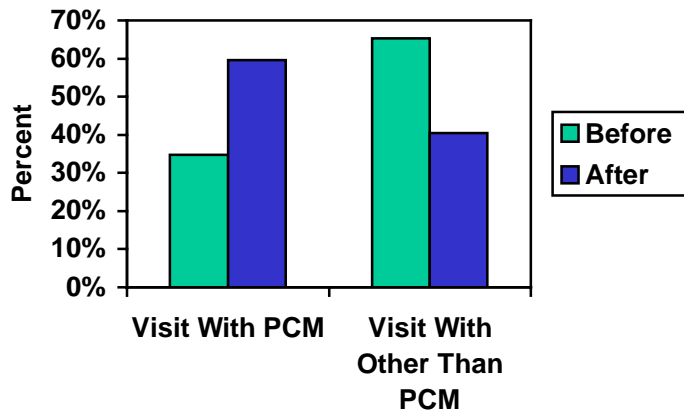


Figure 1. Percent visit with PCM before and after the intervention from the enrollees' perspective.

For the 9 PCMs who were available for both before and after the intervention, the enrollees' visits with PCM by provider increased for all except one provider (See Figure 2). Provider six was not available for three weeks during the study period, and that accounted for his enrollees' inability to see him for their primary care visits.

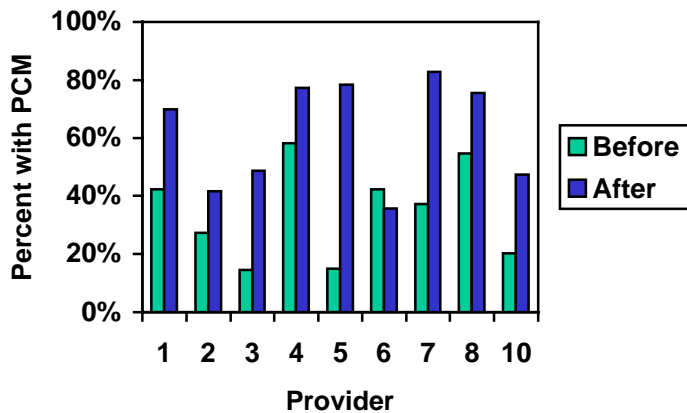


Figure 2. Percentage of visits with PCM by provider from the enrollees' perspective for providers who were PCMs both before the intervention and after the intervention.

A chi-square inferential test was conducted. A significant difference was found between the two groups.  $\chi^2(1) = 716.82, p < .00001$ ; therefore, the researcher rejected the null hypothesis and accepted the alternate hypothesis. The procedural intervention did increase continuity of care, defined previously as primary care visits with PCM.

### Providers' Perspective

Figure 3 depicts a histogram of the percentage of visits with enrollees ( $Y_2$ ) before and after the intervention. The percentages shifted drastically to the higher numbers after the intervention. The mean before the intervention was 53%, and the mean after the intervention was 79%. Figure 4 is the histogram of the actual percentage of same day appointments before and after the intervention. Although the templates were increased to 70% same day appointments, the actual percentage of same day appointments varied in accordance with PCM availability. Figure 5 shows the scatterplot of the percentage of same day appointments versus the percentage of visits with enrollees. After the intervention, the data points became much closer together. The correlation coefficient for the percentage of same day appointments and the

percentage of visits with enrollees was calculated to be statistically significant from zero at  $p < .01$  for  $n = 454$ ,  $r = .50$ .

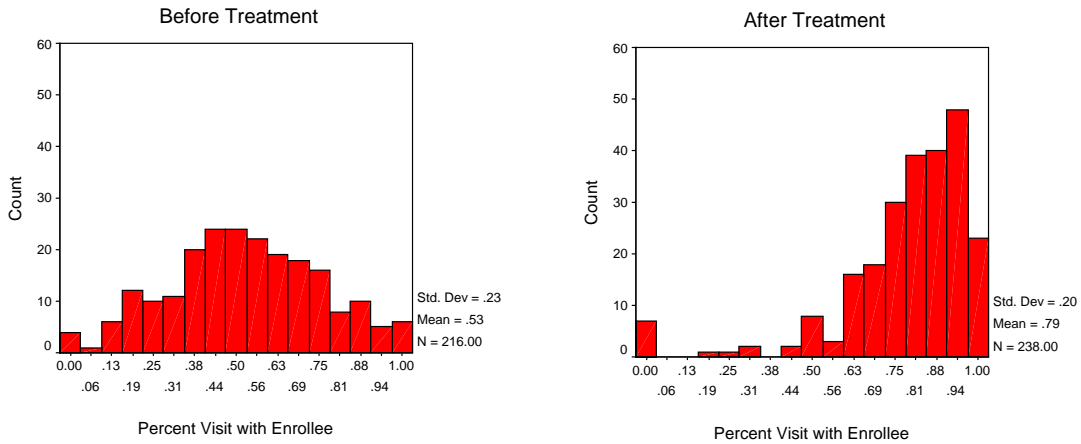


Figure 3. Histogram of Percent Visits with Enrollee before and after the intervention.

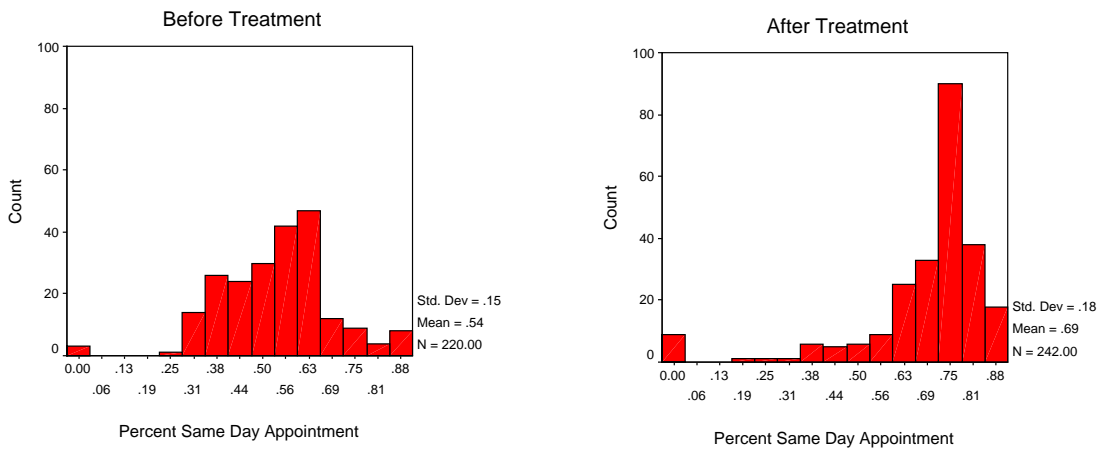


Figure 4. Histogram of Percent Same Day Appointment before and after intervention.

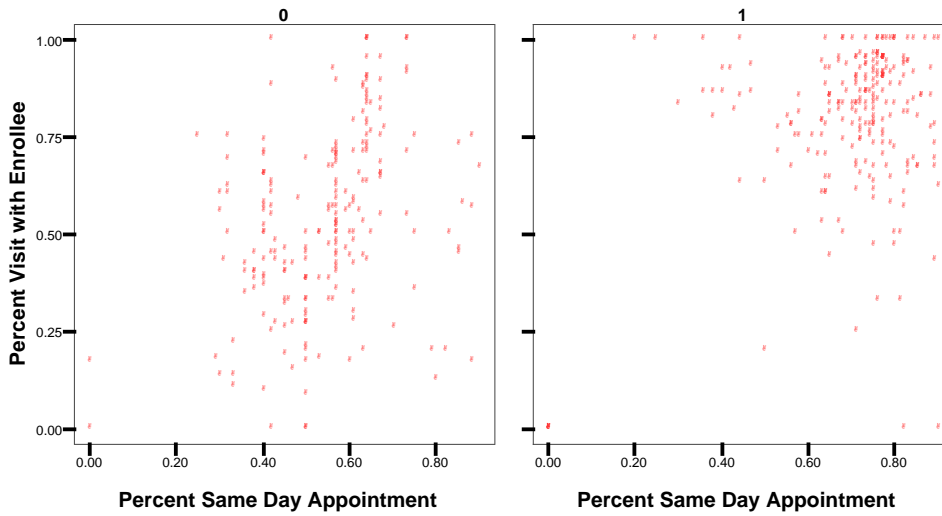


Figure 5. Scatterplot of Percent Same Day Appointment versus Percent Visit with Enrollee before and after the intervention.

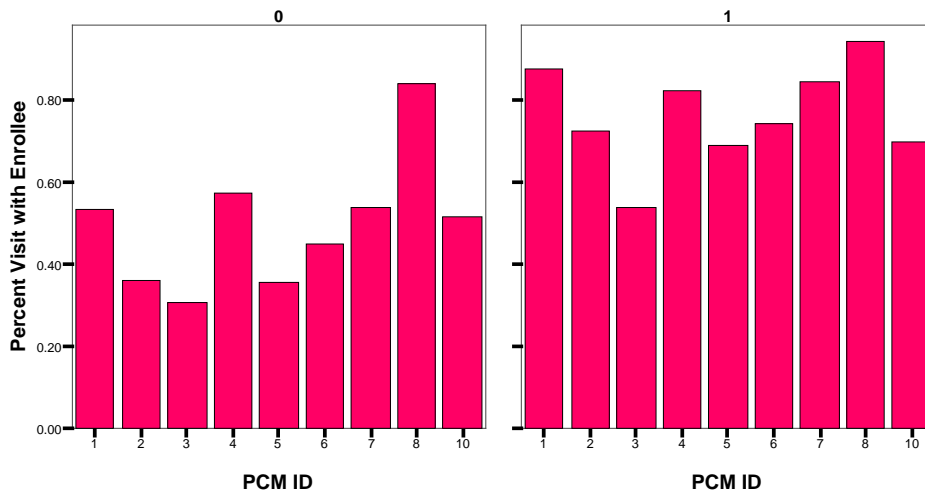


Figure 6. Mean percent visit with enrollee by PCM. All PCMs saw their own enrollees more often after the intervention. Before the intervention, the overall mean for all PCMs was .53 or 53%, and after the intervention, the overall mean increased to .79 or 79%.

Therefore, 25% of the variance in the percentage of visits with enrollees can be accounted for by the variance in the percentage of same day appointments. The percentage of visits with enrollees by PCM was calculated. Figure 6 shows that the aggregate mean for PCMs increased from 53% to 79% after the intervention. What was interesting is that provider ten's template was not changed during the study. However, the percentage of her visits with her own enrollees increased significantly as well. Provider ten experienced an enabling effect. Since enrollees for all other providers were being aligned to their PCM, her enrollees could not help but become aligned to her.

The Mann-Whitney rank sum inferential test was conducted for the providers' perspective. A statistically significant difference was found between the two groups.  $U(1) = 9075$ ,  $p < .00001$ ; therefore, the researcher rejected the null hypothesis and accepted the alternate hypothesis. The intervention increased the percentage of a PCM's daily schedule being filled by his or her own enrollees.

### Discussion

Changing provider templates to increase same day appointments and eliminating the partition between routine and acute appointments helped improve continuity of care from both the enrollees' perspective and the providers' perspective. This change in provider templates enabled the Officer in Charge (OIC) of Bennett to attempt to enforce appointment booking by assigned PCM. However, Darnall's current infrastructure needs to be improved to support a facility-wide implementation of open access or modified open access.

The flaw in the current system is that the clerks are responsible for making the determination of whether the patient complaint is urgent, routine, or wellness. Wellness visits are clearly defined; however, distinguishing between urgent and routine problems is difficult,



even for some nursing personnel. Most clerks would err on the side of caution and give an urgent appointment for problems that did not need require immediate medical attention. The advanced access model makes the decision process much simpler for the clerks. With the exception of Pap smears, vasectomies, and follow up appointments, the clerks could offer a same day appointment to all patients. They were instructed to even offer well baby appointments on a same day basis if the parent wanted one.

The central appointment clerks also appreciated having an escape valve for patients they could not satisfy. When they reached the limits of their ability to help the patient, they could transfer the calls to clinic personnel. This would have been an ideal solution if Darnall's telephone system could have supported the process. Bennett Health Clinic only had two lines to the clinic receptionists. When the 18 appointment clerks tried to forward calls to two lines on a busy morning, they ended up getting busy signals, which led to excessive wait times on the phone for the PAS clerks and the patients. If Bennett had had a telephone queuing system such as the system at central appointments, then the impact would not have been as bad. The number of phone calls transferred to the clinic from PAS increased dramatically in January. The monthly figure went from 49 and 66 in October and November, respectively, to 309 in January.

Darnall already had some problems with patients getting busy signals when they tried to dial in to central appointments in the morning. To alleviate this bottleneck, Darnall had implemented an on-line appointment request system for routine appointments where patients request an appointment at their leisure on the Internet, and an appointment clerk responds back to the patient with an appointment time, preferably through e-mail. Offering more same day appointments only increased the traffic in the morning. The increase in same day appointments at Bennett Health Clinic caused consternation to the on-line appointment clerk in trying to satisfy

on-line requests. Although routine appointments were built in to the provider templates, they were exhausted very quickly. As the providers, clerks, and support staff become accustomed to the new process, the wellness appointment types could be phased out with routine, follow up appointment types to keep the balance of same day appointments to previously booked appointments and meet the needs of the MTF's on-line appointment request initiative. The TRICARE Management Activity is also working toward an MHS-wide on-line appointment booking initiative in conjunction with CHCS II implementation. Darnall would have to coordinate with the proponents at TMA to ensure that we do not work at cross-purposes with TMA initiatives.

Demand management is a tool that has been proven to decrease utilization of services. Darnall has a pilot nurse triage line for all acute appointment requests at the Killeen Family Care Clinic. The four nurses, working under specific, approved protocols, have successfully managed the acute care requests to ensure that medically necessary appointments were booked for Killeen's 15,000 enrollees. The nurse triage line shifts the burden of categorizing the patient from appointment clerks to registered nurses. Because of the size of Darnall, the triage line implementation at the four largest family care and health clinics would require 14 full time equivalent registered nurses at an estimated cost of \$910,000 in recurring salary costs (Storey & Laird, 2001). This analysis was conducted by the Darnall Resource Management Division as part of the unfinanced requirement business case analysis submitted to the Great Plains Regional Medical Command in January 2001.

The researcher and the OIC of the Bennett Health Clinic would prefer to use registered nurses to triage in a different manner. During the study, one of the providers had the responsibility of triaging all the overflow calls that were directed to the clinic and determining

whether the patient had to be worked in that day. When providers work as the triage doctor, they have relatively few appointments available for booking because they have to work those people who have to be seen that day into their schedule. Two triage nurses with the appropriate training and computer software assigned to Bennett Health Clinic could take the triage function from the triage doctor so that the provider can have a full schedule. The nurse would monitor the clinic's daily schedule in order to fit overflow patients or interface with the PCM to fit the patient into the day. On most days, there were open appointments at the clinic, but the limitation of booking only with the PCM led to some appointments not being utilized while the triage doctor worked many walk-in patients into his or her schedule. The triage nurses in consultation with the OIC could determine when and how many appointments would be booked with patients who are not enrolled to the providers, depending on how many PCMs were absent at any given time. The additional function that the triage nurse would serve is as the information conduit for the patients. Some patients, especially new parents, simply need reassurance that the perceived problem is normal. The nurses could be the information and education source for people who have concerns but are not sure whether they need to physically come to the clinic. Working with a smaller group of providers and patients would help the nurses become familiar with the workings of each clinic.

Some of the problems clinic OICs have with PAS is a function of the number of clinics they serve. Currently, Darnall's telephone system does not allow calls to be routed to specific numbers within PAS. It would be ideal for Bennett's OIC to deal with three to four appointment clerks and ensure that they are following her guidelines and protocols. All clinics operate slightly differently, from their clinic hours to how immunization appointments are scheduled. Trying to keep every instruction straight for every clinic is a Herculean task for the appointment

clerks. If the clerks could be divided into teams with routed phone calls to specific numbers depending on the clinics they primarily support, education and command and control would be much easier, leading to higher accuracy in appointment booking.

Another area of concern ties in with Health Affairs' efforts to standardize appointment types<sup>2</sup>. Both well baby and Pap smear appointments were called the same appointment type, "WELL". A few times, a woman had been given a Pap smear appointment (a thirty minute appointment) in a well baby slot (a fifteen to twenty minute appointment). This occurred when overwhelmed appointment clerks neglected to look at the "Slot Comment" to check the exact type of appointment. Since Bennett was the only clinic using the standardized names, some clerks forgot to look at the "Slot Comment" to verify the type of appointment. It was decided that Bennett would stop using "WELL" as an appointment type and continue to use "WB" and "PAP" to ensure that those mistakes do not occur in the future until such a time when the computer upgrade to include an appointment detail field is in place and all primary care clinics migrate to the standard appointment types. The "ACUT" appointment type will be kept to delineate urgent appointments.

Once technological solutions are in place, the open access model with the ability to enforce appointment booking with the PCM and nurses to triage overflow calls would be a powerful system in eliminating the patient hassle factor<sup>3</sup>. Patients would have one phone number to remember, the number for central appointments. The automated telephone attendant would ask the patients to press a button for the clinic to which they are assigned. Then, they would be given an option for the triage line or the appointment line. The triage line would take

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<sup>2</sup> The trade-off for standardization is the loss of complexity in the connotations that a certain appointment type had for the clinic personnel. Detail codes as descriptive appendages for standard appointment types are fine in theory, but implementation without corresponding CHCS capabilities could be disastrous.

them directly to the nurse at the clinic for questions and concerns. The appointment line would take them directly to the four appointment clerks who routinely make appointments for that clinic. The patients would be given appointments with their PCM or an overflow provider because the PCM is not available. If appointments are not available, then the patient is forwarded to the triage line. The nurse may provide advice, reassurance, over the counter medications, enter a detailed telephone consult, or give an appointment. As providers and patients learn about each other and the system matures, some appointments could be handled as telephone consultations rather than physical visits into the clinic, e.g., medication refills or certain follow up appointments.

This change in business practice cannot occur overnight. It requires education of providers, support staff, and patients. As patients realize that their PCM will call them back within a day, they are more prone to leave a message as opposed to making an appointment to see the provider. The trust of the enrolled population must be won, and it will have to start with an educational blitz to condition the patients to call the same day for any appointment. The providers have to get used to the system, and the beginning will be rocky. One of the interesting concepts that developed for the clinic reception clerks was the idea that if the PCM was in clinic (had scheduled appointments) that day, then calls from their enrollees were entered as telephone consultations for the PCM to handle. The introduction of the triage nurse as a higher-level decision authority and as support for the clerks in dealing with disgruntled patients would have made this project more successful. The calls forwarded to the clinic from PAS decreased from 309 in January to 30 in February as patients, providers, receptionists, and appointment clerks became accustomed to the new way of doing business.

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<sup>3</sup> Eliminating the hassle factor is an objective of the Army Surgeon General's Balanced Scorecard Strategy Map, and as such it represents a critical success area for the Army Medical Department (Electric Mercury Extra, 2001).

## Conclusions and Recommendations

The two-part intervention had a significant effect on continuity at the Bennett Health Clinic from both the enrollees' perspective and the providers' perspective. It is a viable option for facility-wide implementation with additional resources for nurse triage and infrastructure upgrades. Based on this study, other clinics at Darnall have expressed interest in adopting this strategy to increase the percentage of same day appointments available daily. Enforcing appointment to a patient's assigned PCM will require a lot of work on the part of the clinic staff members. Clinics must be prepared for the increased calls to the reception desk. At Bennett, the calls to the clinic increased 460% the first month of the study, from 66 calls to the clinic in November to 309 calls to the clinic in January. The providers must be prepared to work patients into their schedule. Higher levels of command must be prepared to accept a greater number of open appointments if they expect providers to work their enrollees into their existing schedules. There is an upper limit to continuity when defined as primary care visits with the assigned PCM. For the Bennett Health Clinic's full time providers, the upper limit is close to 70%. Providers will be absent for periods of time, and during these absences, other providers must see patients other than their own. After the infrastructure is in place, namely, triage nurses at the clinics, functional grouping of central appointment clerks, and a telephone system that provides queuing ability to the outlying clinics, facility wide implementation of the intervention in this study will be an effective means of increasing continuity of care at Darnall.

A CHCS change request has been submitted to add the PCM field to the patient appointment file. The patient appointment file contains a snap shot in time of the appointment date, time, place of care, provider seen, appointment type, patient seen and other information. Even as providers come and go, the patient appointment file keeps the information at that point

in time. The PCM is not a field included in the patient appointment file, and the limitation of the ad hoc report created to capture PCM continuity was that the PCM listed was the PCM of record at the time that the report was generated, not at the time of the appointment. If the PCM information is captured along with the patient appointment information, then reports will have accurate information regardless of when the report is generated. This will be an important feature as facilities and lead agents attempt to quantify and measure compliance with the intent of assignments to specific primary care managers.

Further study is needed to determine whether increasing same day appointments and increasing continuity will decrease emergency room visits. The emergency room at Darnall continues to see many patients who are not true emergencies. The impression of the emergency room staff is that most of these patients were not able to receive an appointment in their primary care clinic. It would be interesting to see whether this intervention would decrease emergency room visits.

Another interesting study would be to determine whether increased continuity also increases provider satisfaction. Studies show that provider satisfaction increases with continuity with their patients, and it would be interesting to measure provider satisfaction before and after facility-wide implementation.

This study has increased awareness of continuity, when continuity is defined as seeing an enrollee's assigned PCM. It is recommended that the modified ad hoc report used in this study be utilized to monitor PCM continuity for all primary care clinics at Darnall. If the report is run on a weekly basis, it will provide timely information to the clinic leadership, which will enable them to monitor and adjust as needed to align actual provision of care with the hospital commander's emphasis on continuity of care.

Appendix A

Sample PCM Activity Report

11 Jan 2001@1418 Page 1

DARNALL ARMY COMMUNITY HOSPITAL

Personal Data - Privacy Act of 1974 (PL 93-579)  
 PCM ACTIVITY REPORT By Provider Group  
 FROM: Nov 2000 TO: Nov 2000

Provider Group:2BCT(BENNETT)

PCM/ Agreement	PCM CAP	#ASSIGN	PCM AVAIL	ENROLLEE #PCM VISITS	#ER VISITS	#REF MADE	ENROLLEE #VISITS W/REF	#VISITS W/O REF
=====								
CROSLAND, TELITA								
MTF	0	0	0					
Provider Total:	0	0	0					
DLUGOPOLSKI, MICHAEL								
MTF	475	464	11	1	14	52	75	90
Provider Total:	475	464	11	1	14	52	75	90
HAWKINS, MICHAEL A								
MTF	905	897	8	44	30	65	247	48
Provider Total:	905	897	8	44	30	65	247	48
KVALEVOG, KRAIG A								
MTF	7	7	0		11		57	81
Provider Total:	7	7	0		11		57	81
LONG, LARRY T								
MTF	500	491	9	1	8	40	99	85
Provider Total:	500	491	9	1	8	40	99	85
ORTA, DAWN L								
MTF	950	936	14			92		
Provider Total:	950	936	14			92		
OSSOWSKI, PHILIP B								
MTF	365	359	6		14	29	26	40
Provider Total:	365	359	6		14	29	26	40
PUYANA, ALFONSO								
CON	4	4	0					
Provider Total:	4	4	0					
RODRIGUEZ, DAVID A								
MTF	0	0	0					
Provider Total:	0	0	0					
ROSADO-COSME, RAFAEL A								
MTF	925	920	5	103	39	96	294	51
Provider Total:	925	920	5	103	39	96	294	51
SCHULER, CINDI J								
MTF	42	16	26	1	34	3	220	207
Provider Total:	42	16	26	1	34	3	220	207
SHAUGHNESSY, JOHN W								
MTF	550	525	25			24		
Provider Total:	550	525	25			24		
STANLEY, CHARLES L								
MTF	355	345	10		14	35	22	38
Provider Total:	355	345	10		14	35	22	38
THOMAS, MARY								
CON	1500	1436	60*	58	45	55	259	71
Provider Total:	1500	1436	60*	58	45	55	259	71
Agreement Total:								
CON	1500	1440	60	58	45	55	259	71
MTF	5100	4958	142	150	164	436	1040	640
Group Grand Total	6600	6398	202	208	209	491	1299	711



Appendix B

Appointments with Other Than Assigned PCM Ad Hoc Report

Title: Appts with Other than Assigned PCM(A000806)  
 AdHoc: GSG A000806 SRT/PRT/HDR  
 File: MCP Patient

Desc: This adhoc provides a list of appointments where the Provider isn't the patient's Assigned PCM. The user identifies the MCP Status(s) to be included (i.e. Enrolled, Conditional Enrollment, Pending Enrollment, Invalid Enrollment, Invalid Disenrollment and/or Disenrolled), the Provider Group(s), and the Appointment Date/Time range to be evaluated. The output is sorted by patient name within each Assigned PCM.

AQF: None  
 User  
 Input: MCP Status(s) - enter status(s) to be included  
         Enrollment Division(s)  
         Provider Group(s)  
         Appointment Date/Time  
 Date: 23 Aug 2000 (JEY)  
 Version:CHCS 4.6  
 Output: 80 column report  
 Client: Tyndall AFB, FL  
 TMSSC#: (original ticket 9905MED03976-A990705); 0008MED04343

=====  
 Sample Output:  
 =====

Personal Data - Privacy Act of 1974 (PL 93-579)  
 APPTS WITH OTHER THAN ASSIGNED PCM(A000806) 12 Jul 1999@1109 PAGE 1  
 APPT DATES FROM: 01 Jan 1997 TO: 31 Jan 1997  
 PATIENT APPT DATE/TIME CLINIC STATUS PROVIDER  
 -----

ASSIGNED PCM: CO,DOCTOR  
 COL,PATIENT 28 Jan 1997@1540 EXTENDED CARE C KEPT CH,DOCTOR  
 REA,PATIENT 30 Jan 1997@0930 PEDIATRIC CLINI KEPT HA,DOCTOR  
 STO,PATIENT 12 Jan 1997@1300 EXTENDED CARE C KEPT KN,DOCTOR

ASSIGNED PCM: HA,DOCTOR

ASSIGNED PCM: SC,DOCTOR  
 SAB,PATIENT 08 Jan 1997@1500 OPTOMETRY CLINI KEPT HO,DOCTOR  
 TAN,PATIENT 14 Jan 1997@1631 PEDIATRIC CLINI KEPT CO,DOCTOR  
 TAN,PATIENT 29 Jan 1997@0922 IMMUNIZATION CL WALK-I PE,DOCTOR

Source: <https://www.tmssc.brooks.af.mil>

## Appendix C

## Sample SPSS Data File for Enrollees' Perspective

PCM_ID	V_PCM	Clinic	DATE	TIME	KEPT	NO SHOW	WALK IN	Treat
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	0730	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	0830	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	0850	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	0910	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	0930	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	0950	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1010	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1030	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1300	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1320	1	0	0	1
1	0	BENNETT HEALTH CLINIC1	01 Feb 2001	1330	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1340	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1400	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1440	1	0	0	1
1	0	BENNETT HEALTH CLINIC1	01 Feb 2001	1500	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1500	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1520	1	0	0	1
1	1	BENNETT HEALTH CLINIC1	01 Feb 2001	1600	1	0	0	1
1	0	BENNETT HEALTH CLINIC1	01 Feb 2001	1615	1	0	0	1
1	0	BENNETT HEALTH CLINIC1	24 Oct 2000	0945	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	24 Oct 2000	1000	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	24 Oct 2000	1000	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	24 Oct 2000	1010	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	24 Oct 2000	1050	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	24 Oct 2000	1110	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	24 Oct 2000	1330	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	24 Oct 2000	1400	0	1	0	0
1	1	BENNETT HEALTH CLINIC1	24 Oct 2000	1520	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	24 Oct 2000	1520	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	24 Oct 2000	1540	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	24 Oct 2000	1540	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	24 Oct 2000	1553	0	0	1	0
1	0	KILLEEN FAMILY CARE CLINIC	24 Oct 2000	1600	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	24 Oct 2000	1700	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	25 Oct 2000	0730	0	1	0	0
1	1	BENNETT HEALTH CLINIC1	25 Oct 2000	0850	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	25 Oct 2000	0910	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	25 Oct 2000	0930	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	25 Oct 2000	0940	1	0	0	0
1	1	BENNETT HEALTH CLINIC1	25 Oct 2000	0950	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	25 Oct 2000	1000	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	25 Oct 2000	1014	0	0	1	0
1	0	BENNETT HEALTH CLINIC1	25 Oct 2000	1020	1	0	0	0
1	0	BENNETT HEALTH CLINIC1	25 Oct 2000	1030	1	0	0	0

## Appendix D

## Sample SPSS Data File for Providers' Perspective

pcm_id	date	v_avail	sda	per_sda	open	v_enroll	per_v_en	treat
1	01 Feb 2001	22	17	0.77	1	19	0.9	1
2	01 Feb 2001	5	1	0.2	3	2	1	1
4	01 Feb 2001	18	16	0.89	0	14	0.78	1
5	01 Feb 2001	18	16	0.89	3	11	0.73	1
7	01 Feb 2001	21	19	0.9	8	8	0.62	1
8	01 Feb 2001	19	12	0.63	1	17	0.94	1
2	01 Nov 2000	10	3	0.3	1	5	0.56	0
3	01 Nov 2000	13	5	0.38	3	4	0.4	0
4	01 Nov 2000	23	13	0.57	4	10	0.53	0
6	01 Nov 2000	8	7	0.88	0	6	0.75	0
7	01 Nov 2000	24	16	0.67	5	13	0.68	0
8	01 Nov 2000	22	14	0.64	7	11	0.73	0
1	02 Feb 2001	25	18	0.72	1	20	0.83	1
3	02 Feb 2001	9	8	0.89	2	3	0.43	1
4	02 Feb 2001	22	17	0.77	2	14	0.7	1
5	02 Feb 2001	19	13	0.68	1	9	0.5	1
7	02 Feb 2001	24	21	0.88	0	22	0.92	1
8	02 Feb 2001	23	18	0.78	5	18	1	1
10	02 Feb 2001	14	6	0.43	3	9	0.82	1

Note:  $\text{per\_sda} = \text{sda} / \text{v\_avail}$   
 $\text{per\_v\_en} = \text{v\_enroll} / (\text{v\_avail} - \text{open})$

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