

**CBOC PERFORMANCE EVALUATION**

**Performance Report 3:  
Quality of Care Measures Based  
on Medical Record Review**





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by

Ashley Hedeem, M.D., MPH

Michael K. Chapko, Ph.D.

Northwest Center for Outcomes Research in Older Adults  
Health Services Research and Development  
VA Puget Sound Health Care System, Seattle Division

John Fortney, Ph.D.

Center for Mental Health and Outcomes Research  
Health Services Research and Development  
Central Arkansas Veterans Healthcare System  
North Little Rock VA Medical Center

Steven Borowsky, M.D., M.P.H.

Center for Chronic Disease Outcomes Research  
Health Services Research and Development  
Minneapolis VA Medical Center

for the

Management Decision and Research Center  
Health Services Research and Development Service  
Office of Research and Development  
Department of Veterans Affairs

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## HIGHLIGHTS

The CBOC Performance Evaluation Project was initiated in 1998 in response to the Under Secretary for Health's request that the Health Services Research and Development Service (HSR&D) formulate a plan for evaluating community-based outpatient clinic (CBOC) performance and conduct a system-wide evaluation of CBOCs. For the purposes of this project, CBOCs are defined as outpatient clinics that successfully completed the congressional review process for CBOCs, and include only the 139 CBOCs that began providing health care to veterans between March 1995 and September 1998. A subset of these CBOCs met the inclusion criteria for the performance measures in this report. The evaluation project has examined CBOC performance on 25 potential performance measures identified by a national committee of VA managers and researchers.

This report, the sixth in a series for the project,<sup>1</sup> provides CBOC performance results for two quality of care measures -- the Prevention Index (PI) and the Chronic Disease Care Index (CDCI). Seven PI indicators and nine CDCI indicators were studied. The measures are based on data from patient medical record reviews conducted specifically for this project in 20 CBOCs by the External Peer Review Program (EPRP) in the Office of Quality and Performance. Since PI and CDCI measures are not regularly collected and reported in CBOCs, we expected CBOC performance to be lower than that of parent VA Medical Centers.

Based on the PI and CDCI indicators, CBOCs overall appear to be providing a quality of care that is not substantially different from parent VA Medical Centers, although some individual CBOCs are not providing the same quality as affiliated parents on all indicators. More specifically:

1. *In the aggregate, CBOC performance was statistically comparable to parent VA Medical Center performance in the study on all seven PI indicators and eight of nine CDCI indicators.*
2. *Performance was more variable when individual CBOCs were compared to their affiliated parent VA Medical Centers:*
  - Ten out of the twenty CBOCs performed significantly below their affiliated parent VA Medical Centers on one or more indicators. Five of these CBOCs performed lower on 25% or more of the indicators.
  - Three CBOCs performed above their affiliated parent VA Medical Centers on one or more indicators.

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<sup>1</sup> Citations for the other reports are listed at the end of this report.

3. *Performance did not vary systematically by type of CBOC:*

- Contract CBOCs and VA-staffed CBOCs had statistically comparable performance on all PI indicators and eight of nine CDCI indicators, although Contract CBOCs consistently had somewhat lower performance scores than VA-staffed CBOCs.
- Urban and rural CBOCs and old and new CBOCs had comparable performance on all PI indicators and CDCI indicators.

From these analyses we note that:

1. **It is encouraging that CBOCs overall offer a quality of care roughly comparable to parent VAMCs, as reflected by the PI and CDCI.** It is particularly impressive since administrators and health care providers have not had access to EPRP performance reports and feedback for CBOCs comparable to that available for VA Medical Centers.
2. **On the other hand, the lower performance by half of the CBOCs studied on one or more indicators bears further investigation and monitoring.** There are several potential explanations for the lower performance at some CBOCs. In addition to CBOCs not having access to EPRP PI and CDCI performance reports and feedback comparable to that available at VA Medical Centers, CBOCs may be less likely to have direct information regarding VHA quality of care recommendations and expectations.
3. **EPRP record reviews are not regularly done in CBOCs.** EPRP conducted special reviews for this project. This has two implications. First, the analyses reported here are based on a relatively small sample of 20 CBOCs, since record reviews are costly and labor intensive. As a result of the small sample, our findings cannot necessarily be generalized to all CBOCs currently in the VA system. Second, looking forward, if the PI and CDCI are to be used as ongoing measures of quality in CBOCs, the EPRP review process must be expanded to regularly include samples of CBOC patients across the system.

When the measures examined in this report are considered in conjunction with the performance measures presented in Performance Reports 1 and 2, CBOCs in aggregate appear to provide quality of care comparable to parent VA Medical Centers overall, as well as to generate greater access to care, lower total cost per patient, and greater patient satisfaction. However, for some individual CBOCs, quality of care performance fell below the affiliated parent VA Medical Centers on some indicators, suggesting that this is an area that should be closely monitored in the future. Although these assessments have limitations that require caution in generalizing the results more broadly, these performance measures suggest that CBOCs may be a valid and promising approach for providing primary care to veterans.

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# **CBOC PERFORMANCE EVALUATION**

## **Performance Report 3: Quality of Care Measures Based on Medical Record Review**

### **INTRODUCTION**

From 1995 to 1998, VHA approved more than 230 Community-Based Outpatient Clinics (CBOCs). By the end of FY98, there were 139 CBOCs providing health care to veterans with the number of CBOCs per Veterans Integrated Service Network (VISN) ranging from 1 to 16. In order to learn about the characteristics and performance of the rapidly growing number of CBOCs, the Under Secretary for Health requested that the Health Services Research and Development Service (HSR&D), through its Management Decision and Research Center (MDRC), conduct a system-wide evaluation of CBOCs.

In response to the Under Secretary's request, the MDRC contracted with the HSR&D Center of Excellence at Seattle, in collaboration with the HSR&D Centers of Excellence in Little Rock and Minneapolis, to conduct the evaluation. A national CBOC Performance Evaluation Committee was convened to develop a set of CBOC characteristics and CBOC performance measures by which CBOCs would be categorized and evaluated. The committee recommended assessment of CBOC performance in six domains: Access, Cost, Mental Health, Quality of Care, Patient Satisfaction, and Utilization. The nominated measures are listed in Table 1.

Reported here are results for two CBOC performance measures that are based on data from patient medical record review conducted by the External Peer Review Program (EPRP). These measures are in bold print in Table 1. For each performance measure, the Performance Evaluation Committee set a standard for the CBOCs. For most measures the standard states that CBOC performance should be at least equal to the performance of the associated parent VA facility.

This is the sixth in a series of reports for this study. The first report detailed the CBOC characteristics and performance measures formulated by the committee. The second report presented characteristics for each CBOC as reported through the VISNs. The third and fourth reports provided results for 17 CBOC performance measures based on data from the Austin Automation Center, National VA Outpatient Customer Satisfaction Survey, Decision Support System, and Planning Systems Support Group. The fifth report presents a set of recommended measures that can be used for ongoing monitoring of CBOC performance. The reports are listed at the end of this report.

The current report provides results for two Quality of Care performance measures -- the Prevention Index (PI) and Chronic Disease Care Index (CDCI) -- that are based on data from patient medical record reviews conducted by the External Peer Review Program (EPRP). These indices were considered relevant measures of quality since they are important to VA Medical Center performance: in FY2000, the PI is a national performance measure and the CDCI is a national monitor. Since these measures have not been tracked at CBOCs and

CBOCs have not received EPRP performance reports and feedback, we expected that CBOCs would score lower on these indices than the parent VA Medical Centers.

**Table 1. Nominated CBOC Performance Measures**

<b>Access</b>
<i>Access 1: Average travel distance for CBOC patients (in different priority and user categories) to the CBOCs vs the Parent VA Medical Centers</i>
<i>Access 2: Patients seen within 20 minutes of scheduled appointment</i>
<i>Access 3: Average waiting time for follow-up after hospitalization or surgery</i>
<i>Access 4: Percent of veterans who were able to access medical care when they needed care</i>
<i>Access 5: Percent of priority 1 and 2 veterans not using VA primary care and residing within 30 miles or 31-60 miles of a VA facility</i>
<b>Cost</b>
<i>Cost 1: Average direct cost per primary care visit</i>
<i>Cost 2: Average primary care direct cost per patient</i>
<i>Cost 3: Average total direct cost per patient</i>
<i>Cost 4: Change in fee-basis costs before and after activation of the CBOC</i>
<b>Mental Health</b>
<i>Mental Health 1: Patients assigned a mental health diagnosis</i>
<i>Mental Health 2: Average weighted outpatient workload per clinical mental health FTEE</i>
<i>Mental Health 3: Patients seen within 30 days after hospitalization for a mental health disorder</i>
<b>Quality of Care</b>
<i>Quality of Care 1: Patients reporting one provider or team in charge of care</i>
<b>Quality of Care 2: Prevention Index</b>
<b>Quality of Care 3: Chronic Disease Care Index</b>
<b>Patient Satisfaction</b>
<i>Patient Satisfaction 1: Average Customer Service Standard (CSS) score on the ambulatory care customer feedback survey</i>
<i>Patient Satisfaction 2: Patients rating healthcare as very good or excellent</i>
<i>Patient Satisfaction 3: Patients rating their VA healthcare encounter as equivalent to or better than what they would receive from any other healthcare provider</i>
<b>Utilization</b>
<i>Utilization 1: User status and priority status of patients</i>
<i>Utilization 2: Average number of VA primary care visits per patient</i>
<i>Utilization 3: Average weighted outpatient workload per clinical FTEE</i>
<i>Utilization 4: Average number of VA specialty visits per patient</i>
<i>Utilization 5: Patients who have: 1) seen a non-VA physician in the past 12 months, 2) been admitted to a non-VA hospital in the past 12 months</i>
<i>Utilization 6: VA bed days of care per patient</i>
<i>Utilization 7: Average number of VA hospital admissions per 1000 patients</i>

Note: Bold font denotes performance measures included in this report. Italicized font denotes performance measures included in Performance Report 1 and Report 2.

## METHODS

The methods used to conduct the analyses presented in this report are summarized in this section. A more complete description of the methods and performance measures is contained in Appendix A and Appendix B.

### *Definitions*

For purposes of this analysis, we used the following definitions:

- *Parent VA Medical Centers (VA Medical Centers)*: This report compares performance measures for patients at CBOCs and parent VA medical centers or facilities. A parent VAMC is defined as the VA facility affiliated with a CBOC as reported by each VISN.
- *Community-Based Outpatient Clinics (CBOCs)*: For the purposes of this report, CBOCs are defined as community-based outpatient clinics that successfully completed the congressional review process for CBOCs. Satellite outpatient clinics, outreach clinics, and other community-based clinics are not included in this definition. Although 139 CBOCs received congressional approval and began providing health care to veterans between March 1995 and September 1998, only a subset of these CBOCs met the inclusion criteria for the performance measures presented in this report (see text below and Appendix C).
- *VA-Staffed CBOCs and Contract CBOCs*: CBOCs are categorized into two groups, VA-staffed and Contract. Clinicians and ancillary staff are VA employees at VA-staff CBOCs; whereas clinicians, ancillary staff, and/or services are contracted at Contract CBOCs.
- *Urban CBOCs and Rural CBOCs*: CBOCs are considered urban if located in an MSA<sup>2</sup> county and rural if located in a non-MSA county.
- *Old CBOCs and New CBOCs*: CBOCs are considered “old” or “new” based upon the date patients were first seen in a CBOC according to the VISN survey administered by the CBOC Performance Evaluation Project. CBOCs established in FY95, FY96 and FY97 are defined as “old” and CBOCs established in FY98 are defined as “new”.

### *Description of the Measures*

As a part of VHA's multifaceted effort to ensure high quality care, VHA has designed and is operationalizing a number of specific quality of care indexes.<sup>3</sup> Two of the indexes developed by VHA, the Prevention Index and the Chronic Disease Care Index, were recommended as CBOC performance measures by the national CBOC Performance Evaluation Committee:

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<sup>2</sup> Metropolitan Statistical Area

<sup>3</sup> Kizer KW. The "New VA": A National Laboratory for Health Care Quality Management. *American Journal of Medical Quality*. 1999;14:3-20.

- *The Prevention Index* is comprised of nine indicators: immunization against influenza and pneumococcal diseases; tobacco use screening and cessation counseling; alcohol use screening; breast, cervical and colon cancer screening and counseling regarding the risks and benefits of screening for prostate cancer.
- *The Chronic Disease Care Index* is comprised of fourteen indicators for five high volume diagnoses: hypertension, diabetes mellitus, obesity, ischemic heart disease (IHD), and chronic obstructive pulmonary disease (COPD).

These indicators have been used by VHA to assess compliance with nationally recognized clinical guidelines for primary prevention, early disease detection, and care of patients with chronic disease. For the CBOC performance evaluation presented in this report, a subset of seven of the nine Prevention Index indicators and nine of the fourteen Chronic Disease Care Index indicators was assessed. These are listed in Table 2 and Table 3. The remaining Prevention Index and Chronic Disease Care Index indicators were not evaluated because the number of eligible CBOC patients was too small for analysis.<sup>4</sup>

**Table 2. Prevention Index Indicators in the Analysis**

<i>Category / Indicator</i>	<i>Definition<sup>5</sup></i>
<i>Immunizations</i> Pneumococcal immunization  Influenza immunization	The proportion of persons age 65 or older, or who are at high risk of pneumococcal disease, that have chart documentation of ever receiving pneumococcal vaccine.  The proportion of persons age 65 or older, or who are at high risk of influenza, that have chart documentation of receiving influenza vaccine in the past year.
<i>Cancer screening</i> Counseling regarding screening for prostate cancer  Colorectal cancer screening	The proportion of males age 50 to 69 that have chart documentation of discussion of risks and benefits of screening for prostate cancer in the past year.  The proportion of persons age 50 or older that have chart documentation of fecal occult blood screening in the past year or sigmoidoscopy/colonoscopy in the past 10 years.
<i>Tobacco consumption</i> Tobacco use screening  Tobacco use cessation counseling	The proportion of persons with chart documentation of screening for tobacco use in the past year.  The proportion of current smokers with chart documentation of advice to stop smoking in the past year.
<i>Alcohol consumption</i> Alcohol use screening	The proportion of persons with chart documentation of screening for alcohol use in the past year by means of a standardized instrument.

<sup>4</sup> The two PI indicators for breast cancer and cervical cancer screening, three CDCI indicators for ischemic heart disease, and two CDCI indicators for chronic obstructive pulmonary disease were not assessed because the sample size was too small to have adequate power for valid statistical analysis.

<sup>5</sup> Patients refusing the intervention are excluded from the calculations.

**Table 3. Chronic Disease Care Index Indicators in the Analysis**

Condition / Indicator	Definition <sup>6</sup>
<p><i>Hypertension</i></p> <p>Nutrition Counseling</p> <p>Exercise Counseling</p>	<p>The proportion of appropriate patients with chart documentation of counseling about nutrition and weight control during the past 2 years.</p> <p>The proportion of appropriate patients with chart documentation of counseling about exercise during the past 2 years.</p>
<p><i>Obesity (BMI &gt;27)</i></p> <p>Nutrition Counseling</p> <p>Exercise Counseling</p>	<p>The proportion of overweight persons with chart documentation of counseling about nutrition during the past 2 years.</p> <p>The proportion of overweight persons with chart documentation of counseling about exercise during the past 2 years.</p>
<p><i>Diabetes mellitus</i></p> <p>Foot inspection</p> <p>Foot pulses checked</p> <p>Foot sensation checked</p> <p>Retinal eye exam</p> <p>Hemoglobin A1c</p>	<p>The proportion of diabetics, excluding bilateral amputees, with chart documentation of visual inspection of feet in the past year.</p> <p>The proportion of diabetics, other than bilateral amputees, with chart documentation of examination of pedal pulses in the past year.</p> <p>The proportion of diabetics, other than bilateral amputees, with chart documentation of foot sensory examination in the past year.</p> <p>The proportion of diabetics with chart documentation of a retinal examination by an eye care specialist in the past year.</p> <p>The proportion of diabetics with chart documentation of hemoglobin A1c determination in the past year.</p>

***Data Collection and Analysis***

Data for the Prevention Index and Chronic Disease Care Index indicators were obtained from patient medical records by the External Peer Review Program (EPRP)<sup>7</sup> for a sample of patients in a sample of CBOCs and VA Medical Centers:

- *EPRP reviews:* Although EPRP has routinely conducted on-site review of patient records at VA Medical Centers, record reviews at CBOCs have not traditionally been performed.<sup>8</sup> Therefore in order to have adequate sample size, it was necessary for EPRP to collect

<sup>6</sup> Patients refusing the intervention are excluded from the calculations.

<sup>7</sup> The External Peer Review Program (EPRP) is a part of the VHA Office of Quality and Performance.

<sup>8</sup> When EPRP identifies cases for review at a VAMC, patients who have been seen in CBOCs are not excluded, so long as they meet the VAMC sampling requirements. Therefore a small number of CBOC patients have been included in past VAMC performance reports.

data from patient records at the CBOCs included in this study, while existing EPRP data for the same time period were used for the parent VA Medical Center comparison group.

- *Sample of 20 CBOCs and affiliated parent VA Medical Centers:* The research team in conjunction with the Office of Quality and Performance determined that it would be feasible to include twenty CBOCs and affiliated parent VA Medical Centers in the patient record review process. A CBOC was eligible if it was in operation prior to July 1998 and had a minimum of 150 veterans meeting the preliminary patient inclusion criteria (see below). The final study sample included twelve VA-staffed CBOCs, eight Contract CBOCs, and the twenty affiliated parent VA Medical Centers (see Appendix C).
- *Sample of 300 CBOC patients:* For each CBOC, a random sample of 150 patients with a diagnosis of hypertension and 150 patients with a diagnosis of diabetes were selected, unless fewer patients were available. (These two diagnoses are regularly sampled in the medical centers and had enough patients in CBOCs to be sampled for this analysis.) These patients had to have three or more visits at specified clinic stop codes during 7/98 through 6/99,<sup>9</sup> including at least one visit during the second or third quarter of FY 1999, and a greater number of primary care encounters at the CBOC than at the VA Medical Center during the study period. A total of 4768 patients from the twenty CBOCs met the final selection criteria.
- *Comparison sample:* The comparison group included patients at the parent VA Medical Centers with a diagnosis of hypertension or diabetes who had a medical record review during the second or third quarter of FY 1999.<sup>10</sup> These patients had to have three or more visits at specified clinic stop codes and no encounters at a CBOC in the preceding year. A total of 2433 patients from the twenty parent VA Medical Centers met the eligibility criteria.

Logistic regression was used to test the hypothesis that compliance with the Prevention Index indicators and Chronic Disease Care Index indicators was different between CBOCs versus parent VA Medical Centers and between patients at the following types of CBOCs: 1) VA-staffed versus Contract CBOCs, 2) urban versus rural CBOCs, and 3) old versus new CBOCs. Additional regression analyses tested whether the performance of individual CBOCs differed from their affiliated Parent VA Medical Centers.

### ***Limitations***

This study is subject to limitations. First, a relatively small number of CBOCs and VA Medical Centers were studied, since record reviews are costly and labor intensive. Therefore, statistical power was limited. In addition, because of the limited sample size and the non-random selection of CBOCs, these findings cannot necessarily be generalized to all CBOCs in the VA system. Second, several CBOCs included in the study were in operation for a short period prior to the start of the evaluation. It is possible that performance may change once CBOCs have been operating for a longer duration. Third, there are challenges

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<sup>9</sup> The following clinics were included: Primary Care, General Internal Medicine, Women's, Cardiology, Endocrine/Metabolic, Diabetes, Hypertension, and Pulmonary/Chest.

<sup>10</sup> EPRP uses a random sampling protocol to select patient charts at VA Medical Centers.

with using record review data collection to access quality of care, including possible under documentation. This may occur if complete documentation of all VA and non-VA medical care is not available in the CBOC/VA patient records.

## **RESULTS FOR THE PERFORMANCE MEASURES**

Results for the Prevention Index and Chronic Disease Care Index indicators analyzed for this study are presented on the following pages. Two types of analyses are shown:

- *Proportions of patients receiving PI and CDCI interventions:* The figures in subsections A and C show the proportion of patients receiving the Prevention or Chronic Disease Care interventions among those eligible and not refusing the intervention, as determined by the EPRP review of patient records. The proportions have been adjusted for possible time trends in indicator performance. The number of patient records reviewed and eligible for each indicator is specified in parentheses in the figures.

The figures present aggregate comparisons of the 20 CBOCs sampled with their 20 affiliated parent VA Medical Centers (Figures A-1, A-2), and comparisons between groups of CBOCs for: 12 VA-staffed vs 8 Contract CBOCs (Figures C-1, C-2), 14 urban vs 6 rural CBOCs (Figures C-3, C-4), and 12 old CBOCs (established in FY97, FY 96 or FY95) vs 8 new CBOCs (established in FY98) (Figures C-5, C-6).

- *Performance of individual CBOCs in relation to the parent VA Medical Centers:* Subsection B summarizes the relative performance of individual CBOC-parent VAMC pairs, 1) across all PI and CDCI indicators and 2) by each indicator (Figures B-1, B-2, B-3).

**A. In the aggregate, CBOC performance was significantly different from parent VAMC performance on only one of the PI and CDCI indicators.<sup>11</sup>**

There were no significant differences in the overall CBOC and parent VAMC performance on the 7 PI indicators (Figure A-1) or 8 of the 9 CDCI indicators (Figure A-2),  $p < .003$ .<sup>12</sup> The only statistically significant difference was in the proportion of diabetic patients with documentation of an eye examination by an eye care specialist within the past year,  $p = .0006$ . However, the CBOC scores were lower than parent VAMC scores on most indicators. For the 15 PI and CDCI indicators with statistically non-significant differences, CBOC scores were .01 to .06 below the parent VAMC on 13 indicators.

Figure A-1: PI - Proportion of Eligible Patients Receiving the Intervention

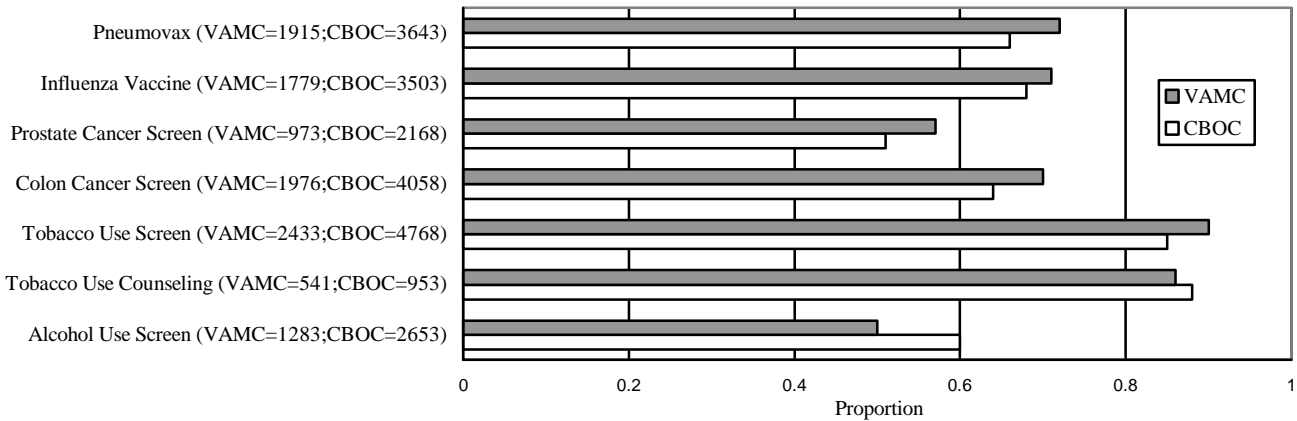
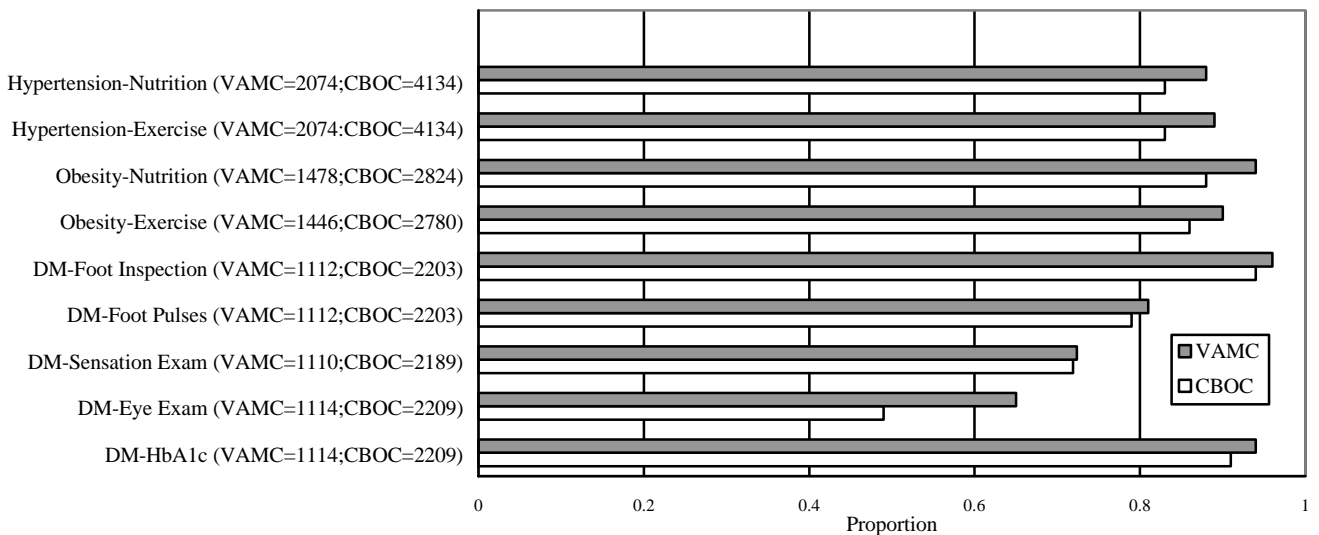


Figure A-2: CDCI - Proportion of Eligible Patients Receiving the Intervention



<sup>11</sup> A total of 2433 records at the 20 Parent VAMCs and 4768 records at the 20 CBOCs met the eligibility criteria for the study. The number of records eligible for each indicator is specified in parenthesis in the figures.

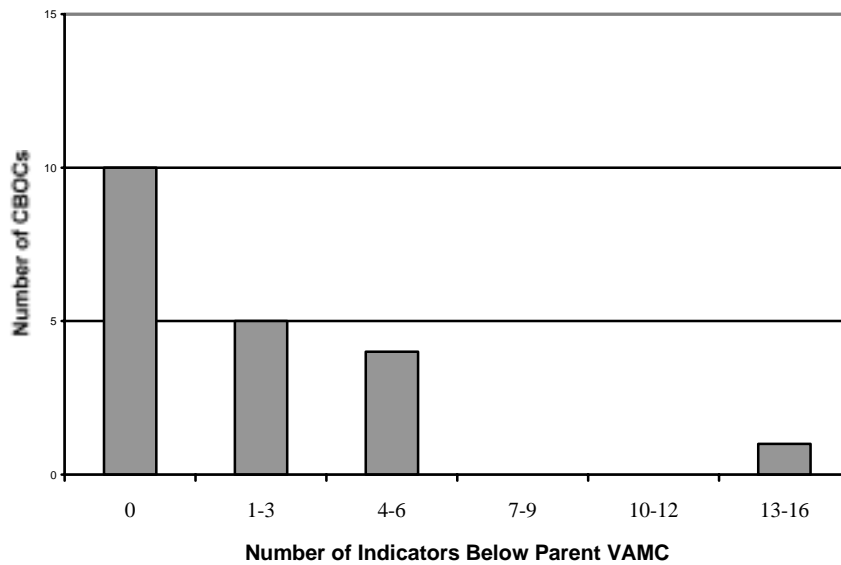
<sup>12</sup> Significance level was  $p < .003$  with Bonferroni correction for multiple comparisons ( $.003 = .05/16$ ).



**B. Performance was more variable when individual CBOCs were compared to their affiliated parent VA Medical Centers.**

Ten out of 20 of the individual CBOCs performed significantly below their affiliated parent VAMC on one or more indicator,  $p < .00015$  (Figure B-1).<sup>13</sup> Of these 10 CBOCs, 4 performed lower on 25-50% (4 to 8) of the indicators, and 1 performed lower on more than 50% (>8) of the indicators. In addition, 3 CBOCs performed above the affiliated parent VAMC on one or more indicator, with none higher on more than 15% (3) of the indicators. One CBOC had some indicators below and above the parent VAMC and 10 CBOC-VAMC pairs had no differences.

Figure B-1: Number of Indicators Below Parent VAMC, Individual CBOCs Compared to Affiliated Parent VAMC



<sup>13</sup> Significance level was  $p < .00015$  with Bonferroni correction for multiple comparisons [ $.00015 = .05 / (16 \times 20)$ ].

For 13 of the 16 PI/CDCI indicators, 10% or more of the CBOCs ( $\geq 2$ ) performed significantly below the parent VAMC, with a mean difference of .44,  $p < .00015$  (Figures B-2, B-3).<sup>14</sup> Three PI and one CDCI indicators were particularly likely to have low scores, with 20% or more of the CBOCs ( $\geq 4$ ) significantly lower than the parent VA Medical Centers: pneumococcal vaccination, colon cancer screening, alcohol use screening, and nutrition counseling for patients with hypertension. For 4 of the 16 indicators 5% or more of the CBOCs performed significantly above the parent VAMC. None of the indicators had over 10% of the CBOCs above the parent VAMCs.

Figure B-2: PI - Number of CBOCs Below Parent VAMC, Individual CBOCs Compared to Affiliated Parent VAMC

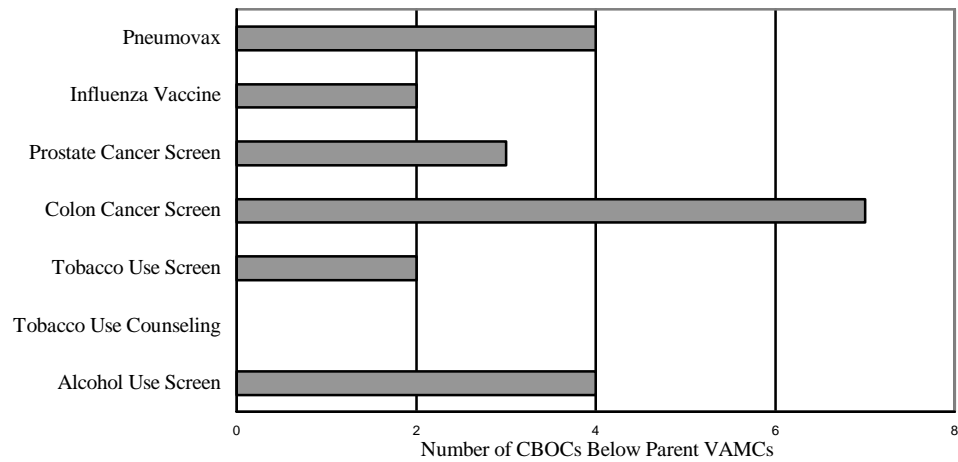
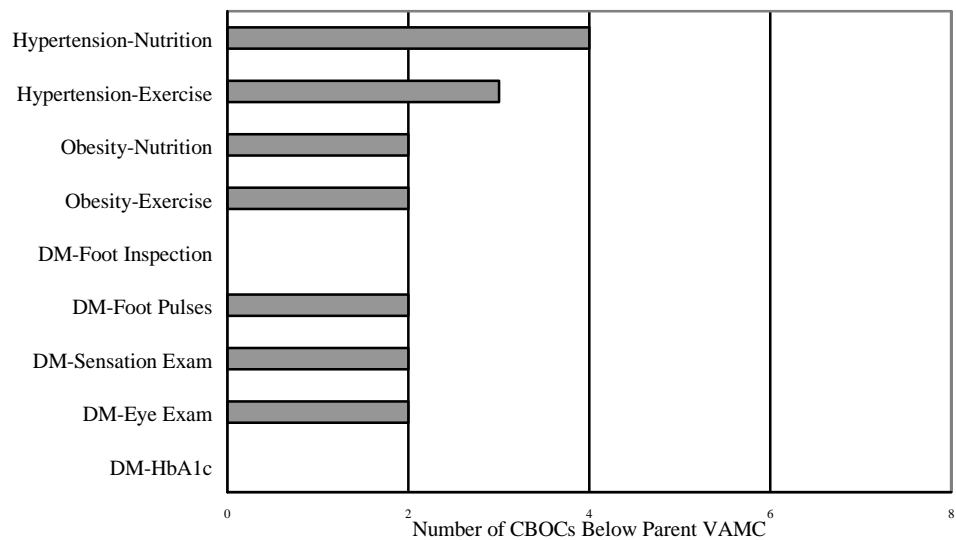


Figure B-3: CDCI - Number of CBOCs Below Parent VAMC, Individual CBOCs Compared to Affiliated Parent VAMC



<sup>14</sup> Significance level was  $p < .00015$  with Bonferroni correction for multiple comparisons [ $.00015 = .05 / (16 \times 20)$ ].

**C. There are few statistically significant differences between types of CBOCs on PI and CDCI performance.<sup>15</sup>**

*Contract CBOC performance scores were statistically comparable to VA-staffed CBOC scores on most measures, although the Contract CBOC scores were consistently lower. There was no significant difference between Contract CBOC and VA-staffed CBOC performance for any of the 7 PI indicators (Figure C-1) or 8 of the 9 CDCI indicators (Figure C-2),  $p < .003$ .<sup>16</sup> The only statistically significant difference was in the proportion of diabetic patients who had medical record documentation of a HbA1c lab test within the past year,  $p = .0001$ . For the 15 indicators with statistically non-significant differences, Contract CBOC scores were .02 to .15 below VA-staffed CBOC scores on 14 indicators and .06 above VA-staffed CBOC scores on 1 indicator.*

Figure C-1: PI - Proportion of Eligible Patients Receiving the Intervention

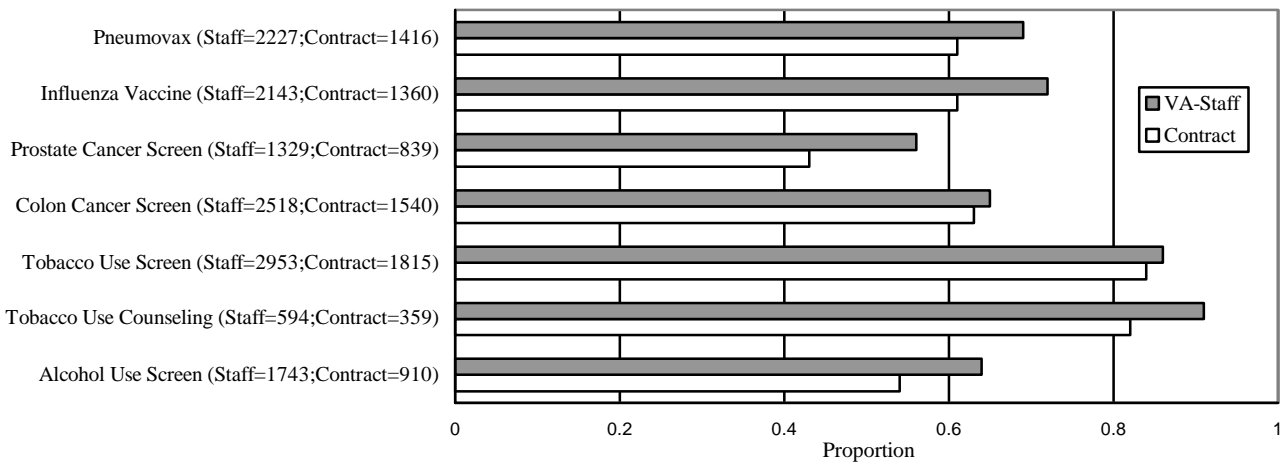
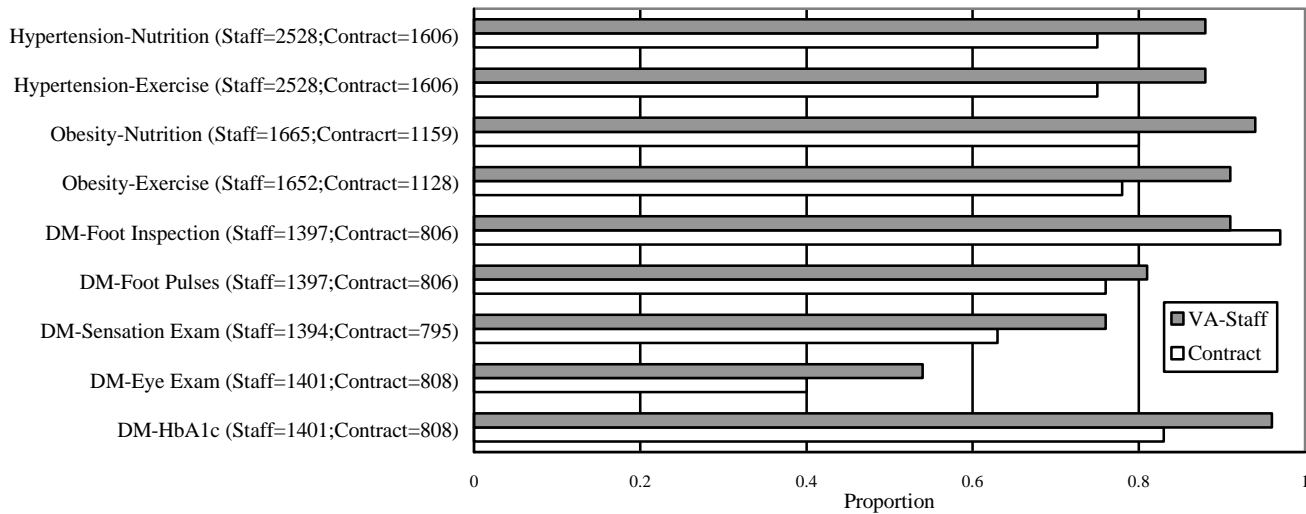


Figure C-2: CDCI - Proportion of Eligible Patients Receiving the Intervention



<sup>15</sup> A total of 2953 records at the 12 VA-staffed CBOCs and 1815 records at the 8 Contract CBOCs met the eligibility criteria for the study. The number of records eligible for each indicator is specified in parenthesis in the figures.  
<sup>16</sup> Significance level was  $p < .003$  with Bonferroni correction for multiple comparisons ( $.003 = .05/16$ ).

There was no significant difference between urban CBOC and rural CBOC performance on any of the PI indicators (Figure C-3) or CDCI indicators (Figure C-4),  $p < .003$ .<sup>17,18</sup>

Figure C-3: PI - Proportion of Eligible Patients Receiving the Intervention

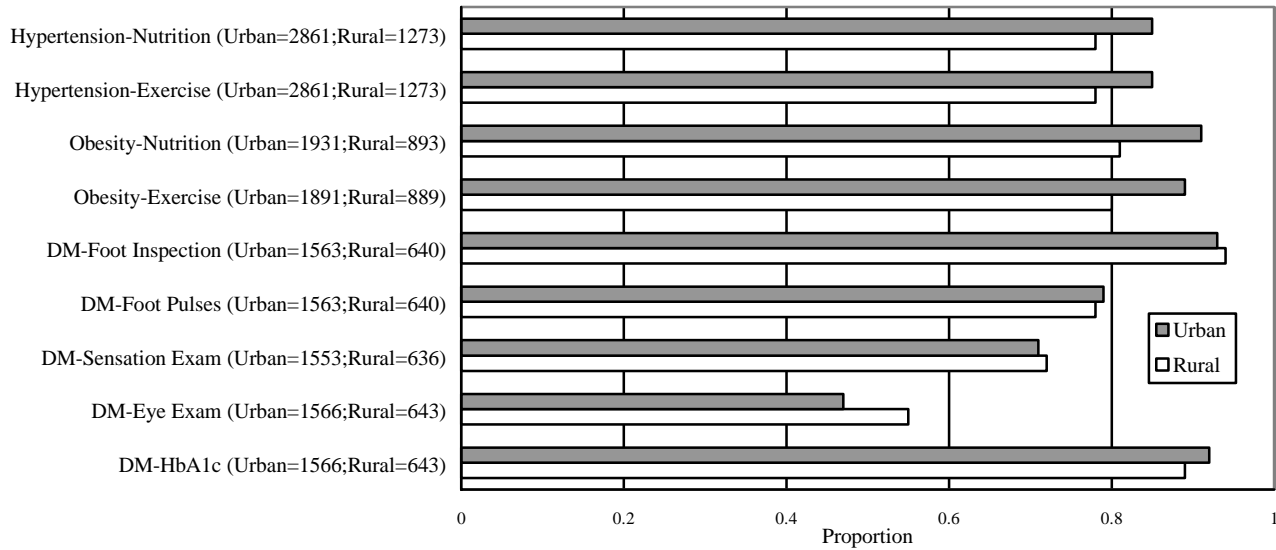
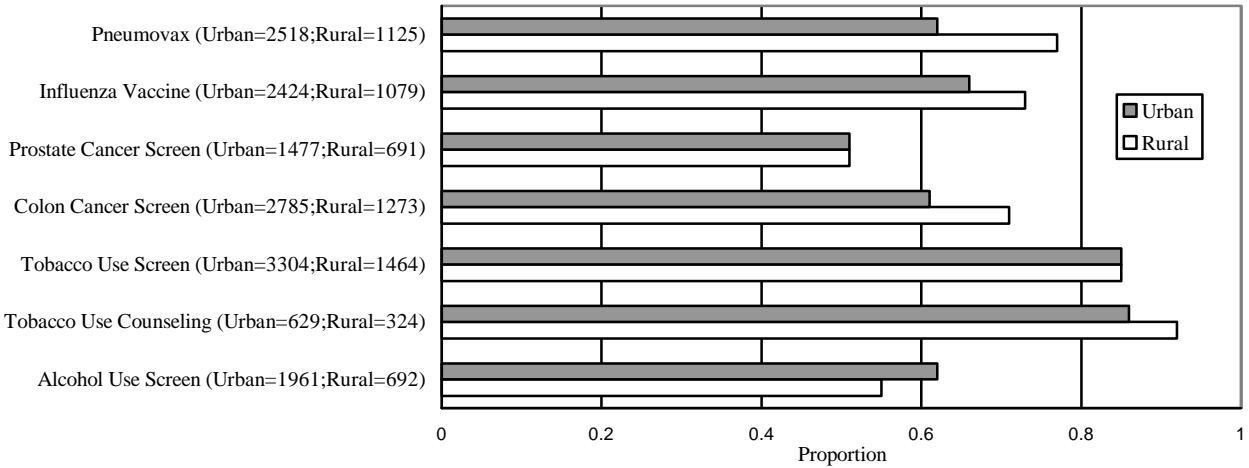


Figure C-4: CDCI - Proportion of Eligible Patients Receiving the Intervention

<sup>17</sup> A total of 3304 records at the 14 urban CBOCs and 1464 records at the 6 rural CBOCs met the eligibility criteria for the study. The number of records eligible for each indicator is specified in parenthesis in the figures.

<sup>18</sup> Significance level was  $p < .003$  with Bonferroni correction for multiple comparisons ( $.003 = .05/16$ ).

There was no significant difference in performance between CBOCs established in FY95, 96, 97 (old) and CBOCs established in FY98 (new) on any of the PI indicators (Figure C-5) or CDCI indicators (Figure C-6),  $p < .003$ .<sup>19,20</sup>

Figure C-5: PI - Proportion of Eligible Patients Receiving the Intervention

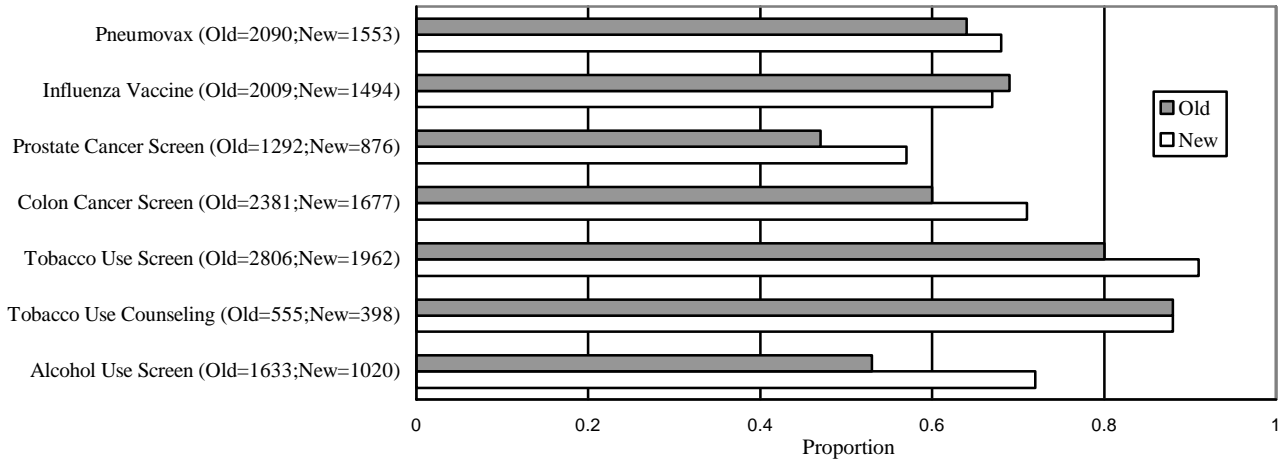
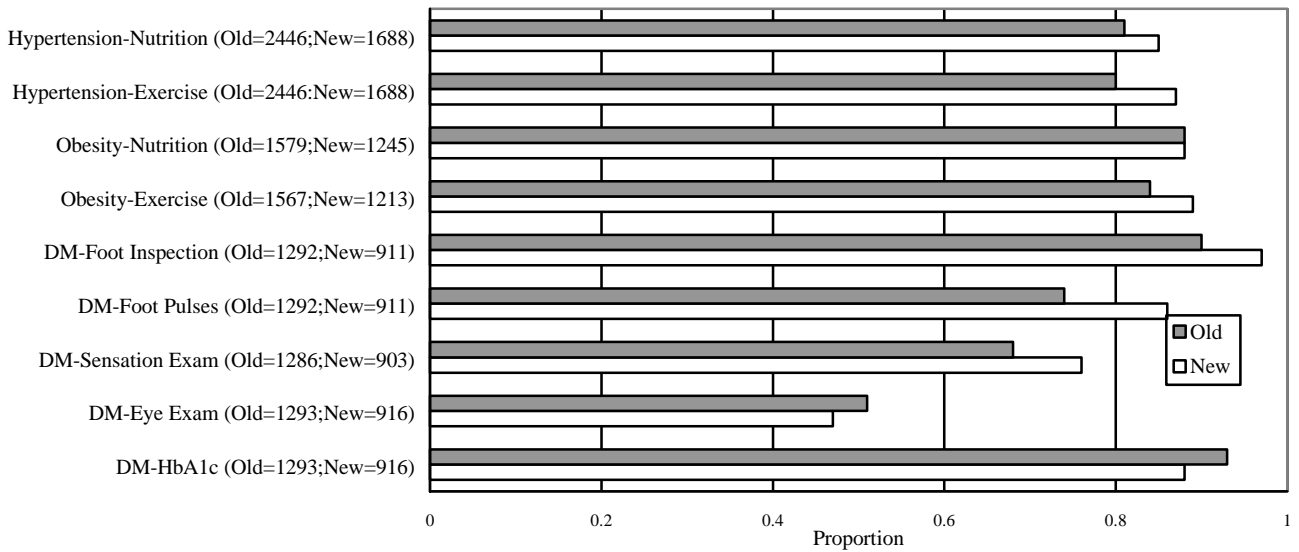


Figure C-6: CDCI - Proportion of Eligible Patients Receiving the Intervention



<sup>19</sup> A total of 2806 records at the 12 old CBOCs and 1962 records at the 8 new CBOCs met the eligibility criteria for the study. The number of records eligible for each indicator is specified in parenthesis in the figures.

<sup>20</sup> Significance level was  $p < .003$  with Bonferroni correction for multiple comparisons ( $.003 = .05/16$ ).

## DISCUSSION

As a part of VHA's multifaceted effort to ensure high quality care, VHA designed and operationalized a number of quality of care indexes, including the Prevention Index (PI) and the Chronic Disease Care Index (CDCI).<sup>21</sup> Performance on these indexes has been monitored since FY 1995. Compared with baseline results obtained in late FY 1995 and FY 1996, VHA's compliance with the Prevention Index recommendations nearly doubled in FY 1997 (34% to 67%) and compliance with the Chronic Disease Care Index in aggregate nearly doubled in FY 1998 (44% to 85%). Performance results for FY 1999 continued to show improvement on both indexes.<sup>22</sup>

While performance data for the Prevention Index and the Chronic Disease Care Index have been tracked at VA Medical Centers, VHA has not traditionally collected such data at CBOCs. We hypothesized, therefore, that compliance with the indicators might be lower at CBOCs since EPRP performance reports and feedback comparable to that available at VAMCs were not available.

Based on the PI and CDCI indicators analyzed, it appears that CBOCs overall are providing a similar level of quality of care as the parent VA Medical Centers. The analysis showed that CBOCs in aggregate had comparable performance to the parent VA Medical Centers on all seven Prevention Index indicators and eight of nine Chronic Disease Care Index indicators. However, there was not sufficient power to detect differences in overall performance scores between the CBOCs and VAMCs of less than .06. It is not known if such differences are clinically meaningful to the quality of care provided.

The analyses also suggest that patients at some individual CBOCs may not be receiving a quality of care comparable to the care provided in the affiliated parent VAMC: a number of CBOCs had lower compliance with individual PI/CDCI guidelines and recommendations than the parent VA Medical Centers. When individual CBOC-parent VA Medical Center pairs were compared, ten out of the twenty CBOCs performed below the affiliated parent VA Medical Centers on one or more of the indicators, and five of these CBOCs were lower on 25% or more of the indicators. There are several possible explanations for the lower performance found at some CBOCs. First, most CBOCs provide predominantly primary care and therefore are more likely than parent VA Medical Centers to refer patients off-site for selected tests and specialty care. It is possible that some non-CBOC care that was received at VA Medical Centers or in the private sector was not documented or available in the VA/CBOC patient records. Second, it also is possible that new VHA users were screened for some indicators prior to initiating VHA care that were not documented in VAMC/CBOC records, such as a pneumococcal vaccination (recommended once in a lifetime) or colorectal cancer screening (colonoscopy recommended every ten years). This would have a greater effect on CBOCs than VA Medical Centers, since CBOCs have a higher percent of new VHA users. Third, since CBOC physicians are geographically removed from VA Medical Centers, they may have less access to direct information regarding VHA quality of care

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<sup>21</sup> Kizer KW. The "New VA": A National Laboratory for Health Care Quality Management. *American Journal of Medical Quality*. 1999;14:3-20.

<sup>22</sup> [vaww.npdfc.med.va.gov/performance measures](http://vaww.npdfc.med.va.gov/performance%20measures)

recommendations and expectations, and therefore may not be performing and/or not documenting care according to these expectations. In addition, CBOC-level Prevention Index and Chronic Disease Care Index data have not routinely been collected in the past, therefore administrators and health care providers have not had access to EPRP performance reports and feedback for CBOCs comparable to that available for VA Medical Centers. If, in the future, health care providers and administrators at the CBOCs are knowledgeable about VHA quality of care indexes, and are provided with baseline and followup indicator data, it is quite possible that CBOC performance may improve in parallel to improvements recently seen at VA Medical Centers.

Four PI/CDCI indicators show lower performance than others in comparing patients in CBOCs and in parent VAMCs: pneumococcal vaccination, colon cancer screening, alcohol use screening, and nutrition counseling for patients with hypertension. In the comparisons between CBOC-parent VA Medical Center pairs, these indicators had more between-facility inconsistencies than other indicators, as judged by  $\geq 20\%$  of CBOCs performing significantly lower than the parent VA Medical Centers. Future VHA efforts to improve and monitor PI/CDCI performance at CBOCs may want to place particular emphasis on monitoring these indicators.

While not statistically significant, there was a tendency for Contract CBOCs to have a lower proportion of patients passing the indicators than VA-staffed CBOCs. It is possible that the providers at Contract CBOCs might have less access to VHA quality of care standards than the providers at VA-staffed CBOCs. These potential differences in quality should be monitored. Urban and rural CBOCs, as well as old and new CBOCs, had comparable performance on all Prevention Index and Chronic Disease Care Index indicators.

### ***Summary***

In conclusion, based on the Prevention Index and Chronic Disease Care Index indicators, quality of care was not substantially different for CBOC and parent VA Medical Center patients in the overall comparisons. However, there were significant differences on at least one indicator for half of the individual CBOC-parent VA Medical Center pairs studied. This suggests that standardized quality of care data should be routinely collected at each CBOC and that CBOCs should receive performance reports and feedback comparable to that available for VA Medical Centers.

When the measures examined in this report are considered in conjunction with the performance measures presented in Performance Reports 1 and 2, CBOCs in aggregate appear to provide comparable quality of care as parent VA Medical Centers overall, as well as generate better access to care, lower total cost per patient, and greater patient satisfaction. However, for some individual CBOCs, quality of care performance fell below the affiliated parent VA Medical Centers on some indicators, suggesting that this is an area that should be closely monitored in the future. Although there are limitations of these baseline analyses that require caution in generalizing the results more broadly, these performance measures suggest that CBOCs may be a valid and promising approach for providing primary care to veterans.

## **OTHER CBOC EVALUATION PROJECT REPORTS**

CBOC Evaluation Project. *Recommended CBOC Performance Measures and CBOC Characteristics*. HSR&D Management Decision and Research Center. Department of Veterans Affairs. November 1998.

CBOC Evaluation Project. *CBOC Characteristics*. HSR&D Management Decision and Research Center. Department of Veterans Affairs. February 1999.

CBOC Performance Evaluation. *Performance Report 1: Measures Based on Austin Automation Center and Patient Survey Data*. HSR&D Management Decision and Research Center. Department of Veterans Affairs. July 1999.

CBOC Performance Evaluation. *Performance Report 2: Cost and Access Measures*. HSR&D Management Decision and Research Center. Department of Veterans Affairs. March 2000.

CBOC Performance Evaluation. *Program Implications and Future Performance Measures*. HSR&D Management Decision and Research Center. Department of Veterans Affairs. March 2000.



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March 2000.

CBOC Performance Evaluation. *Program Implications and Future Performance Measures*.  
HSR&D Management Decision and Research Center. Department of Veterans Affairs.  
March 2000.

## APPENDIX A

### Methods

#### *Data Collection*

Data for the Prevention Index and Chronic Disease Care Index indicators were obtained from patient medical records by the External Peer Review Program (EPRP).<sup>23</sup> Although EPRP has routinely conducted on-site patient record reviews at VA Medical Centers, record reviews at CBOCs have not traditionally been performed.<sup>24</sup> Therefore in order to have adequate sample size, it was necessary for EPRP to collect patient record data at the CBOCs for this study, while existing EPRP data for the same time period were used for the parent VA Medical Centers comparison group.

The abstraction period for each Prevention Index and Chronic Disease Care Index indicator was determined by national guidelines. For example, the indicator for colon cancer screening requires chart documentation of fecal occult blood testing within the past year or a sigmoidoscopy or colonoscopy within the past 10 years in patients aged 50 years or older; while the indicators for patients with hypertension require chart documentation of nutrition counseling and exercise counseling within the past 2 years.

#### *Study Sample*

The research team in conjunction with EPRP determined that it would be feasible to include twenty CBOCs and affiliated parent VA Medical Centers in the patient record review process. A CBOC was eligible if it was in operation prior to July 1998 and had a minimum of 150 veterans meeting the preliminary patient inclusion criteria (see below). CBOC type (VA-staffing vs Contract-staffing), urban vs rural location, and geographic diversity (section of the U.S.) were also considered. The final study sample included twelve VA-staffed CBOCs, eight Contract CBOCs, and the twenty affiliated parent VA Medical Centers (see Appendix C).

Patients at the twenty study CBOCs were initially selected using the Austin Automation Center (AAC) Outpatient Encounter File.<sup>25</sup> A patient was eligible if he/she met the following criteria: [1] a primary or secondary ICD-9 code for diabetes (250) and/or hypertension (401, 402, 403, 404); [2] three or more encounters at clinic stop code 301, 303, 305, 306, 309, 312, 322, or 323<sup>26</sup> at the CBOC or parent VA Medical Center during 7/98 through 6/99, including at least (a) one CBOC encounter and (b) one encounter during the second or third quarter of FY99 (1/99-6/99); and [3] a greater number of primary care

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<sup>23</sup> The External Peer Review Program (EPRP) is a part of the VHA Office of Quality and Performance.

<sup>24</sup> When EPRP identifies cases for review at a VAMC, patients who have been seen in CBOCs are not excluded, so long as they meet the VAMC sampling requirements. Therefore a small number of CBOC patients have been included in past VAMC performance reports.

<sup>25</sup> Clinical and administrative data routinely collected by each VAMC are compiled in a nationwide database housed at the Austin Automation Center (AAC).

<sup>26</sup> These clinic stop codes include the following clinics: Primary Care, General Internal Medicine, Women's, Cardiology, Endocrine/Metabolic, Diabetes, Hypertension, and Pulmonary/Chest.

encounters at the CBOC than at the affiliated parent VA Medical Center during the study period.<sup>27</sup> In order to review an adequate number of patient records for the Chronic Disease Care indicators, a sample of 150 patients with a primary or secondary diagnosis of diabetes and 150 patients with a primary or secondary diagnosis of hypertension were randomly selected from eligible patients at each CBOC, unless fewer patients met the inclusion criteria (some patients had both diagnoses). For CBOCs with less than 150 eligible patients in either diagnostic category (diabetes or hypertension), additional patients from the other category were selected when available. It was anticipated that approximately 10-15% of the selected patients would not have medical records available for abstraction at the time of the record review.

The final CBOC patient selection was done upon completion of the record review process. A CBOC patient was included in the study if all existing VA medical records were available for review (i.e., CBOC and VAMC records) and if documentation was present in his/her medical records verifying criteria #1 and #2 from the AAC file (see above).<sup>28</sup> A total of 4768 patients from the twenty CBOCs met the final selection criteria (with a median of 258 patients and a range of 114 to 277 patients per CBOC).

The comparison group included patients at parent VA Medical Centers with a medical record review during the second or third quarter of FY99 (1/99-6/99)<sup>29</sup> who met the following criteria: [1] a primary or secondary ICD-9 code for diabetes (250) and/or hypertension (401, 402, 403, 404), and [2] three or more visits at clinic stop code 301, 303, 305, 306, 309, 312, 322, or 323 during the year preceding formation of the record review pull list (1/99-6/99), including at least one visit in the month preceding formation of the list. Although the record review process at VA Medical Centers generally includes patients with ischemic heart disease and chronic obstructive pulmonary disease, parent VA Medical Center patients with these diagnoses were not included in the study because the number of CBOC patients with these diagnoses was too small for statistical analysis. Patients with an encounter at a CBOC during the preceding year were also excluded from the parent VA Medical Center sample. A total of 2433 patients from the twenty parent VA Medical Centers met the eligibility criteria (with a median of 118 patients and a range of 30 to 227 patients per VA Medical Center).

### ***Statistical Analysis***

Logistic regression was used to test the hypothesis that compliance with the Prevention Index indicators and Chronic Disease Care Index indicators was different between CBOCs versus Parent VA Medical Centers and between patients at the following types of CBOCs: 1) VA-staffed versus Contract CBOCs, 2) urban versus rural CBOCs, and 3) old versus new CBOCs. The statistical model used individual patients as the unit of analysis and generalized estimating equations (GEE) with empirical variance estimates to correct the standard errors for within-facility correlation.<sup>30,31,32</sup> A covariate for possible time effect was also included

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<sup>27</sup> Primary care clinic stop codes 301 (GIMC), 322 (Women's Clinic), 323 (Primary Care Clinic).

<sup>28</sup> Medical record documentation of clinician-entry of the specified diagnoses was required for validation of criteria #1, and documentation of visits to a clinician at the designated clinic stop codes was required for validation of criteria #2.

<sup>29</sup> EPRP uses a random sampling protocol to select patient charts at the VA Medical Centers.

<sup>30</sup> Liang KY, Zeger SL. Longitudinal data analysis using generalized linear models. *Biometrika*.

since VA Medical Center performance on the Prevention Index and Chronic Disease Care Index indicators has been generally improving over time. The significance level was set at  $p < .003$  with a Bonferroni correction for multiple comparisons ( $.003 = .05/16$ ). Case-mix adjustment was not included in the model because the analysis for each indicator was restricted to only those patients meeting eligible criteria for the intervention as defined by national clinical guidelines, i.e., age, gender, associated risk factors, and/or diagnosis, etc.<sup>33</sup>

Additional regression analyses tested whether the performance of individual CBOCs differed from the affiliated parent VA Medical Centers. The significance level was set at  $p < .00015$  with a Bonferroni correction for multiple comparisons [ $.00015 = .05/(16 \times 20)$ ].

### ***Limitations***

This study is subject to some important limitations. First, a relatively small number of CBOCs and VA Medical Centers were studied, since record reviews are costly and labor intensive. Because of the relatively small number of facilities, there was not sufficient power to detect differences in performance scores between the aggregate CBOCs and VAMCs of  $\leq .06$  and between Contract and VA-staffed CBOCs of  $\leq .15$ . It is not known if such differences are clinically meaningful or if they impact quality of care. Because of the limited sample size and the non-random selection of CBOCs, there also may be concerns about the generalizability of the results to all CBOCs in the VA system. In addition, because some facilities had a comparably small number of records reviewed, the individual CBOC-parent VAMC differences may have been underestimated.

Second, several CBOCs included in the study were in operation for a short period prior to the start of the evaluation. It is possible that performance may change once CBOCs have been operating for a longer duration.

Third, there are challenges when using record reviews to access quality of care, including possible under documentation or under abstraction of care that was provided. This may occur if complete documentation of all VA and non-VA medical care is not available in the CBOC/VA patient records. Under documentation of medical care may affect some indicators more than others. For example, the Chronic Disease Care Index indicator for diabetic patients requiring an annual eye examination by an eye specialist may be affected in particular, since such examinations are often done in the private sector. This would potentially have a greater effect on CBOCs than VA Medical Centers, since CBOCs generally offer less on-site specialty care. However, a patient can pass this indicator if there is documentation in the CBOC/VA medical record that an eye specialist was seen, or that a retinal photo was taken and sent to an eye specialist for review.

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1986;73:13-22.

<sup>31</sup> Huber PJ. The behavior of maximum likelihood estimates under non-standard conditions. In *Proceedings of the Fifth Berkeley Symposium of Mathematical Statistics and Probability*. Berkeley, CA: University of California Press. 1967;1:221-233.

<sup>32</sup> White H. Maximum likelihood estimation of misspecified models. *Econometrica*. 1982;50:1-25.

<sup>33</sup> Patients eligible and refusing a recommended PI or CDCI intervention did not effect the outcome.

A further limitation is that guidelines for the care of diabetic patients are changing, which may affect physician practices and influence performance on indicators. The CDCI indicator requiring an annual eye examination by an eye specialist is most affected once again, because of variation (every year to every two years) in clinical guidelines for the frequency of eye examinations in stable noninsulin-requiring diabetic patients. This could potentially affect Contract CBOCs more than VA-staffed CBOCs or VA Medical Centers, since contract CBOCs may be more removed from information regarding VHA quality of care guidelines and expectations.

## APPENDIX B

### The Prevention Index and Chronic Disease Care Index Indicators in the Record Review Analysis: Description, Target Conditions, Target Groups, Recommendations, Sources<sup>34</sup>

**I. Prevention Index Indicators:**<sup>35</sup> This performance measure assesses compliance with seven nationally recognized primary prevention and early detection recommendations for six diseases with major social consequences: influenza and pneumococcal diseases; tobacco consumption; alcohol abuse; and cancer of the colon and prostate. The source for this CBOC measure is the 1998 Network Directors' Performance Measures, the FY 2000 Performance Plan, and VHA Directive 97-036 CBOC Characteristic #12. The data were obtained by an external review of patient medical records at the CBOCs and parent VA Medical Centers conducted by the External Peer Review Program (EPRP). The measure was calculated by determining the proportion of veterans receiving each recommended intervention among those eligible and not refusing the intervention.

#### 1. *Pneumococcal Immunization*

- a. Target Condition. Pneumococcal pneumonia.
- b. Target Group. All veterans who are at increased risk from pneumococcal infection and veterans aged 65 years and older.
- c. Recommendation. Pneumococcal vaccine is recommended for all immunocompetent individuals aged 65 years and older or otherwise at increased risk from pneumococcal infection including:
  - (1) Institutionalized persons  $\geq$  50 years old.
  - (2) Persons with chronic cardiac or pulmonary disease, diabetes mellitus, anatomic asplenia.
  - (3) Persons who live in special environments or social settings with an identified increased risk of pneumococcal disease (e.g. certain Native American and Alaska Native populations).
- d. Indicator Sources. USPSTF 1996, and VHA Prevention Index.

#### 2. *Influenza Immunization*

- a. Target Condition. Influenza.
- b. Target Group. All veterans who are at increased risk from influenza infection and veterans aged 65 years and older.
- c. Recommendation. An annual influenza vaccination is recommended for all individuals age 65 years and older, or otherwise at increased risk for influenza, i.e.:
  - (1) Residents of nursing homes and other chronic-care facilities of any age who have chronic medical conditions.

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<sup>34</sup> VHA Health Promotion and Disease Prevention Program. *Handbook 1120.2*. Department of Veterans Affairs. Washington, DC. May 3, 1999.

<sup>35</sup> A subset of 7 out of 9 Prevention Index indicators routinely assessed by the VHA were included in the analyses. The indicators for breast cancer screening and cervical cancer screening were not evaluated because the number of eligible CBOC patient records was too small to have adequate power for valid statistical analysis.

- (2) Adults who have known chronic disorders of the pulmonary or cardiovascular systems, metabolic diseases (including diabetes mellitus), hemoglobinopathies, immunosuppression, or renal dysfunction.
- d. Indicator Sources. USPSTF 1996, Health Plan Employer Data and Information Set (HEDIS) 3.0, VHA Prevention Index, and VHA Clinical Practice Guideline for the Management of Persons with Chronic Obstructive Pulmonary Disease or Asthma, Version 1.0, 1997.

### 3. Prostate Cancer Screening Counseling

- a. Target Condition. Prostate Cancer.
- b. Target Group. All male veterans aged 50 years and older.
- c. Recommendation. All male veterans aged 50 years and older should receive annual counseling regarding potential benefits and hazards of screening for prostate cancer.
- d. Indicator Source. VHA Prevention Index.

### 4. Colorectal Cancer Screening

- a. Target Condition. Colorectal Cancer.
- b. Target Group. All veterans aged 50 years and older.
- c. Recommendation. All persons aged 50 years and older should receive an annual fecal occult blood test or undergo a sigmoidoscopy every 5 years or colonoscopy every 10 years.
- d. Indicator Sources. USPSTF 1996, VHA Prevention Index, and American Gastroenterological Association 1997.

### 5. Tobacco Use Screening

- a. Target Conditions. Cancer, pulmonary, and cardiovascular disease.
- b. Target Group. All veterans.
- c. Recommendation. All veterans should be screened annually for tobacco use, and counseling offered to those who use tobacco.
- d. Indicator Sources. USPSTF 1996, HEDIS 3.0, and VHA Prevention Index.

### 6. Tobacco Use Cessation Counseling

- a. Target Conditions. Cancer, pulmonary, and cardiovascular disease.
- b. Target Group. All veterans reporting tobacco use.
- c. Recommendation. All veterans reporting tobacco use should be offered smoking cessation counseling.
- d. Indicator Sources. USPSTF 1996, HEDIS 3.0, and VHA Prevention Index.

### 7. Alcohol Use Screening

- a. Target Condition. Problem alcohol drinking.
- b. Target Group. All veterans.
- c. Recommendation. Veterans should be asked each year to describe their use of alcohol. The use of a standardized screening questionnaire is recommended. High-risk patients should receive alcohol counseling.
- d. Indicator Sources. USPSTF 1996, and VHA Prevention Index.



**II. Chronic Disease Care Index Indicators:**<sup>36</sup> This performance measure assesses compliance with nine nationally recognized guidelines for three high volume diagnoses: hypertension, diabetes mellitus, and obesity. The source for this CBOC measure is the 1998 Network Directors' Performance Measures and the FY 2000 Performance Plan. The data were obtained by an external review of patient medical records at the CBOCs and parent VA Medical Centers conducted by the External Peer Review Program (EPRP). The measure was calculated by determining the proportion of veterans receiving each recommended intervention among those eligible and not refusing the intervention.

1. *Hypertension - Nutrition (Weight control and nutrition screening and counseling)*
  - a. Target Conditions. Hypertension.
  - b. Target Group. All veterans with hypertension.
  - c. Recommendation. Veterans should have access to counseling to limit dietary intake of fat and cholesterol, maintain caloric balance and emphasize foods containing fiber.
  - d. Indicator Sources. USPSTF 1996, and VHA Chronic Disease Care Index.
2. *Hypertension - Exercise (Physical activity screening and counseling)*
  - a. Target Condition. Hypertension.
  - b. Target Group. All veterans with hypertension.
  - c. Recommendation. Veterans should be encouraged annually to engage in a program of physical activity tailored to their health status and personal life style. Veterans should have access to counseling regarding optimizing their level of physical activity.
  - d. Indicator Sources. USPSTF 1996, and VHA Chronic Disease Care Index.
3. *Obesity - Nutrition (Weight control and nutrition screening and counseling)*
  - a. Target Conditions. Obesity.
  - b. Target Group. All veterans with obesity.
  - c. Recommendation. Veterans should receive height and weight measurements every 2 years. Veterans should have access to counseling to limit dietary intake of fat and cholesterol, maintain caloric balance and emphasize foods containing fiber
  - d. Indicator Sources. USPSTF 1996, and VHA Chronic Disease Care Index.
4. *Obesity - Exercise (Physical activity screening and counseling)*
  - a. Target Conditions. Obesity.
  - b. Target Group. All veterans with obesity.
  - c. Recommendation. Veterans should be encouraged annually to engage in a program of physical activity tailored to their health status and personal life style. Veterans should have access to counseling regarding optimizing their level of physical activity.
  - d. Indicator Sources. USPSTF 1996, and VHA Chronic Disease Care Index.

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<sup>36</sup> A subset of nine out of fourteen CDCI indicators routinely assessed by the VHA were included in the analyses. The three indicators for ischemic heart disease (IHD) and two indicators for chronic obstructive pulmonary disease (COPD) were not evaluated because the number of eligible CBOC patient records was too small to have adequate power for valid statistical analysis.

5. *Diabetes Mellitus - Foot Inspection*

- a. Target Conditions. Foot complications associated with diabetes mellitus.
- b. Target Group. All veterans with diabetes mellitus.
- c. Recommendation. Annual foot examination for all veterans with diabetes mellitus that includes examination of skin. Those veterans whose feet are at risk of infection or injury should be fitted with protective footwear or referred to a foot specialist.
- d. Indicator Sources. VHA Chronic Disease Care Index, and VHA Clinical Guidelines for Management of Patients with Diabetes Mellitus, 1997.

6. *Diabetes Mellitus - Pedal Pulses*

- a. Target Conditions. Vascular foot complications associated with diabetes mellitus.
- b. Target Group. All veterans with diabetes mellitus.
- c. Recommendation. Annual foot examination for all veterans with diabetes mellitus that includes examination of pulses. Those veterans whose feet are at risk of infection or injury should be fitted with protective footwear or referred to a foot specialist.
- d. Indicator Sources. VHA Chronic Disease Care Index, and VHA Clinical Guidelines for Management of Patients with Diabetes Mellitus, 1997.

7. *Diabetes Mellitus - Foot Sensory Exam*

- a. Target Conditions. Neurologic foot complications associated with diabetes mellitus.
- b. Target Group. All veterans with diabetes mellitus.
- c. Recommendation. Annual foot examination for all veterans with diabetes mellitus that includes sensory examination. Those veterans whose feet are at risk of infection or injury should be fitted with protective footwear or referred to a foot specialist.
- d. Indicator Sources. VHA Chronic Disease Care Index, and VHA Clinical Guidelines for Management of Patients with Diabetes Mellitus, 1997.

8. *Diabetes Mellitus - Retinal Eye Exam*

- a. Target Condition. Diabetic retinopathy.
- b. Target Group. All veterans with diabetes mellitus.
- c. Recommendation. Annual eye examination for all veterans with diabetes mellitus.
- d. Indicator Sources. HEDIS 3.0, VHA Chronic Disease Care Index, and VHA Clinical Guidelines for Management of Patients with Diabetes Mellitus, 1997.

9. *Diabetes Mellitus - Hemoglobin A1c*

- a. Target Condition. Glycemic control in diabetes mellitus.
- b. Target Group. All veterans with diabetes mellitus.
- c. Recommendation. All veterans with diabetes mellitus receive an annual measurement of Hemoglobin A1c (HbA1c).
- d. Indicator Sources. VHA Chronic Disease Care Index, and VHA Clinical Guidelines for Management of Patients with Diabetes Mellitus, 1997.

## APPENDIX C

**Table 4: CBOCs and VA Medical Centers in the Record Review Analysis for Quarter 2 & Quarter 3 of FY 1999**

VISN	CBOC Station #	CBOC Name	CBOC Type	Urban/ Rural	1 <sup>st</sup> Veteran Visit at CBOC	# Eligible Records at CBOC*	Parent VA Medical Center	# Eligible Records at VAMC**
1	608GA	VA Primary Care Clinic (Portsmouth) Pease Air National Guard Base	VA-staffed	Urban	Mar-97	265	Manchester VAMC	64
2	500GC	Glen Falls Primary Care Practice	Contract	Urban	Oct-97	245	Albany VAMC	146
2	670GE	Binghamton CBOC	VA-staffed	Urban	Dec-96	258	Syracuse VAMC	135
3	527GA	Staten Island Veterans Health Care Center	VA-staffed	Urban	Jan-96	233	Brooklyn VAMC	101
4	460GA	VA Primary Care Clinic, Millsboro	Contract	Rural	Mar-98	254	DVA Medical and Regional Office, Wilmington	98
7	619GB	VA Outpatient Clinic, Dothan	Contract	Urban	Dec-97	272	Central Alabama VA HCS	80
8	516GA	Sarasota CBOC	VA-staffed	Urban	May-97	258	Bay Pines VAMC	118
8	548GA	Ft. Pierce CBOC	Contract	Urban	Jun-98	235	West Palm Beach VAMC	118
9	603GA	Veterans Fort Knox Clinic	VA-staffed	Rural	Feb-98	264	Louisville VAMC	112
10	541GB	DVA CBOC, Lorain	VA-staffed	Urban	Sep-97	274	Cleveland VAMC	168
12	537HA	Woodlawn Clinic, Chicago	VA-staffed	Urban	Oct-95	210	VA Chicago HCS, West Side	74
14	584GB	Waterloo Outpatient Clinic	VA-staffed	Urban	Jan-98	260	Iowa City VAMC	208
16	598GA	Mountain Home CBOC	Contract	Rural	Apr-98	265	VA Central Arkansas HCS, Little Rock	123
17	549GA	Camp Fannin CBOC, Tyler	Contract	Urban	Jun-97	114	VA North Texas HCS	182
17	674HA	Hamilton CBOC	Contract	Rural	Apr-95	153	VA Central Texas HCS	227
18	519HC	VA Medical Clinic in Abilene	VA-staffed	Rural	Dec-95	259	Big Spring VAMC	30
18	678GB	Yuma CBOC	VA-staffed	Urban	Oct-97	167	Tucson VAMC	79
19	436GC	Missoula Primary Care Clinic	VA-staffed	Rural	Jun-97	269	VA Montana HCS	73
22	605GA	Victorville CBOC	Contract	Urban	Jul-97	277	Jerry L. Pettis Memorial VAMC, Loma Linda	142
22	691GC	Gardena CBOC	VA-staffed	Urban	May-97	236	VA Greater LA HCS	155

\* The total number of records reviewed at each CBOC and eligible for the study is listed in the table. The number of records from each CBOC included in the analysis for each indicator was determined by the number of patients eligible for that indicator, and ranged from 31 to 277 for the PI indicators and from 42 to 254 for the CDCI indicators.

\*\* The total number of records reviewed at each VAMC and eligible for the study is listed in the table. The number of records from each VAMC included in the analysis for each indicator was determined by the number of VAMC patients eligible for that indicator, and ranged from 5 to 227 for the PI indicators and from 13 to 182 for the CDCI indicators.