Supplemental material for

McFarland BH, Deck DD, McCamant LE, Gabriel RM, Bigelow DA (2005): Outcomes for Medicaid clients with substance abuse problems before and after managed care. Journal of Behavioral Health Services and Research 32:351-367.

APPENDIX

Detailed results of regression analyses

Retention in treatment

Simple logistic regression (Table 2) showed that older patients, those in the expansion group, and those in towns (as opposed to rural communities) were more likely to be retained in treatment. Conversely, the severity score strongly predicted early treatment drop-out. Although there was a trend for patients from the after (managed care) group to be retained in treatment longer than the fee for service subjects, this main effect was not statistically significant.

Eligibility (i.e., length of Medicaid eligibility in the year following intake) was a powerful predictor of treatment retention. Moreover, there was a significant interaction between before versus after (managed care) status and eligibility. Retention was substantially higher among after (managed care) subjects (versus fee for service patients) for clients who had only one month of Medicaid eligibility following treatment initiation. However, this difference was not found for subjects with 12 months of Medicaid eligibility (see Figure 1).

Simple logistic regression for the propensity score matched sample indicated that older patients and those in the expansion group were more likely to be retained. Subjects in rural areas

(versus urban residents) were also more likely to be retained. Again, Medicaid eligibility strongly predicted retention in treatment while the severity score was negatively related to retention. The odds ratios for eligibility and severity were closer to unity than those in the un-stratified sample but remained statistically significant. The stratified logistic regression for the propensity score matched sample indicated that older patients were slightly more likely to be retained in treatment as were those with greater eligibility duration or lower severity. The before versus after (managed care) indicator was not a significant predictor of treatment retention in the simple logistic regression using the propensity score matched sample nor in the stratified logistic regression (Table 2).

Figure 2 shows the Forrest plot as well as the fixed effects and random effects models for treatment retention. The Q statistic for heterogeneity among health plans was not statistically significant (chi-squared = 4.87 with six degrees of freedom). Therefore, the fixed effects and random effects models are identical and show that the before versus after (managed care) parameter is not statistically significant.

Completion of treatment goals

The simple logistic regression for completion of treatment goals indicated that older patients, whites, rural residents (versus urban dwellers) and those from the expansion category were more likely to complete (Table 2) although the coefficient for the expansion category indicator variable was not statistically significant. Eligibility was a strongly positive predictor of treatment completion whereas severity was negatively related to completion. People from the after (managed care) group were more likely to complete treatment. Again, there was a statistically significant interaction between the before versus after indicator and eligibility. There was also a statistically significant interaction between the before versus after indicator and the expansion category indicator. The

implication here is that expansion clients were more likely to complete treatment in the managed care era than in the fee for service era. Enrollees in Health Plan 1 (not for profit) were less likely to complete treatment than those in the reference group while those in Health Plan 2 (for profit) were more likely to complete treatment.

The simple logistic regression for the propensity score matched sample indicated that older individuals and whites were more likely to complete treatment (Table 2). Eligibility remained a powerful predictor of completion and severity continued to be negatively related to completion. Patients from the after (managed care) group were more likely to complete treatment. Enrollees in Health Plan 1 (not for profit) were less likely to complete treatment than those in the reference group. In addition, patients in stratum 2 were less likely to complete treatment that those in stratum 1. The results from the stratified logistic regression were quite similar to the simple logistic regression for the propensity score sample although the odds ratios were closer to unity (Table 2).

Figure 3 shows the Forrest plot as well as the fixed effects and random effects models for completion of treatment goals. The Q statistic for heterogeneity among health plans was not statistically significant (chi-squared = 3.86 with six degrees of freedom). Therefore, the fixed effects and random effects models are identical. The models show that the treatment completion rate was higher in the after (managed care) group compared to the before (fee for service) patients ($p = .03$).

Abstinence at discharge

The simple logistic regression for abstaining from the primary drug in the month preceding discharge indicated that older patients, whites, rural (versus urban) residents, and those from the expansion category were more likely to abstain from substance use (Table 2). Subjects who were Medicaid eligible a higher proportion of the year following intake were much more likely to abstain

from drug use as were people with lower severity index scores. People in the managed care group were more likely to abstain from drug use. Enrollees in Health Plan 3 (not for profit) were more likely to abstain from drug use than those in the reference group. Again, there was a statistically significant interaction between the before versus after indicator and Medicaid eligibility. Another statistically significant interaction term suggested that enrollees in Health Plan 3 were more likely to be abstinent in the fee for service era (versus their Health Plan 3 counterparts in the managed care era). The simple logistic regression for the propensity score matched sample had similar results to the simple logistic regression for the whole sample except that age was no longer a statistically significant predictor. The stratified logistic regression indicated that whites, those who were Medicaid eligible a higher proportion of the year following intake, patients with lower severity scores, and those from the after (managed care) group were more likely to abstain from drug use (Table 2).

Figure 4 shows the Forrest plot as well as the fixed effects and random effects models for abstinence at discharge. Here the Q statistic for heterogeneity among health plans showed a trend toward marginal statistical significance (chi-squared = 9.62 with six degrees of freedom, $p = .16$). Heterogeneity appears chiefly due to Health Plan 3 (a large, not for profit, carve-out system). Consequently, the fixed effects and random effects models are different. The random effects model shows that (overall) abstinence was more likely in the after (managed care) group versus the fee for service patients ($p = .02$).

Readmission to treatment.

The simple logistic regression for being readmitted in the 12 months following discharge from the index episode indicated that older patients were readmitted less often than younger subjects

(Table 2). There was a trend for those in towns to be readmitted slightly less often than those in rural areas while subjects in urban areas were readmitted more often than people in rural areas. Patients who were Medicaid eligible a higher proportion of the year following intake and those with higher severity index scores were much more likely to be readmitted. Individuals who were in publicly funded chemical dependency programs during the 24 months prior to treatment were more likely to be readmitted. Patients from the after (managed care) group were more likely to be readmitted than fee for service subjects. Enrollees in Health Plan 6 (a not for profit, integrated system) were more likely to be readmitted than those in the reference group. However, there was a statistically significant interaction between the before versus after indicator and the marker for Health Plan 6. This interaction showed a reduction for readmission rates in Health Plan 6 during the managed care era. There was also a statistically significant interaction between the indicators for before versus after managed care and residence in town suggesting an increase in readmission rates for town dwellers after managed care.

The simple logistic regression for the propensity score matched sample indicated that those who were older were slightly less likely to be readmitted as were white patients. Conversely, members of the expansion category and those with publicly funded chemical dependency services during the 24 months prior to treatment were more likely to be readmitted. Patients in the after (managed care) group were more likely to be readmitted. People who were Medicaid eligible a higher proportion of the year following intake and those with higher severity index scores were much more likely to be readmitted. Individuals in stratum 9 were less likely to be readmitted than those in stratum 1. The results from the stratified logistic regression indicated that individuals in the expansion category, those who were Medicaid eligible a higher proportion of the year following intake, and those with publicly funded substance abuse services during the 24 months prior to

treatment were more likely to be readmitted. Moreover, patients from the after (managed care) group were also more likely to be readmitted. Not surprisingly, patients with higher severity index scores were much more likely to be readmitted (Table 2).

Figure 5 shows the Forrest plot as well as the fixed effects and random effects models for readmission to substance abuse treatment in the 12 months following discharge from the index episode. In this case, the Q statistic for heterogeneity among health plans was statistically significant (chi-squared = 12.44 with six degrees of freedom, $p = .05$). Heterogeneity appears largely due to Health Plan 5 (not for profit). The implication here is that readmission rates declined over time for Health Plan 5 enrollees whereas the rates increased for members of other health plans. Consequently, the fixed effects and random effects models are different. The random effects model shows that (overall) readmission was less in the before (fee for service) group versus the after (managed care) patients ($p = .007$).