Center for Healthcare Improvement for Addictions, Mental Illness and Medically Vulnerable Populations
"Research & Training to Improve Clinical Care"

HARBORVIEW MEDICAL CENTER
UW Medicine

WASHINGTON STATE UNIVERSITY
SPOKANE

EVALUATION OF THE GENERAL ASSISTANCE MANAGED CARE PILOT IN KING AND PIERCE COUNTIES FOR THE PERIOD JANUARY 2008 THROUGH SEPTEMBER 2009[1]

TECHNICAL REPORT

Jutta M. Joesch, PhD[a], Robert Short, PhD[b], David Mancuso, PhD [c], Toni Krupski, PhD[a], Peter Roy-Byrne, MD[a], and John Roll, PhD[b]

Center for Healthcare Improvement for Addictions, Mental Illness and Medically Vulnerable Populations (CHAMMP), Department of Psychiatry and Behavioral Sciences, University of Washington (UW) at Harborview Medical Center, Seattle, WA[a]

Program of Excellence in Rural Mental Health & Substance Abuse Treatment (RMHSAT), Washington State University College of Nursing, Spokane, WA[b]

Research and Data Analysis Division (RDA)[c]
Washington State Department of Social and Health Services, Olympia, WA

In Collaboration with

Beverly Court, PhD
Medicaid Purchasing Agency (MPA)
Washington State Department of Social and Health Services, Olympia, WA

Erin Hafer and Betsy Jones
Community Health Plan of Washington (CHPW), Seattle, WA

And

Jürgen Unützer, MD, MPH
UW Department of Psychiatry and Behavioral Sciences, Seattle, WA

January 14, 2011

[1] Funding for this project was made possible in part by the Mental Health Transformation State Incentive Grant Award No. 6 U79 SM57648 from the Substance Abuse and Mental Health Services Administration (SAMHSA) to the State of Washington. The views expressed in association with this project do not necessarily reflect the official policies of the U.S. Department of Health and Human Services, nor does the mention of trade names, commercial practices, or organizations imply endorsement by the U.S. government. Preparation was also supported by the Washington State University Program of Excellence in the Addictions.

Introduction

The state-funded Washington State General Assistance-Unemployable (GA-U) Program provides cash and medical benefits to working-age adults who meet specific income, resource, and citizenship rules. To be eligible, an applicant also must be physically or mentally incapacitated and unable to work for at least 90 days at the time of their application to the program. In April 2010, the program became known as Disability Lifeline (DL), however, the term "GA-U" is used throughout this report to reflect the terminology in place for all but a few months of the period under study.

According to an analysis of individuals who received a GA-U cash grant in 2003[2], a high proportion of GA-U clients have chronic physical conditions, mental illness, and/or substance abuse problems. GA-U clients as a group are expensive users of inpatient hospital services, and those with mental illness and/or substance abuse are relatively frequent visitors to hospital emergency rooms. In 2003, half of Washington State Department of Social and Health Services (DSHS) spending on GA-U clients was for medical costs alone[3].

In response to high medical costs and longstanding concerns that GA-U clients lacked a medical home and lacked access to adequate preventive care, mental health care, and substance abuse treatment services, the legislature authorized a managed care benefit for GA-U clients. The managed care payment covers primary medical care services, but not medical or psychiatric hospital or state mental hospital costs. Such costs are covered through fee-for-service payments made directly to hospitals by the Medicaid Purchasing Agency, Washington State Department of Social and Health Services. The legislative intent of the GA-U managed medical care pilot was to maximize GA-U clients' care coordination and high-risk medical and chronic care management to achieve better health outcomes and ultimately savings in hospital inpatient services. King and Pierce Counties were identified as the pilot counties for this managed medical care benefit. The benefit came into effect in December 2004 and became operational in January 2005. Enrollment in the pilot was mandated for all GA-U participants residing in the two counties.

On January 1, 2008, a mental health benefit was added to the managed medical care benefit. Here the legislative intent was to improve the mental health status of GA-U clients and to have a positive impact on their primary care physician visits, emergency room utilization, and prescription drug utilization, creating health care cost savings for the state.

The approach that was used to implement the mental health benefit is referred to as the Mental Health Integration Program (MHIP). MHIP is based on a model of collaborative and stepped-care, developed and tested at the University of Washington Department of Psychiatry and Behavioral Sciences.[4] Mental health treatment is provided in primary care clinics, where care coordinators assess clients for mental health conditions. In addition, care coordinators support primary care providers in caring for client mental health needs in consultation with a psychiatrist.

---

[2] Mancuso, D., Nordlund, D., & Felver, B. E. M. (August 2006). *GA-U Clients: Challenges and Opportunities. A look at the General-Assistance-Unemployable Population.* Olympia, WA: Research and Data Analysis Division, Department of Social and Health Services. Report 6.54.

[3] Ibid

[4] Unutzer, J., Katon, W., Callahan, C.M., Williams, J.W., Hunkeler, E., et. al. (2002). Collaborative care management of late-life depression in the primary care setting. A randomized controlled trial. *Journal of the American Medical Association, 288* (22), 2836-2845.

Report Purpose
The purpose of this report is to describe the impact of the managed medical care/mental health benefits on state costs, on the health and well-being of GA-U clients, and on the use of related social services by GA-U recipients in King and Pierce Counties over the twenty-one month period, January 2008 through September 2009. Four sets of analyses were conducted, all but one comparing GA-U clients in the pilot counties with GA-U clients in the comparison counties of Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark Counties. All analyses were based on information extracted from administrative data sources. A brief report of findings is contained in a separate document, which is available from the authors.

Evaluation Questions
As described earlier, GA-U clients are a complex population with multiple, disparate, and often serious co-occurring problems and health care needs. To capture the impact of the medical care/mental health benefits on this complex population, a comprehensive evaluation was designed. Four evaluation questions were posed to examine a broad set of outcomes that may be impacted by the managed medical care/mental health benefits. The questions address different aspects of potential impacts, using somewhat different analytic approaches. Given these differences, the results cannot necessarily be expected to be consistent across analyses. Each evaluation question is described below. The pattern of results across evaluation questions and their interpretation is addressed in the discussion section.

Evaluation Question #1: What is the impact of the managed medical care and mental health benefits on state costs, health service utilization, mental health service utilization, and criminal justice system utilization on ***all*** *GA-U clients in King and Pierce Counties*?

Answers to this question describe what happens to GA-U clients as a group when managed medical care/mental health benefits are provided. This question is of particular relevance to policy makers who are interested in whether this publicly-funded program results in decreased costs, as well as decreases in avoidable and expensive health care use among clients who have the benefits available, whether they use them or not. Evaluation Question #1 is examined with monthly data from all GA-U clients in the pilot counties versus comparison counties that are similar, but do not provide the benefits. The ***unit of analysis*** for Evaluation Question #1 ***is a county-group month***.

Only about one-third of GA-U clients are estimated to have mental health problems[5]. Examining the impacts of the managed medical care and mental health benefits on **all** GA-U clients may therefore not detect changes resulting from the benefits. The focus on all GA-U clients could, thus, lead to the mistaken conclusion that the managed medical care/mental health benefits were not effective for GA-U clients with mental health service needs. To avoid this potential pitfall, a second evaluation question examines the impact on GA-U clients who have evidence of mental illness in either their medical record or in the incapacity review[6] each client receives when applying for GA-U benefits.

---

[5] Mancuso, D., Nordlund, D., & Felver, B.E.M. (2006). *GA-U Clients: Challenges and Opportunities. A look at the General-Assistance-Unemployable Population*. Olympia, WA: Research and Data Analysis Division, Department of Social and Health Services. Report 6.54. Although documented in the above report, the estimate that 36% of GA-U clients have mental health problems is based on diagnostic claims data which may under-report the actual prevalence.
[6] An incapacity review is conducted as part of the process for determining eligibility for GA-U status. It includes diagnostic information regarding an individual's mental and physical health.

Evaluation Question #2: What is the impact of the managed medical care and mental health benefits on state costs, health service utilization, mental health service utilization, and criminal justice system utilization *on* ***all*** *GA-U clients in King and Pierce Counties* ***with evidence of mental illness in their medical record and/or in their GA-U incapacity review***?

By focusing on GA-U clients with evidence of mental illness, results of analyses related to this question will provide a picture of what happens to the subset of GA-U clients with mental illness when managed medical care/mental health benefits are provided, whether such clients use the benefits or not. This evaluation question is also examined with data whose ***unit of analysis is a county-group month***.

It is likely that only a subset of GA-U clients with mental illness will actually use the mental health benefit being offered in King and Pierce Counties. As such, results for Question #2 may underestimate the impact of the managed medical care/mental health benefits on **clients who use** the benefits and, as in Evaluation Question #1, mistakenly lead to the interpretation that the benefits were not effective. In an attempt to overcome this potential issue, Evaluation Question #3 focuses on impacts the managed medical care and mental health benefits may have on clients who received mental health services through the benefits.

Evaluation Question #3: What is the impact of the managed medical care and mental health benefits on state costs, health service utilization, mental health services utilization, and criminal justice system utilization on *GA-U in King and Pierce Counties* ***who actually received*** *mental health services through the managed medical care and mental health benefits*?

Evaluation Question #3 compares GA-U clients in King and Pierce Counties who received services through the managed medical care and mental health benefits with GA-U clients outside of King and Pierce Counties who had evidence of mental illness and were similar in other important respects, but who were neither enrolled in managed medical care nor received mental health services through the mental health benefit. For this question, ***the unit of analysis is the individual.*** The data used to address Evaluation Question #3 follow GA-U clients for up to one year after their mental health assessment. This follow-up time makes it possible to measure outcomes beyond the (often) brief time a client spends in the GA-U program. It is important to note, however, that results from Evaluation Question #3 cannot be extrapolated to the entire GA-U population as the analyses, by definition, focus on a select subgroup of GA-U clients in King and Pierce Counties.

Evaluation Question #4: Among GA-U clients who obtain mental health services provided by the managed medical care/mental health benefits, what proportion shows meaningful improvement in mental health symptoms?

The strength of this fourth evaluation question is that it focuses on the treatment progress of GA-U clients who received mental health services. However, equivalent clinical outcome data are not available for GA-U clients who did not receive the benefits. Thus, of the four questions addressed in this evaluation, the results of this last question are methodologically the weakest. It will, therefore, not be possible to attribute changes in client mental health symptoms unequivocally to the mental health services provided through the managed medical care and mental health benefits.

Method

Sample. As noted, we obtained data for two groups of GA-U clients: GA-U clients residing in King and Pierce Counties ('pilot group') and GA-U clients residing in Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark Counties ('comparison group'). Evaluation Question #1 is addressed with data from **all** GA-U clients residing in the pilot and comparison counties. For Evaluation Question #2, data were obtained for all GA-U clients in these counties with evidence of mental illness in either their incapacity review or in their medical record prior to being accepted into the GA-U program. Evaluation Question #3 uses data from GA-U clients who received mental health services through the managed medical care and mental health benefits in King and Pierce counties and data from matched GA-U clients in the comparison counties. The matching procedure is described below (see Data Analysis section). Clients enrolled in the Mental Health Integration Program (MHIP) are the focus of Question #4.

Data availability necessitated the use of different time periods to address the evaluation questions. In particular, Evaluation Question #1 is based on data from January 1, 2005 through September 30, 2009; Evaluation Questions #2 and #3 are addressed with data from January 1, 2007 through September 30, 2009; and Evaluation Question #4 with data from clients who enrolled in MHIP between January 1, 2008 and December 30, 2009. Outcome data for this latter group of clients cover the time period through November 2010.

Data Sources. The primary source of data for this evaluation is the state DSHS Research and Data Analysis (RDA) Client Outcomes Database (CODB). The CODB contains data from a number of state administrative databases, including the Medicaid Management Information System (MMIS)/Provider One (from the State Medicaid Purchasing Agency (MPA)); the Treatment and Assessment Report Generating Tool (TARGET) (from the state Division of Behavioral Health and Recovery (DBHR); outpatient mental health service utilization and inpatient psychiatric service utilization records (from DBHR and MPA); state arrest records (from Washington State Patrol (WSP)); death records (from state Department of Health (DOH)); and long-term care service utilization (from the state Aging and Disability Services Administration (ADSA)). Evaluation Question #4 is addressed with data from the Mental Health Integrated Tracking System (MHITS), an integral part of the collaborative care model that was used to implement the mental health benefit. MHITS is a web-based clinical tracking system for clients enrolled in MHIP. The system is used by clinicians as part of their routine clinical work to record client contacts, treatment recommendations, and treatment results.

Dependent Variables. Several cost measures were used to assess the impact of the managed medical care and mental health benefits. They include total Medicaid Medical costs, outpatient emergency department (ED) costs, and the costs of medical and psychiatric inpatient stays. Cost data represent average cost per member per month (PMPM). However, depending on the evaluation question, the averages are computed differently. For Question #1, for each month the average is calculated for each county-group by dividing cost incurred in the county-group during the month by the number of GA-U clients in the county-group during the same month. This approach is also used for Questions #2, except that data are only for GA-U clients with evidence of mental health illness.

For Question #3, the unit of analysis is the individual. Prior to obtaining mental health services through the benefits, GA-U clients were assessed for mental health needs. The index month for the treatment group was the assessment month, while the index month for the comparison group was randomly assigned according to the empirical distribution of index months observed in the

treatment group prior to constructing pre-period measures for the matching process. Data were obtained for the 12 consecutive months prior to the index month (pre-period) and for the 12 consecutive months starting with the index month (post-period). Average costs PMPM were calculated for each 12-month period, except for clients who did not have Medicaid eligibility for the entire 12 months. Their average costs were computed based on the number of months with eligibility. Additional outcome measures represent average per member per month service utilization expressed as "per 1,000 member months" (outpatient ED use, inpatient medical, and inpatient psychiatric), number of arrests, and proportion of clients experiencing homelessness and improvement in the symptom severity of depression and anxiety. Depression symptom severity is measured with the Patient Health Questionnaire-9 (PHQ-9)[7] and anxiety symptom severity with the Generalized Anxiety Disorder Assessment GAD-7[8]. As with costs, medical care utilization averages are based on the number of months a client was Medicaid-eligible during the 12-month time windows.

Data Analysis. Evaluation Questions #1 - #3 are addressed with a difference-of-differences design. This design compares the time period in King and Pierce Counties when the managed medical care benefit was available to GA-U clients with the time period after the mental health benefit had been added to the managed care benefit. In addition to the pre/post comparison for King and Pierce counties, the difference-of-differences approach compares the same time periods in other urban counties unaffected by these benefits. This additional comparison is conducted to avoid attributing effects to the managed medical care and mental health benefits that are the result of other changes, such as secular trends in the cost of health care. Besides the difference-of-differences design, the intent-to-treat principle is applied to Questions #1 and #2. Intent-to-treat analyses estimate the effects of providing a new benefit, rather than its effects among those who use it. Following this principle, *all* GA-U clients in King and Pierce Counties are included in the analysis, regardless of whether they used the benefits. For both questions, data are analyzed with the method of generalized estimating equations (GEE).

The analyses for Evaluation Question #3 focus on GA-U clients who received mental health services. These clients are compared with GA-U clients in counties without the managed medical care and mental health benefits, but who were similar in other respects to the King and Pierce County sample. For each client who received services, a matched client was identified, using 1:1 nearest-neighbor matching. Matching was implemented with the SAS-callable R algorithm "Matchit"[9]. In addition to requiring an exact match on gender, matching criteria included age and race, measures of physical and mental health, physical and mental health care, alcohol and drug treatment utilization, history of homelessness, arrest, and employment, and months of Medicaid eligibility and GA-U medical coverage prior to receiving mental health services. The matching variables and their means are summarized in Appendix A by intervention and comparison group. As can be seen from the table, the match between the groups was, for the most part, very close.

---

[7] Kroenke, K., Spitzer, R.L., & Williams, J.B., (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*(9): 606–613.
[8] Spitzer, R.L., Kroenke, K., Williams, J.B,. & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder. *Archives of Internal Medicine,* 166:1092-1097.
[9] Ho, D.E., Imai, K., King, G., and Stuart, E.A. (in press). MatchIt: Nonparametric preprocessing for parametric causal inference. Forthcoming, *Journal of Statistical Software.*

For the third question, estimates were derived with Generalized Linear Models (GLM), adjusted for clustering. The clustering is due to having two observations per client: one from the time before the mental health assessment was done and another one from the time after it took place.
The estimates are also adjusted for age, gender, evidence of alcohol/drug treatment need in the time before the mental health service need assessment was conducted, evidence of mental illness in the pre-period and of a primary or secondary diagnosis of mental illness in the client's incapacity review. In addition, these analyses are weighted to take into account that clients were observed for different lengths of time within the 12 month-window before and after the mental health needs assessment was carried out.

Inferences for the first three questions are based on estimates of an interaction term, specifically, the magnitude of the estimate and whether it is significantly different from zero ($p < 0.05$). For the first two questions, the interaction term is constructed by multiplying indicators of county group and the post-intervention time period; for the third question, it is created by multiplying indicators of a client receiving mental health services and time after the mental health need assessment.

Analyses for Evaluation Question #4 are based on King and Pierce County GA-U clients who received mental health services provided by the managed medical care/mental health benefits and had data in MHITS. There is no comparison group. Analyses consist of means and cross-tabulations.

Results

The results in this section are organized to address the four evaluation questions described earlier in this report.

Evaluation Question #1

Evaluation Question #1 is designed to provide a picture of what happens to ***all GA-U clients*** in pilot counties when managed medical care/mental health benefits ***are available***, whether clients use the benefits or not. Analyses were conducted to determine whether overall Medicaid medical, inpatient, outpatient ED, or psychiatric inpatient costs were impacted by the availability of benefits in the pilot counties compared to similar counties where such benefits were not available.

Results of these analyses are summarized in Table 1a. In general, average PMPM costs for both the pilot and comparison counties increased during the three years before the managed medical care and mental health benefits were available and the twenty-one months after. Tests of statistical significance indicated that these cost increases were not significantly different for the two county groups.

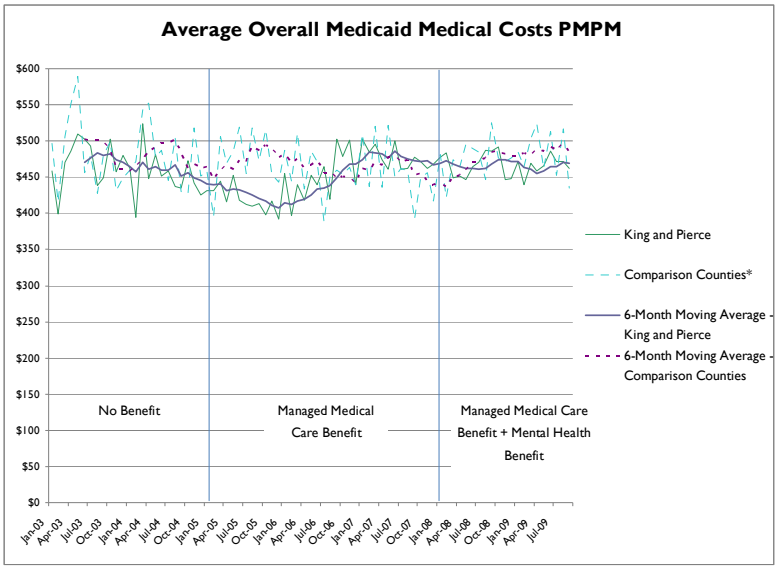
Table 1a. Average PMPM costs for GA-U clients in King-Pierce Counties ('pilot counties') and GA-U clients in counties where managed medical care/mental health benefits were not available ('comparison counties'). Time periods reflect the three years before the mental health benefit went into effect and the twenty-one months after.

Variable	Location	Before 12/04–12/07 Average	After 1/08–9/09 Average	Difference[1]	Difference-of-Differences	p
Average PMPM Overall Medicaid Medical Costs	King-Pierce Comparison Counties[2]	$448 $463	$467 $479	+ $19 + $16	$ 3	0.83
Average PMPM Inpatient Medical Costs	King-Pierce Comparison Counties	$ 90 $ 86	$ 97 $ 88	+ $ 7 + $ 2	$ 5	0.52
Average PMPM Outpatient ED Costs	King-Pierce Comparison Counties	$ 43 $ 44	$ 49 $ 51	+ $ 6 + $ 7	- $ 1	0.65
Average PMPM Inpatient Psychiatric Costs	King-Pierce Comparison Counties	$ 8 $ 5	$ 12 $ 10	+ $ 4 + $ 5	- $ 2	0.42

[1] A positive difference indicates average costs increased during the three years before and the twenty-one months after the mental health benefit became available, a negative difference indicates that average costs decreased.
[2] Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

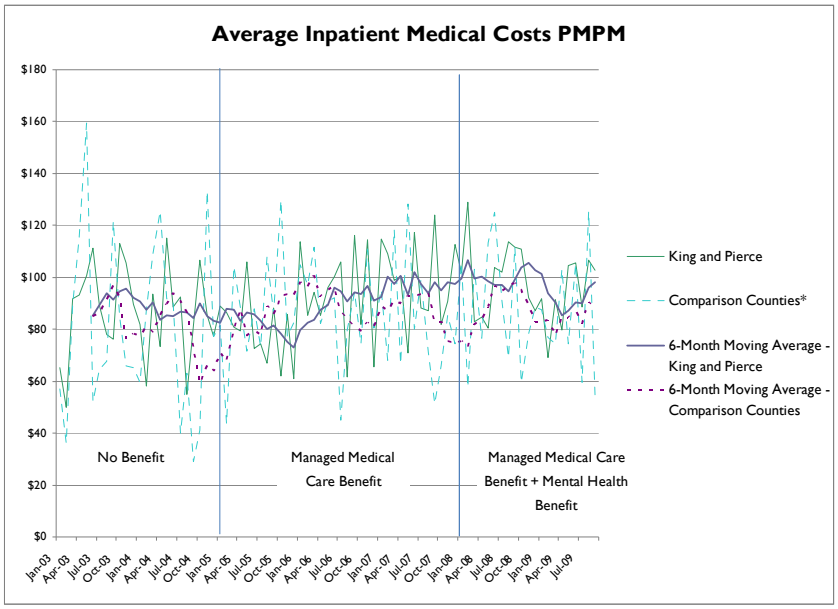
In order to examine possible trends that might not be captured by averages displayed in Table 1a, monthly average PMPM costs for each variable are shown in Figures 1 through 4. These graphs cover three distinct time periods. The time period before either benefit had been introduced, the time period when only the managed medical care benefit was available, and the time period after the mental health benefit had been added to the managed care benefit. For the most part, these graphs also suggest no evidence of difference between the pilot and comparison counties, with the exception of outpatient ED costs. This one case suggests that average PMPM ED costs increased in the comparison but not pilot counties between January 2009 and September 2009. In the face of no significant statistical difference, this latter apparent trend should be interpreted with caution at this time. Nonetheless, it is a trend that will be important to monitor in the future.

Figure 1. **All GA-U clients**: Average monthly PMPM overall Medicaid medical costs for pilot and comparison counties for the five years before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



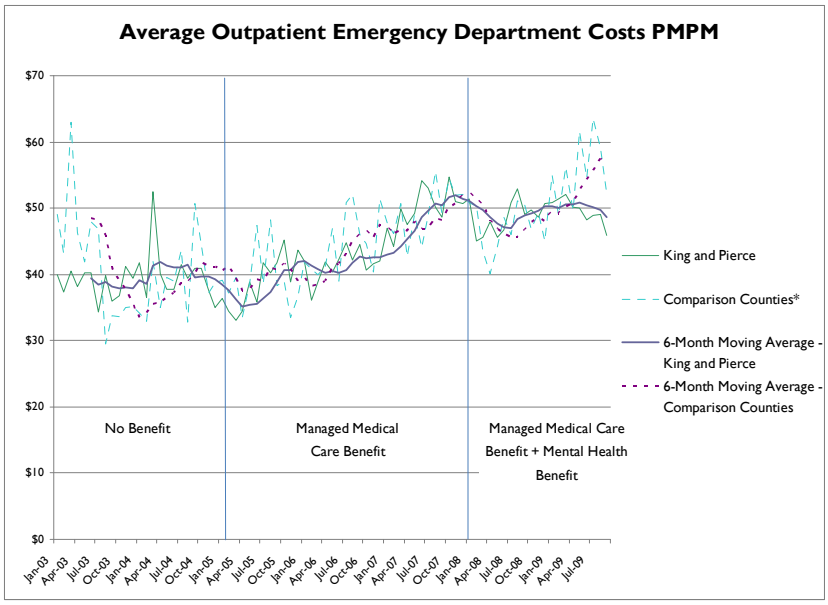
* Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Figure 2. **All GA-U clients**: Average monthly PMPM inpatient medical costs for pilot and comparison counties for the five years before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



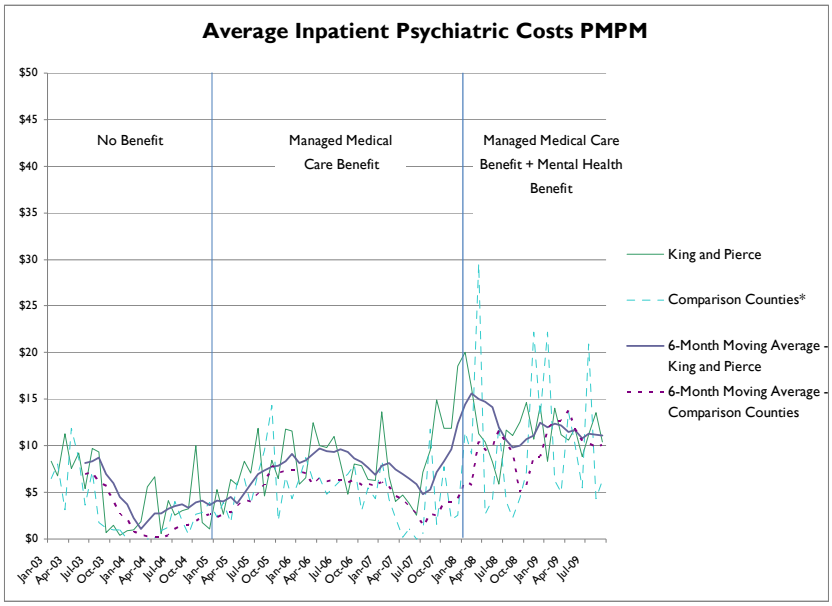
* Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Figure 3. **All GA-U clients**: Average monthly PMPM outpatient emergency department costs for pilot and comparison counties for the five years before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



*Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Figure 4. **All GA-U clients**: Average monthly PMPM inpatient psychiatry costs for pilot and comparison counties for the five years before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



*Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Results of healthcare utilization analyses are summarized in Table 1b. As can be seen from the table, pilot and comparison counties did not differ significantly in changes regarding inpatient medical admissions, outpatient ED visits, and inpatient psychiatric admissions when only the managed medical care benefit was in effect compared to the time period after the mental health benefit became available.

Table 1b. Average health care utilization per 1,000 member months (MM) for GA-U clients in King-Pierce Counties ('pilot counties') and GA-U clients in counties where managed medical care/mental health benefits were not available ('comparison counties'). Time periods reflect the three years before the mental health benefit went into effect in pilot counties and the twenty-one months after.

Variable	Location	Before 12/04–12/07 Average	After 1/08–9/09 Average	Difference[1]	Difference-of-Differences	p
Average Inpatient Medical Admissions per 1,000 MM	King-Pierce Comparison Counties[2]	23 20	20 19	- 3 - 1	-1[3]	0.17
Average Outpatient ED Visits per 1,000 MM	King-Pierce Comparison Counties	158 166	166 180	+ 8 +14	-6	0.15
Average Inpatient Psychiatric Admissions per 1,000 MM	King-Pierce Comparison Counties	3 2	3 2	0 0	0	0.90

[1] A positive difference indicates average utilization increased between the three years before and the twenty-one months after the mental health benefit became available, a negative difference indicates that average utilization decreased.
[2] Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.
[3] Due to rounding, row and column figures do not always add exactly.

Results of analyses of other service utilization are summarized in Table 1c. For both pilot and comparison counties, the percent of GA-U clients receiving chemical dependency services was higher after the mental health benefit went into effect compared to the time period before it went into effect. This increase was greater in the pilot counties than in the comparison counties. Although this difference is statistically significant, the percentages are so close that the difference may be of little practical significance.

Table 1c. Percentage of GA-U clients in King-Pierce Counties ('pilot counties') and in counties where managed medical care/mental health benefits were not available ('comparison counties') who received chemical dependency treatment services or who were living in shelters or outdoors. Time periods reflect the three years before the mental health benefit went into effect in pilot counties and the twenty-one months after.

Variable	Location	Before 12/04–12/07 Average	After 1/08–9/09 Average	Difference[1]	Difference-of-Differences	p
Received Chemical Dependency Treatment	King-Pierce Comparison Counties[2]	6.8% 6.2%	8.6% 7.7%	+1.8 +1.5	0.3	0.019*
Homeless[3]	King-Pierce Comparison Counties	32% 21%	36% 25%	+4 +4	0	0.752

* Statistically significant at $p<.05$
[1] A positive difference indicates the outcome increased between the three years before and the twenty-one months after the mental health benefit became available, a negative difference indicates that it decreased.
[2] Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.
[3] Includes living in shelters, outdoors, or temporarily with friends

Evaluation Question #2

Evaluation Question #2 is more targeted than Evaluation Question #1 in that it ***focuses on GA-U clients with evidence of mental illness.*** The question is designed to assess the impact of the ***availability*** of the managed medical care and mental health benefits on state costs, regardless of whether clients used the benefits or not. Analyses were conducted to determine whether overall Medicaid medical, inpatient, outpatient ED, or psychiatric inpatient costs were impacted by the availability of the benefits in the pilot counties compared to similar counties where the benefits were unavailable.

Results of these analyses are summarized in Table 2a. Average PMPM overall Medicaid medical, inpatient medical, and outpatient ED costs decreased somewhat for pilot counties after the managed medical care and mental health benefits were available, while these costs either increased or stayed the same in comparison counties. Inpatient psychiatric costs increased in both pilot and comparison counties, but to a somewhat lesser extent in the pilot counties. Although these averages, taken together, are suggestive of decreasing costs in the pilot counties relative to comparison counties, only the comparison for inpatient psychiatric costs was found to be statistically significant.

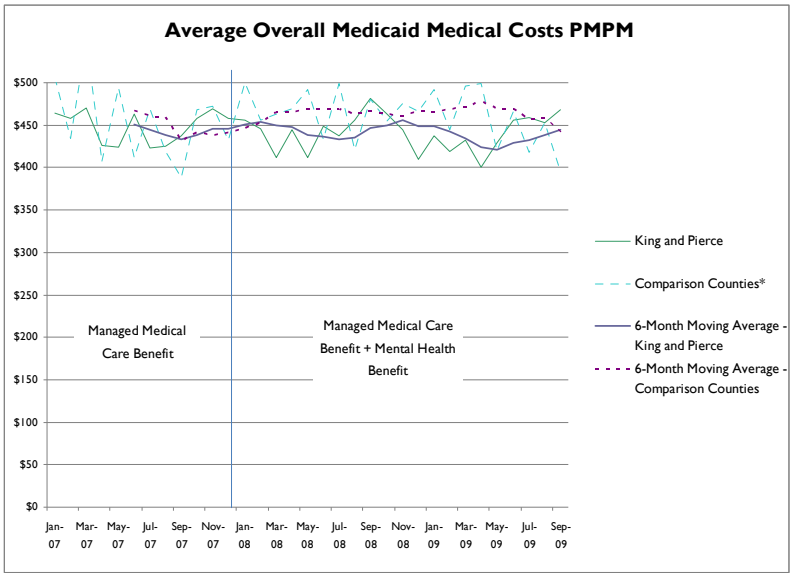
Table 2a. Average PMPM costs for GA-U clients in King-Pierce Counties ('pilot counties') with evidence of mental illness and for similar GA-U clients in counties where managed medical care/mental health benefits were not available ('comparison counties'). Time periods reflect the year before the mental health benefit went into effect in pilot counties and the twenty-one months after.

Variable	Location	Before 1/07–12/07 Average	After 1/08–9/09 Average	Difference[1]	Difference-of-Differences	p
Average PMPM Overall Medicaid Medical Costs	King-Pierce Comparison Counties[2]	$448 $454	$441 $461	- $ 7 + $ 7	- $14	0.36
Average PMPM Inpatient Medical Costs	King-Pierce Comparison Counties	$ 90 $ 73	$ 84 $ 73	- $ 6 $ 0	- $ 6	0.62
Average PMPM Outpatient ED Costs	King-Pierce Comparison Counties	$ 60 $ 63	$ 57 $ 63	- $ 3 $ 0	- $ 3	0.22
Average PMPM Inpatient Psychiatric Costs	King-Pierce Comparison Counties	$ 14 $ 6	$ 17 $ 16	+ $ 3 + $10	- $ 7	0.045*

* Statistically significant at p<.05
[1] A positive difference indicates average costs increased between the year before and the twenty-one months after the mental health benefit became available, a negative difference indicates that average costs decreased.
[2] Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

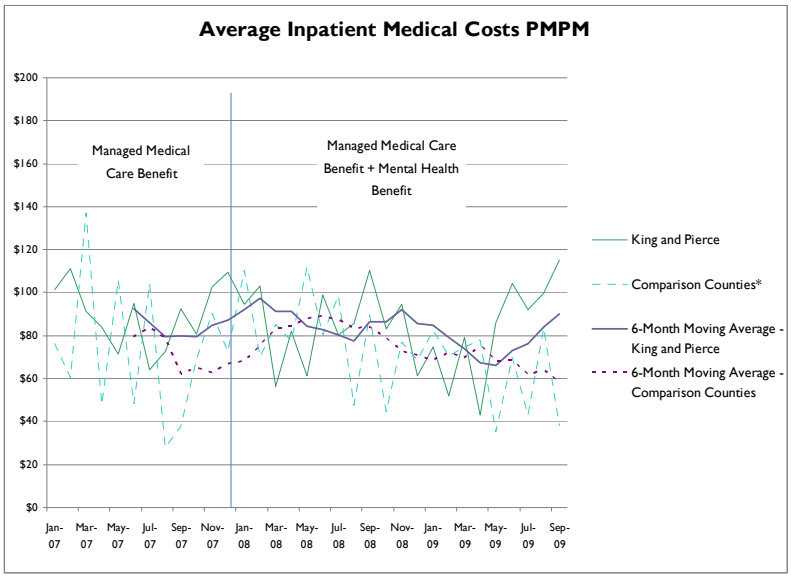
In order to examine possible trends that might not be captured by averages displayed in Table 2a, monthly average PMPM costs for each variable are shown in Figures 5 through 8. For the most part, these graphs indicate no evidence of difference between the pilot and comparison counties, except for inpatient medical (see Figure 6) and outpatient ED costs (see Figure 7). With respect to average inpatient medical PMPM costs, Figure 6 suggests that comparison counties costs may have **de**creased between April 2009 and September 2009, while pilot counties costs **in**creased for the same time period. With respect to average outpatient ED PMPM costs, Figure 7 suggests comparison county costs increased between August 2008 and September 2009, while costs in the pilot counties remained relatively constant or decreased over this same time period. However, in the face of no significant statistical difference, these apparent trends should be interpreted with caution at this time. Nonetheless, they are trends that will be important to monitor in the future.

Figure 5. **GA-U clients with evidence of mental illness:** Average monthly PMPM overall Medicaid medical costs for pilot and comparison counties for the year before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



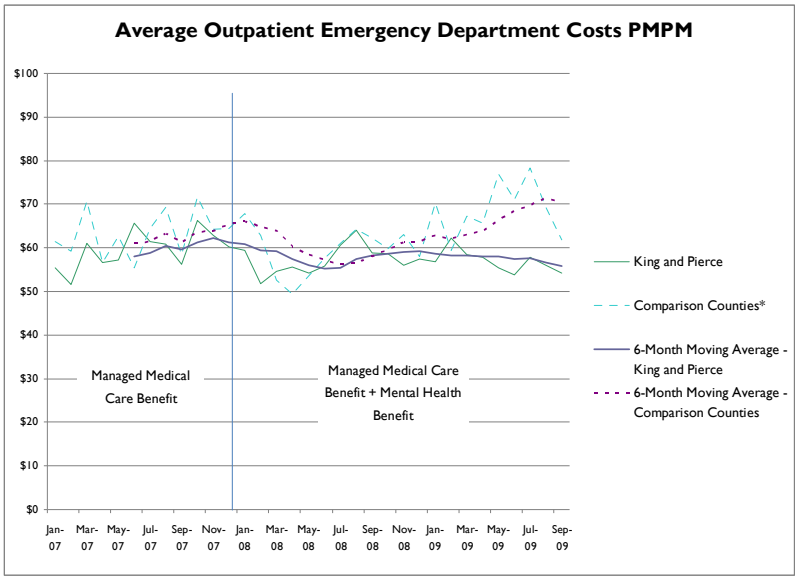
* Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Figure 6. **GA-U clients with evidence of mental illness:** Average monthly PMPM inpatient medical costs for pilot and comparison counties for the year before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



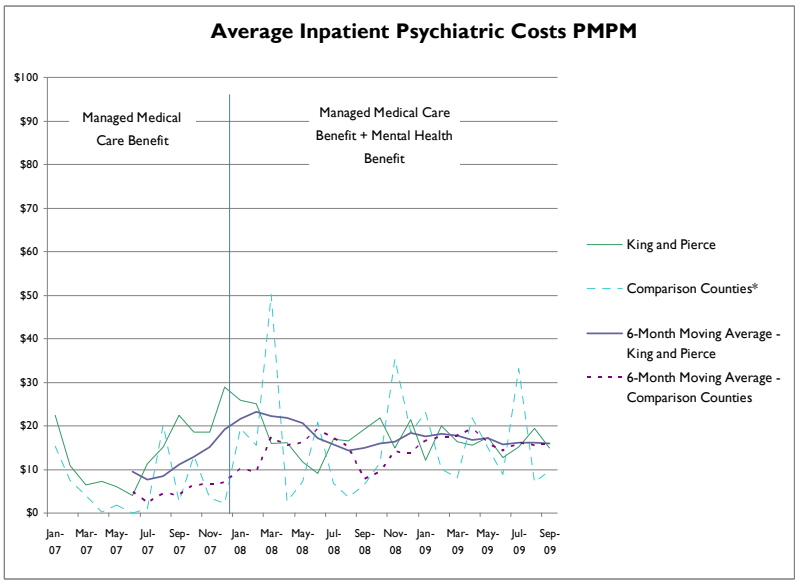
* Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark
.

Figure 7. **GA-U clients with evidence of mental illness:** Average monthly PMPM outpatient emergency department costs for pilot and comparison counties for the year before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



* Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Figure 8. **GA-U clients with evidence of mental illness:** Average monthly PMPM inpatient psychiatry costs for pilot and comparison counties for the year before the mental health benefit became available and the twenty-one months after; the heavy lines represent a 6-month moving average.



* Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Results of health care utilization analyses are summarized in Table 2b. There was one significant finding among GA-U clients with evidence of mental illness: inpatient medical admissions went down to a greater extent in pilot counties after the mental health benefit went into effect. There was

also a trend for a somewhat lower increase in inpatient psychiatric admissions in pilot counties (33% increase) relative to comparison counties (50% increase) ($p<.08$). Although not statistically significant, this result is consistent with finding a smaller increase in inpatient psychiatric costs in pilot relative to comparison counties (See Table 2a).

Table 2b. Average healthcare utilization per 1,000 member months (MM) for GA-U clients in King-Pierce Counties ('pilot counties') with evidence of mental illness and similar GA-U clients in counties where managed medical care/mental health benefits were not available ('comparison counties'). Time periods reflect the year before the mental health benefit went into effect in pilot counties and the twenty-one months after.

Variable	Location	Before 1/07–12/07 Average	After 1/08–9/09 Average	Difference[1]	Difference-of-Differences	p
Average Inpatient Medical Admissions per 1,000 MM	King-Pierce	23	19	- 4	-4	0.008*
	Comparison Counties	18	18	0		
Average Outpatient ED Visits per 1,000 MM	King-Pierce	200	196	-4	-6	0.22
	Comparison Counties	220	222	+2		
Average Inpatient Psychiatric Admissions per 1,000 MM	King-Pierce	3.3	3.9	+0.6	-0.8	0.08#
	Comparison Counties	2.0	3.4	+1.4		

* Statistically significant at $p<.05$
# Not statistically significant at $p<.05$, but indicative of a trend toward significance
[1] A positive difference indicates average utilization increased between the year before and the twenty-one months after the mental health benefit became available, a negative difference indicates that average utilization decreased.
[2] Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.

Results of analyses of additional variables are summarized in Table 2c. There was one significant finding—the percent of clients living in homeless shelters or outdoors was stable before and after the mental health benefit was implemented in the pilot counties, but increased in comparison counties.

Table 2c. Percentage of GA-U clients in King-Pierce Counties ('pilot counties') with evidence of mental illness and percentage of similar GA-U clients in counties where managed medical care/mental health benefits were not available ('comparison counties') who received chemical dependency treatment services or who were living in shelters, outdoors, or temporarily with friends. Time periods reflect the year before the mental health benefit went into effect in pilot counties and the twenty-one months after.

Variable	Location	Before 1/07–12/07 Average	After 1/08–9/09 Average	Difference[1]	Difference-of-Differences	p
Received Chemical Dependency Treatment	King-Pierce	10%	11%	+ 1	0	0.50
	Comparison Counties	9%	10%	+ 1		
Homeless[3]	King-Pierce	40%	40%	0	-1.0	0.002*
	Comparison Counties	28%	29%	+ 1		

* Statistically significant at $p<.05$
[1] A positive difference indicates the outcome increased between the year before and the twenty-one months after the mental health benefit became available, a negative difference indicates that it decreased.
[2] Comparison counties were Whatcom, Skagit, Snohomish, Kitsap, Thurston, and Clark.
[3] Includes living in shelters, outdoors, or temporarily with friends.

Evaluation Question #3

Evaluation Question #3 is designed to compare GA-U clients in King and Pierce Counties who received services through the managed medical care and mental health benefits with similar GA-U clients outside of King and Pierce Counties who had no access to these benefits. Analyses assess the impact on state health care costs, utilization of health services, and utilization of other social services.

With the data available for the present analyses, it was not possible to determine the proportion of GA-U clients who obtained mental health services through the benefits. According to a recent master's thesis[10], between January 1, 2008 and October 31, 2009 there were 19,703 unique GA-U clients in King and Pierce Counties. Of these, 4,948 were enrolled in MHIP, representing approximately 25% of ***all*** GA-U clients. However, as discussed earlier, only 36% of all GA-U clients are estimated to have mental health problems severe enough to require mental health treatment (19,703 x 0.36 = 7,093 clients). If 7,093 GA-U clients were ***in need of mental health treatment*** during the period under study and 4,948 actually obtained services provided by the mental health benefit, approximately 70% of those in need received services.

Results of cost analyses are summarized in Table 3a. Although average overall Medicaid medical and inpatient medical PMPM costs increased for GA-U clients in both groups, they appeared to increase more for clients in the comparison group. However, these results were not statistically significant. Average outpatient ED and inpatient psychiatric PMPM costs did not change appreciably within 12 months after the mental health benefit began.

Table 3a. Average PMPM costs for GA-U clients in King-Pierce Counties who received services through the managed medical care and mental health benefits ('treatment group') with similar GA-U clients in counties where the benefits were not available ('comparison group').

Variable	Group	Pre-Period[1] Average	Post-Period[2] Average	Difference[3]	Difference-of-Differences[4]	p
Average PMPM Overall Medicaid Medical Costs	Treatment Comparison	$451 $464	$567 $611	+ $116 + $147	- $ 22	0.54
Average PMPM Inpatient Medical Costs	Treatment Comparison	$ 91 $ 96	$134 $173	+ $ 43 + $ 77	- $ 30	0.30
Average PMPM Outpatient ED Costs	Treatment Comparison	$ 52 $ 53	$ 52 $ 54	$ 0 + $ 1	- $ 1.24	0.75
Average PMPM Inpatient Psychiatric Costs	Treatment Comparison	$ 17 $ 14	$ 18 $ 13	+ $ 1 - $ 1	+ $ 1.05	0.85

[1] The pre-period represents the 12 months before a client's index month. For clients with less than 12 months Medicaid eligibility, average costs are based on number of months with eligibility.
[2] The post-period represents 12 consecutive months starting with the client's index month For clients with less than 12 months Medicaid eligibility, average costs are based on number of months with eligibility.
[3] A positive difference indicates that costs increased in the post-period compared to the pre-period; a negative difference indicates that costs decreased.
[4] Difference-of-difference estimates are adjusted for age, gender, evidence of alcohol/drug treatment need in the time prior to obtaining mental health services, evidence of mental illness in the pre-period, primary or secondary diagnosis of mental illness in client's incapacity review, and weighted by length of time client was observed. In addition, due to rounding, row and column figures do not always add exactly.

[10] Hafer, E. (2010). Improving mental health care for safety net populations: An examination of the General Assistance-Unemployable Mental Health Integration Pilot. Unpublished master's thesis, University of Washington, Seattle, Washington.

Results of health care utilization analyses are summarized in Table 3b. As can be seen from the table, there are no significant differences between treatment and comparison groups with respect to changes in outpatient ED use or inpatient admissions between the time period before and after the mental health benefit went into effect. However, although not quite statistically significant at $p<.05$, there was less of an increase in days spent in state hospitals for GA-U clients who received mental health services than for GA-U clients who did not receive such services.

Table 3b. Average health care utilization per 1,000 member months (MM) for GA-U clients in King-Pierce Counties who received services through the managed medical care and mental health benefits ('treatment group') and similar GA-U clients in counties where the benefits were not available ('comparison group').

Variable	Group	Pre-Period[1] Average	Post-Period[2] Average	Difference[3]	Difference-of-Differences[4]	p
Average Hospital Admissions through the ED per 1,000 MM	Treatment Comparison	11.8 11.3	11.5 12.9	-0.3 +1.6	- 1.6	0.38
Average Hospital Admissions Not through the ED per 1,000 MM	Treatment Comparison	6.6 8.5	6.1 8.5	-0.5 0	- 0.4	0.84
Average Outpatient ED Visits per 1,000 MM	Treatment Comparison	175 182	164 187	-11 5	- 16	0.17
Days in State Hospitals	Treatment Comparison	0.06 0.06	0.08 0.36	+ 0.02 + 0.30	- 0.28	0.06#

[1] The pre-period represents the 12 months before a client's index month . For clients with less than 12 months Medicaid eligibility, average utilization is based on number of months with eligibility.
[2] The post-period represents 12 consecutive months starting with the client's index month. For clients with less than 12 months Medicaid eligibility, average utilization is based on number of months with eligibility.
[3] A positive difference indicates that the outcome increased in the post-period compared to the pre-period; a negative difference indicates that it decreased.
[4] Difference-of-difference estimates are adjusted for age, gender, evidence of alcohol/drug treatment need in the time prior to obtaining mental health services, evidence of mental illness in the pre-period, primary or secondary diagnosis of mental illness in client's incapacity review, and weighted by length of time client was observed. In addition, due to rounding, row and column figures do not always add exactly.

Results of other utilization analyses are summarized in Table 3c. This set of analyses resulted in two significant differences. Specifically, GA-U clients who received mental health treatment through the benefits were less likely to be living in shelters or outdoors relative to GA-U clients in the comparison group. In addition, GA-U clients who received mental health treatment, on average, had fewer arrests than GA-U clients in the comparison group.

Table 3c. Number of arrests, chemical dependency treatment, homelessness, and days in state hospitals for GA-U clients in King-Pierce Counties who received services through the managed medical care and mental health benefits ('treatment group') and similar GA-U clients in counties where the benefits were not available ('comparison group').

Variable	Group	Pre-Period[1] Average	Post-Period[2] Average	Difference[3]	Difference-of-Differences[4]	P
Number of Arrests	Treatment Comparison	0.42 0.41	0.32 0.42	- 0.10 + 0.01	- 0.10	0.000*
Received Chemical Dependency Treatment	Treatment Comparison	18% 19%	20% 21%	+ 2 + 2	1.11[5]	0.28*
Homeless[6]	Treatment Comparison	8% 8%	12% 16%	+ 4 + 8	0.75[7]	0.000*

* Statistically significant at p<.05.
# Not statistically significant at p<.05, but indicative of a trend toward significance.
[1] The pre-period represents the 12 months before a client's index month.
[2] The post-period represents 12 consecutive months starting with the client's index month.
[3] A positive difference indicates that the outcome increased in the post-period compared to the pre-period; a negative difference indicates that it decreased.
[4] Difference-of-difference estimates are adjusted for age, gender, evidence of alcohol/drug treatment need in the time prior to obtaining mental health services, evidence of mental illness in the pre-period, primary or secondary diagnosis of mental illness in client's incapacity review, and weighted by length of time client was observed. In addition, due to rounding, row and column figures do not always add exactly.
[5] The estimate reflects the odds of receiving chemical dependency treatment for GA-U clients who received mental health services through the managed medical care and mental health benefits compared to GA-U clients without those benefits.
[6] Includes living in shelters or outdoors.
[7] The estimate reflects the odds of being homeless for GA-U clients who received mental health services through the managed medical care and mental health benefits compared to GA-U clients without those benefits.

Evaluation Question #4

Two types of mental health symptoms were tracked. Changes in depression symptoms were measured with the nine-item Patient Health Questionnaire (PHQ-9), and changes in anxiety symptoms were measured with the seven-item General Anxiety Disorder (GAD-7). Changes of 5-points or more between baseline and most recent score were used as a measure of adequate response to treatment[11].

Results revealed that, overall, 28% of clients who received services through the mental health benefit had a 5-point or greater reduction in depression symptoms and 23% had such a reduction in anxiety symptoms. Clients with more severe levels of depression and anxiety at baseline were more likely to get better. See Table 4.

[11] http://www.depression-primarycare.org/clinicians/toolkits/materials/forms/phq9/treatment_response/

Table 4. GA-U clients with ≥ 5-Point Reduction in PHQ-9 or GAD-7 score by baseline symptom severity

First Score	Total n	Had ≥ 5-Point Reduction	
		n	%
PHQ-9			
10 to 14 (Mild)	907	166	18
15 to 19 (Moderately Severe)	1,158	328	28
≥ 20 (Severe)	1,461	481	33
Total	**3,526**	**975**	**28**
GAD-7			
5 to 9 (Mild)	626	45	7
10 to 14 (Moderate)	869	159	18
≥ 15 (Severe)	1,771	451	25
Total	**2,640**	**610**	**23**

Discussion

This evaluation of the General Assistance Managed Care Pilot was designed to examine the impact of the managed medical care and mental health benefits by answering four different questions. Taken together, the results of the four analyses provide a comprehensive picture of the effect of the benefits on state costs, service utilization, and the well-being of GA-U clients.

Evaluation Question #1: What is the impact of the managed medical care and mental health benefits on state costs, health service utilization, mental health service utilization, and criminal justice system utilization on ***all*** *GA-U clients in King and Pierce Counties*?

The first analysis focused on changes in costs and service utilization for **all** GA-U clients in the pilot counties relative to comparison counties. Although impacts detected at this level of analysis would be the most compelling evidence for effectiveness of the benefits, they are also the least likely to emerge. This is because only a subset of all GA-U clients has mental health problems (estimated at approximately 1/3), so any change in this group would be unlikely to be large enough to impact cost and utilization of all GA-U clients in the pilot counties. Moreover, only a subset of GA-U clients with mental health issues obtained mental health services provided by the benefits. As such, it is unlikely that this analysis would find county differences. In fact, results revealed neither overall medical cost savings nor reductions in medical utilization for the GA-U population as a whole. One exception is the following difference between pilot and comparison counties.

After the mental health benefit went into effect, the percent of GA-U clients receiving chemical dependency services was higher compared to the time period before it went into effect. This increase was greater in pilot counties (from 6.8% to 8.6%--a 26% increase) than in comparison counties (from 6.2% to 7.7%--a 24% increase). Although this difference is statistically significant ($p<.02$), the percentages are so similar that the result may be of little practical significance. The direction of difference—increased admissions to chemical dependency treatment for pilot counties—is what one would expect, if the benefits were successfully providing better coordination of care across systems.

Evaluation Question #2: What is the impact of the managed medical care and mental health benefits on state costs, health service utilization, mental health service utilization, and criminal justice system utilization *on* ***all*** *GA-U clients in King and Pierce Counties* ***with evidence of mental illness in their medical records and/or in their GA-U incapacity review***?

The second analysis also focused on changes in costs and service utilization with county-level data but, in this case, only on the subset of GA-U clients with evidence of mental illness. This analysis was designed to assess the impact of the availability of the managed medical care and mental health benefits regardless of whether clients used the benefits. Results of these analyses indicated that overall costs were not impacted. However, one component of cost was— average PMPM inpatient psychiatric costs.

After the mental health benefit went into effect, both pilot and comparison counties showed an increase in inpatient psychiatric costs for GA-U clients with evidence of mental illness, however the 21% increase in pilot counties was significantly less than the 167% increase in the comparison counties ($p<.05$). Complementing this finding was a trend indicating a somewhat lower increase in inpatient psychiatric utilization in pilot counties (33% increase) relative to comparison counties (50%

increase). This latter finding did not achieve statistical significance at the conventional $p<.05$ level, but did show a trend ($p<.08$), which will be important to monitor in the future.

In addition to inpatient psychiatric costs and utilization, pilot and comparison counties also differed in inpatient medical admissions ($p<.01$) for GA-U clients with evidence of mental illness. After the mental health benefit came into effect, there was a 17% decrease in GA-U clients' PMPM inpatient medical admissions in pilot counties compared to no change in comparison counties, although there was not a corresponding difference in acute care hospital costs.

Important goals of the GA-U managed medical care and mental health benefits were to impact the cost and utilization of expensive inpatient medical and inpatient psychiatric services. The results based on all GA-U clients with evidence of mental illness are supportive of relatively improved utilization of both, as well as decreased costs of inpatient psychiatric services. Thus, it appears that the pilot may have been successful in achieving two of its goals. Cost-effectiveness of the mental health benefit was not addressed in the analyses reported here, as it was beyond the scope of the current project.

Finally, there is evidence from the analyses based on GA-U clients with evidence of mental illness that the percent of homeless clients was stable at 40% before and after the mental health benefit was implemented in the pilot counties, but increased by 4% in comparison counties, from 28% to 29% ($p<.002$). In this analysis, homelessness was defined as living in shelters, outdoors, or temporarily with friends.

Evaluation Question #3: What is the impact of the managed medical care and mental health benefits on state costs, health service utilization, mental health services utilization, and criminal justice system utilization on *GA-U clients in King and Pierce Counties* ***who actually received*** *mental health services through the managed medical care and mental health benefits*?

This third analysis focused on GA-U clients who actually received mental health services through the benefits. As such, it represents the approach which is potentially most sensitive to the benefits' impact, if such impacts exist. It is important to keep in mind that results of these analyses cannot be extrapolated to the entire GA-U population, as they are based on a select subgroup of the GA-U population.

Although results of analyses related to this question did not reveal significant impacts on state costs or medical service utilization, two results emerged as statistically significant and one emerged as a trend. Among GA-U clients who received mental health services, the average number of arrests *decreased* by 24% (from 0.42 to 0.32) during the year after mental health services were obtained, while the average *increased* 2% (from 0.41 to 0.42) among those who did not receive services. This result was statistically significant ($p<.001$). Given that GA-U clients are known to have a high rate of criminal justice activity (relative to Medicaid Disabled clients), especially if they have an alcohol/drug problem[12], such a reduction in arrests may reflect that the receipt of mental health services through the mental health benefit is having a positive impact on public safety.

[12] Mancuso, D., Nordlund, D., & Felver, B. E. M. (2007). *Arrests among Working-Age Disabled Clients. The Role of Mental Illness and Substance Abuse.* Olympia, WA: Research and Data Analysis Division, Washington State Department of Social and Health Services. Report 11.132

A second finding was related to homelessness. The proportion of GA-U clients living in homeless shelters or outdoors increased by 50%, from 8% to 12%, among GA-U clients who received mental health services, but it increased by 100% among clients who did not receive services (from 8% to 16%). This finding is similar to, but somewhat more robust, than the finding reported for Evaluation Question 2, suggesting it may be a reliable effect of providing managed medical care and mental health benefits.

The third finding that emerged from analyses of GA-U clients who received mental health services was a trend related to differences in days spent in state hospitals. For both pilot and comparison clients, there was an increase in state hospital days after the mental health benefit went into effect. However, the 33% increase for pilot clients who received mental health services (from .06 to .08) was less than the 500% increase for clients who did not receive such services (from .06 to .36). Although not statistically significant at a conventional level, this finding represents a trend ($p<.06$) that will be important to monitor in the future. State hospital day data were not available to examine for Evaluation Questions #1 or #2.

Evaluation Question #4: Among GA-U clients who participate in mental health services provided by the mental health benefit, what proportion show meaningful improvement in mental health symptoms?

The strength of this evaluation question is that it focuses on individuals who took advantage of the mental health benefit and follows these individuals closely. The weakness is that it is not possible to tell what proportion of clients would have improved without mental health services provided by the mental health benefit, as there is no comparison group. Results suggest that, overall, 28% of clients who received services through the mental health benefit had a 5-point or greater reduction in depression symptoms and 23% had such a reduction in anxiety symptoms. Clients with more severe levels of depression and anxiety at baseline were more likely to get better.

Strengths and Limitations

An important strength of the evaluation approach adopted in this study is its comprehensiveness. Four evaluation questions were designed to examine the impact on different subsets of the GA-U population using somewhat different analytic methods. Variations in results across evaluation questions are to be expected given these differences. The four evaluation questions made it possible to provide a richer description of outcomes that can be associated with the managed medical care/mental health benefits than could have been revealed with a single question.

Analytical limitations are unavoidable in empirical analyses. The approach used to examine Evaluation Questions #1 and #2 is subject to the limitation that GA-U clients in the comparison counties may differ from GA-U clients in King and Pierce Counties in ways that impact the cost and utilization of medical care and other social services. In addition, the opportunity to obtain medical and mental health care, social services, or housing may differ across the two county groups, or may have changed differentially during the time periods considered here. The approach used for Evaluation Question #3 avoids the problem of differences in characteristics to the extent that the matching criteria capture GA-U client characteristics that are important to assess true medical care costs, utilization, and the other outcomes of interest. However, the analyses answer a different question, namely, the impact on clients who received mental health services through the managed medical care and mental health benefits. Due to a lack of data, no comparison group could be constructed to address the fourth evaluation question. Thus, it is not possible to attribute changes

in client mental health symptoms unambiguously to the services provided through the mental health benefit.

Conclusions

An important intent of the managed medical care and mental health benefits was to impact state costs. Results of analyses reported here indicate that, although overall costs were not impacted, there was evidence for modest impacts on inpatient medical admissions and inpatient psychiatric costs among GA-U clients with documented evidence of mental illness. Previous research indicates that for interventions similar to the mental health benefit studied here, impacts on medical costs can take as long as four years to emerge[13]. Since the analyses reported here focus on the first twenty-one months after the mental health benefit became available, if anything, the inpatient medical admissions and psychiatric cost impacts that emerged can be viewed as encouraging. This latter point is particularly important when one considers that the first two evaluation questions are based on monthly data that are likely to include, in each month, GA-U clients who have newly entered the program. Because benefits of mental health treatment are not observed immediately, the monthly county-level data are limited in their ability to detect change, depending on the proportion of new GA-U clients who enter the program in each month. Analyses for Evaluation Question 3 are limited in that clients were followed, at most, for one year. Finally, it should be remembered that the focus of this evaluation was the first twenty-one months of the program and that this time period included the start-up phase which, in most cases, attenuates outcomes. Thus, in the face of these limitations, the emergence of significant findings is particularly encouraging.

Another important goal of the managed medical care and mental health benefits pilot was to impact the utilization of social and other services. Here, the impact on the proportion of individuals living homeless shows promise. In addition, a reduction in arrests among clients who received mental health services suggests that the managed medical care and mental health benefits may be having a significant impact on public safety.

Although not statistically significant, there were two trends that will be important to monitor in the future. In particular, inpatient psychiatric admissions showed less of an increase among GA-U clients with pre-existing mental illness in pilot counties after the mental health benefit went into effect relative to the comparison counties. This finding is consistent with the significantly reduced increase in inpatient psychiatric costs in pilot counties. And, finally, there was a trend suggesting that among GA-U clients who received mental health services there was less of an increase in days spent in state hospitals than among similar clients who did not receive the services. This trend is what one might expect to see if the mental health benefit was having an impact on expensive specialized mental health services, so it will be important to monitor in the future.

Recommendations

Analyses reported here focus only on the first twenty-one months of the mental health benefit. Nevertheless, there are indications that the managed medical care and mental health benefits are having a positive impact on inpatient medical and psychiatric costs as well as on homelessness and arrests. Because of these findings, and the promise of others (as reflected in trends), we recommend that the managed medical care and mental health benefits be continued.

---

[13] Unützer, J., Katon, W.J., Fan, M-Y, Schoenbaum, M.C., Lin, E.H.B., Penna, R.D.D., & Powers, D. (2008). Long-term cost effects of collaborative care for late-life depression. *The American Journal of Managed Care, 13* (2), 95-100.

The literature indicates that it may take several years to observe the full effect of treating a person for mental health problems. For this reason, we also recommend that future evaluations be undertaken to examine longer-term impacts on individuals who receive services through the two benefits. For these analyses to be sensitive, it will be important to follow individuals who receive the benefits for three to four years after treatment begins. Finally, to insure an evaluation of the long-term impacts of the benefits, we also recommend an evaluation be included as a dedicated component of any future funding of the benefits.

Appendix A. Variables selected for matching GA-U clients who received services through the managed medical care and mental health benefits in King/Pierce Counties with GA-U clients in counties where the benefits were unavailable and the degree of balance on those variables

Matching Variable	Treatment Group Average	Comparison Group Average
Age in years	42.32	42.41
Index month	August 2008	August 2008
Risk Score[14]	0.60	0.59
Received alcohol/drug treatment services in12 months before index month	18%	19%
Average PMPM total Medicaid medical costs in12 months before index month[15]	$407.01	$413.96
Number of months enrolled in GA-U medical coverage in 12 months before index month	5.63	5.68
Number of months with Medicaid eligibility during 12 months before index month	1.48	1.51
Number of arrests in12 months before index month[16]	0.42	0.41
Number of quarters with positive earnings during 8 quarters before index month	2.19	2.11
Earnings in quarter before index month	$287.05	$261.46
Living "homeless with housing" (i.e., 'couch surfing') at any time during 12 months before index month	27%	27%
Living on street or in shelters at any time during 12 months before index month	8%	8%
Received mental health services in 24 months before index month[17]	13%	13%
Indication of need for alcohol/drug treatment in medical, arrest, or chemical dependency treatment records in 24 months before index month	38%	38%
Psychotic disorder diagnosis in 24 months before index month [18]	20%	20%
Mania/bipolar disorder diagnosis in 24 months before index month [19]	22%	22%
Primary incapacity defined as 'mental illness' in incapacity review completed in 6 months before index month	58%	58%
Secondary incapacity defined as 'mental illness' in incapacity review completed in 6 months before index month	13%	12%
Average inpatient psychiatric cost in 12 months before index month	$148.77	$118.66
Number of days spent in state mental hospital in 12 months before index month	0.06	0.06

[14] Ratio of expected future medical costs relative to the average expected future medical costs of the SSI adult population.
[15] Includes all costs paid by Medical Assistance including inpatient, outpatient, emergency department, physician, prescription, laboratory, durable medical equipment (DME), emergency transport, and managed care capitation payments.
[16] Arrests include felonies, gross misdemeanors, and some misdemeanors.
[17] Refers to having received mental health services from the state Division of Behavioral Health and Recovery (DBHR). For the vast majority of clients, this means they received some level of outpatient services through a Regional Support Network (RSN). Some clients also received community psychiatric outpatient or state hospital services. It is possible, but unlikely, that this measure is an undercount for some Pierce County clients.
[18] Information about psychotic disorders was obtained from medical claims, and fee-for-service or RSN encounters.
[19] Ibid