December 2010

TEXAS DEMONSTRATION TO MAINTAIN INDEPENDENCE AND EMPLOYMENT (DMIE)

24-MONTH EVALUATION REPORT

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The DMIE Study - Background

The Texas Demonstration to Maintain Independence and Employment (DMIE) is a federally-funded research study that examines whether working people with potentially disabling health conditions can remain employed and independent if provided health and employment supports. The study's 1,616 participants were individuals working at least 40 hours a month, aged 21-60, with a health diagnosis that could potentially lead to their applying for disability benefits.

Final Results

This report presents results at the conclusion of the Texas DMIE, after 24 months of intervention. It also shows significant findings at 12 and 24 months, so changes across time can be observed.[1]

❖ Results for preventing participants from transitioning to federal disability benefits showed:
  - For all participants, there was a low incidence of **applying** for federal disability benefits after 24 months in the study. About 12% of both groups had applied for SSI or SSDI and about 9% had received them.
  - DMIE helped younger participants avoid the need to go on disability benefits. Among younger individuals, applications for disability were stabilized for the intervention group but increased significantly over time for the control group.

❖ The most consistent and comprehensive impact of the intervention was in the area of increasing access to and use of appropriate health services. A higher percentage of the intervention group used mental health and outpatient services and a higher percentage filled prescriptions. Intervention participants who reported using outpatient physical health services had a higher average number of visits, compared to the control group. The intervention group was also less likely to report delays in receiving health care due to costs, and showed generally better adherence and persistence with their medications. Intervention participants also expressed greater satisfaction with their access to healthcare and the quality of health care they received.

❖ Case Managers spent more time with intervention participants with greater health and employment need and high levels of case management hours were related to more access to health care and more satisfaction with several quality of life measures.

❖ DMIE participants balanced internal resources, social capital, material resources, health, social support and job flexibility in deciding whether to apply for disability benefits or continue to work. DMIE can impact some, but not all, of these factors, meaning that DMIE services can contribute to, but not insure, participants' ability to maintain work.

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[1]A summary of findings from a final participant survey conducted at 32 months is also included; however, due to differences in methodology, strict comparisons of the 24- and 32-month numbers should be made with caution

II.   INTRODUCTION AND BACKGROUND

Texas has the highest rate of uninsured workers in the country with over 5.7 million, or 27%, of the non-elderly population being without health insurance (SHADAC, 2009). People with chronic conditions – those who need regular health care the most – make up nearly half (an estimated 45%) of the uninsured population (The Urban Institute of Maryland Baltimore County, 2005). The majority of health care provided to these uninsured individuals falls heavily on large county hospital districts such as the Harris County Hospital District (HCHD), which served nearly 900,000 individuals in outpatient services during HCHD fiscal year 2009 which ended February 28, 2009 (HCHD, 2009). However, despite the availability of publicly-funded care, uninsured adults with chronic conditions are less likely to visit a health professional, have been found to forgo needed medical care due to costs, and "suffer serious, identifiable gaps in needed medical care" (The Urban Institute of Maryland Baltimore County, 2005). In addition, individuals with a serious mental illness have increased morbidity and mortality rates compared to the non-mentally ill population (Osborn 2001) and they experience significant barriers to receipt of medical care, including being denied insurance because of their condition (Druss & Rosenheck, 1998).

Untreated medical conditions can lead to various other consequences in addition to poorer health, including reduced quality of life, strained social relationships, and reduced productivity at work, up to and including the need to stop working and file for federal disability benefits (SSI/SSDI). Studies indicate that many individuals receiving disability want to work and could work with modest assistance or accommodation (President's New Freedom Commission on Mental Health, 2002; Drak et al., 1999a). Numerous studies document the benefits of enhanced health and mental health care and employment supports in helping those with behavioral illness maintain employment (Drake et al., 1999b; Langlieb & Kahn, 2005; Schoenbaum et al., 2002; Rost et al., 2004).

The Texas Demonstration to Maintain Independence and Employment (DMIE) was a research study that examined whether working people with potentially disabling health conditions could remain employed and independent if provided health benefits and employment services. The intent of this study was to examine the hypothesis that a coordinated program of employment and health supports (including expanded behavioral, medical, and dental health services, improved access to services, case management services and vocational supports) could prevent the loss of employment and independence for workers with potentially disabling health conditions.

III. PROJECT DESIGN AND DATA SOURCES

The Texas DMIE is a randomized, controlled study that was conducted within HCHD. A total of 1,616 working adults with potentially disabling conditions[2] were recruited and randomly assigned to either the intervention group (904) or the control group (712). The control group received services normally available through HCHD. The intervention group received case management, job training and employment services, expedited clinic appointments, enhanced mental health and substance abuse services, dental and vision benefits, and subsidized prescriptions and medical visits.

All participants completed a baseline survey at study entry, 1,470 (91%) completed a 12-month survey, 1,480 (92%) completed an 18-month survey, and 1,482 (92%) completed a 24-month survey. The analysis for this final report is based on respondents who completed a 12- and/or a 24-month survey (N=1551, or 96% of the initial sample of 1,616). (Of these, most [1,403] completed both surveys)[3]. For the 32-month survey, 1312 participants answered the questions for a response rate of 81%.

Demographic characteristics of the respondents at study entry are shown in Appendix V.

Data for this evaluation report came from several sources:

1. Participant surveys – telephone surveys conducted at study entry, 12 and 24 months;
2. Participant demographics from the DMIE database maintained by the University of Texas Addiction Research Institute;
3. Medical encounter (visits) and pharmacy (prescriptions written) data from HCHD and visits to contracted service providers (dental, vision, psychiatric, and substance abuse providers);
4. Case management activity reports – a list of over 40 codes to reflect the type of activity, time spent, etc. by Case Managers from Shorman Associates;
5. Administrative data on participants from the Texas Workforce Commission (employment and unemployment earnings; employment assistance activities) and the Department of Assistive and Rehabilitative Services (employment assistance activities); and
6. Individual 'process evaluation' interviews conducted with selected participants, focus group with Case Managers, and interviews with stakeholders.

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[2] To be eligible, participants had to have a severe mental illness **or** a combination of a behavioral health condition and a significant physical health condition, which put them at risk for disability status.

[3] Of the 65 participants not included in the analysis because they did not have either a 12- or 24-month survey, 12 were formally disenrolled (9 had died and 3 had left the service area), while the lack of response for the remaining 56 was for unknown reasons. There was no difference in the completion rate between the intervention and control groups The 65 non-responders were similar to the 1,551 responders across a wide spectrum of baseline measures; however, non-responders were more likely than responders to have been recruited in person rather than by mail.

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7. Data from the Social Security Administration on actual applications for, and receipt of, SSI and SSDI.

All statistical tests were conducted using SAS software (SAS 9.2, SAS Institute Inc., Cary, NC, USA) with a standard significance level of 0.05.

For interval-level response data, the outcomes were analyzed with general linear models. For ordinal-level and dichotomous response data, logistic regression models were used. Adjusted means and percents for the intervention and control groups at baseline, 12 and 24 months were computed and tested for statistical significance.

Several covariates were included in the models, including the baseline response when available. The statistics reported in the tables are adjusted (controlled) for these covariates. Reporting adjusted means/percents removes any variation between the intervention and control groups associated with the covariates, thereby making the comparisons more precise. The covariates included: sex, age, race/ethnicity, education, occupational group, diagnosis, recruitment cohort, health risk score, and days between end of services and 24-month survey (see Appendix V for table showing demographic characteristics by study group). Education and time from when services ended to the completion of the 24 month interview were new covariates added to these analyses and results reported in this report may differ slightly from prior results in preliminary reports.

For each outcome, additional models were run to test for statistical interactions between the covariates and group variable (intervention vs. control). A statistically significant interaction indicated that the adjusted means/percents were not constant across all values of the covariate: the effect of the intervention relative to the control might be different for specific subgroups of participants. For those responses with a statistically significant interaction, subgroup analyses were performed.

Health Care Utilization and Access

Key Point:

DMIE increased access to health care.

- The intervention group was more likely to have an outpatient visit, a mental health visit, and a dental visit in the past year.
- The intervention group was less likely to have delayed or foregone health care due to costs.

Of the twenty-seven (27) outcomes in the health care access and utilization category, thirteen (13) showed statistically significant differences between the intervention and control groups. Table 1, below, displays the eight (8) significant findings related to health care **utilization**.

Table 1: Health Care Utilization
Significant Findings

Outcome	Group	Sample Size[1]	Baseline	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Outpatient Services						
Percent utilizing any outpatient physical health service in the past 12 months (as reported by healthcare provider)	Intervention	833	94%	89%	85%	-9%*
	Control	647	97%	80%	70%	-27%*
	Difference (I - C)		**-3%***	**9%***	**15%***	**18%***
Average number of outpatient physical health visits in the past 12 months[2] (as reported by healthcare provider)	Intervention	777	7.15	6.35	5.25	-1.90*
	Control	554	7.74	5.89	4.64	-3.10*
	Difference (I - C)		**-0.59***	**0.46**	**0.61***	**1.20***
Average number of routine health care visits in the past 12 months[2] (self-report)	Intervention	811	3.79	4.00	3.86	0.07
	Control	617	3.68	3.60	3.43	-0.25*
	Difference (I - C)		**0.11**	**0.40***	**0.43***	**0.32**
Mental Health Care Services						
Percent utilizing any mental health services in the past 12 months (as reported by healthcare provider)	Intervention	833	12%	18%	14%	2%
	Control	647	11%	9%	8%	-3%*
	Difference (I - C)		**1%**	**9%***	**6%***	**5%***

Outcome	Group	Sample Size[1]	Baseline	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Percent reporting having received a mental health service in the past 12 months (self-report)	Intervention	830	21%	27%	27%	6%*
	Control	646	22%	21%	21%	-1%
	Difference (I - C)		**-1%**	**6%***	**6%***	**7%***
Average number of mental health visits in the past 12 months[2] (as reported by healthcare provider)	Intervention	195	1.02	3.10	3.01	1.99*
	Control	78	1.88	3.21	2.14	0.26
	Difference (I - C)		**-0.86**	**-0.11**	**0.87**	**1.73***
Dental Services						
Percent having a dental care visit in the past 12 months (self-report)	Intervention	833	53%	70%	72%	19%*
	Control	647	55%	58%	61%	6%*
	Difference (I - C)		**-2%**	**12%***	**11%***	**13%***
Average number of dental care visits in the past 12 months[2] (self-report)	Intervention	706	1.18	2.85	3.27	2.09*
	Control	488	1.28	2.46	2.49	1.21*
	Difference (I - C)		**-0.10**	**0.39***	**0.78***	**0.88***

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

[1] Sample size for analysis was 1,480. Specific outcomes with a sample size less than 1,480 resulted from non-response or invalid response.

[2] Data is for those participants who reported at least one visit (zero visits not included in the calculation), therefore the lower sample size is not due to non-response or invalid response.

Overall, in both study groups, participants reduced their utilization of outpatient physical health care services between baseline and the second year of the study. This likely represents a regression to the mean, meaning that participants were recruited into the study *because* of their health care usage, which, with time, would be expected to decrease back to a level that is normal for them. Although both groups reduced outpatient care usage, the intervention group decreased their utilization *less* than the control group. As can be seen in the table above, a higher percentage of the intervention group, as compared to the control group, used outpatient services for physical care at 12 months and 24 months into the study (as reported by the health care provider). Additionally, participants in the intervention group maintained a higher average number of outpatient visits per year than participants in the control group, who had a significantly lower average number of visits between baseline and year two (as reported by both the health care provider and self-report). These findings of more outpatient care are positive since utilization of outpatient services is an indication of better preventative health care. There were no significant differences between the groups, however, in inpatient or emergency care usage.

At both the 12 and 24 months reporting times, intervention participants reported higher rates (compared to the control group) of having a mental health care visit (both as reported by the health care provider and self-report). The intervention group also self-reported a higher average number of visits to a mental health care provider, when compared to the control group, and health care system numbers showed that the intervention group significantly increased their average number of mental health visits from baseline to year two. Also, while both the intervention and control groups showed a significant increase in the percent visiting a dentist and the average number of dental visits (between baseline and 24 months), the intervention group increased their access more than the control group. Increased access to dental care is important because studies show that after controlling for lifestyle and health access variables, people who had periodontal disease showed higher incidence of heart disease, stroke and premature death (Mattila et al., 1989).

Table 2, below, shows significant differences between the intervention and control groups in reported delay or inability to receive care due to cost, which is a measure of health care **access**.

Table 2: Health Care Access
Significant Findings

Outcome	Group	Sample Size[1]	Baseline[2]	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Percent who needed the following, but delayed or were unable to get due to cost:						
• **Family doctor**	Intervention	833		21%	19%	
	Control	647		32%	26%	
	Difference (I - C)			**-11%***	**-7%***	
• **Specialist**	Intervention	833		22%	20%	
	Control	647		29%	26%	
	Difference (I - C)			**-7%***	**-6%***	
• **Hospital care**	Intervention	833		13%	11%	
	Control	647		19%	17%	
	Difference (I - C)			**-6%***	**-6%***	
• **Surgery**	Intervention	833		12%	9%	
	Control	647		14%	13%	
	Difference (I - C)			**-2%**	**-4%***	

Outcome	Group	Sample Size[1]	Baseline[2]	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
• **Prescriptions**	Intervention	833		15%	21%	
	Control	647		28%	25%	
	Difference (I - C)			**-13%***	**-4%**	
• **Medical equipment**	Intervention	833		8%	5%	
	Control	647		9%	8%	
	Difference (I - C)			**-1%**	**-3%***	

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

[1] Sample size for analysis was 1,480. Specific outcomes with a sample size less than 1,480 resulted from non-response or invalid response.

[2] This measure was not asked at baseline.

The intervention group was significantly less likely to have delayed or not received six (6) of the seven (7) types of care asked about (although the difference for prescriptions was only significant at 12 months). Interestingly, there was no significant difference between the intervention and control groups on the percent who reported a delay in getting dental care. Since the intervention group was offered dental care as part of their enhanced benefit package, it is unexpected that just as many intervention participants as control participants reported delays in receiving dental care. This finding may be due to the changes in dental benefits that occurred during the intervention and the challenges that some participants experienced in obtaining dental services. Yet the findings in Table 1 showed that the intervention group was still more likely to have had a dental visit and had a higher number of visits than the control group.

Pharmacy Outcomes

Key Point:

DMIE increased access to and use of several medications that are used to treat chronic conditions.

- The intervention group was more likely to receive prescriptions for 10 of the 17 medications or medical devices asked about.
- The intervention group was also more adherent to 5 of the 11 medications asked about.

The sample size for medication/device utilization analyses was the 1,214 participants who were prescribed at least one of 17 prescriptions used to treat chronic conditions. Adherence and

persistence outcomes, shown in Tables 4 and 5, may have lower sample sizes since they were based only on those participants who had at least one prescription for that specific drug.

Receipt of Prescriptions

A review of the pharmacy utilization data at 12 and 24 months into the study showed DMIE participants enrolled in the intervention group received an overall larger percentage of prescriptions compared to the control group. Of the 17 drug classes and medical devices that were analyzed, intervention participants were more likely to receive prescriptions for eight (8) medications as well as for medical devices and test equipment for diabetes (Table 3).

Table 3: Receipt of Prescriptions
Significant Findings

Medications	Group	Sample Size[1]	Baseline[2]	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
ACE Inhibitors (for hypertension)	Intervention	724		42%	41%	
	Control	490		37%	34%	
	Difference (I - C)			**5%**	**7%***	
Beta adrenergic agonists (for respiratory conditions)[3]	Intervention	724		16%	18%	
	Control	490		13%	14%	
	Difference (I - C)			**3%**	**4%***	
Beta blocking agent (for hypertension)	Intervention	724		27%	27%	
	Control	490		23%	22%	
	Difference (I - C)			**4%**	**5%***	
Biguanides (for diabetes)	Intervention	724		19%	21%	
	Control	490		14%	15%	
	Difference (I - C)			**5%***	**6%***	
HMG-CoA reductase inhibitors (for high cholesterol)	Intervention	724		30%	32%	
	Control	490		24%	26%	
	Difference (I - C)			**6%***	**6%***	
Non-steroidal anti-inflammatories (NSAIDs) (for pain)	Intervention	724		32%	31%	
	Control	490		27%	23%	
	Difference (I - C)			**5%***	**8%***	

Medications	Group	Sample Size[1]	Baseline[2]	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Proton pump inhibitors (for dyspepsia, ulcers)	Intervention	724		38%	41%	
	Control	490		35%	34%	
	Difference (I - C)			**3%**	**7%***	
Antihistamines (second generation)	Intervention	724		25%	23%	
	Control	490		18%	15%	
	Difference (I - C)			**7%***	**8%***	

Equipment	Group	Sample Size[1]	Baseline[2]	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Medical devices (such as BP cuffs, CPAP machine, etc.)	Intervention	724		19%	17%	
	Control	490		13%	13%	
	Difference (I - C)			**6%***	**4%***	
Test equipment for diabetes mellitus	Intervention	724		21%	22%	
	Control	490		16%	15%	
	Difference (I - C)			**5%***	**7%***	

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

[1] Sample size for pharmacy analyses was 1,214 participants who were prescribed at least one of 17 medications used to treat chronic conditions.

[2] These measures were not tracked at baseline.

[3] There are two types of Beta Adrenergic Agonists (B1 and B2). B1 agonists are used to treat cardiac related illness such as heart attack. B2 agonists are bronchiole dilators used to treat respiratory conditions such as asthma and COPD.

Pharmacy Adherence

Analysis of prescription claims data showed better medication adherence among the intervention group, particularly for drug therapies used to treat chronic health conditions. Adherence is the degree to which patients conform to medical recommendations regarding day-to-day treatment of illness. In particular, medication adherence is identified through DMIE participants' prescriptions filled through the HCHD pharmacy. For each drug, adherence was measured by the proportion of days covered (PDC) for two periods of time: enrollment to 12 months after enrollment and 13 months after enrollment to 24 months after enrollment. For example, a participant taking ACE inhibitors would be 100% adherent if they refilled their prescription every 30 days, assuming a 30-day supply. Individuals enrolled in the intervention were significantly more adherent to five

(5) of the 11 medications analyzed (Table 4). For example, the average intervention group adherence rate (PDC) for beta adrenergic agonists was 44% compared to the control group's PDC of 35% at 24 months.

Although the results presented below show a significant difference in medication adherence between the intervention and control groups, it should be noted that adherence *decreased* between 12 months and 24 months for both study groups (not tested for significance). One hypothesis as to why the intervention decreased adherence is that many intervention participants completed their 24 month interview after DMIE services ended and copayments for medications were reinstituted. However, analysis of those who completed their 24 month interview before the end of services and those who completed after the end of services showed no differences in adherence between these two groups. Poor adherence to medication regimens accounts for substantial worsening of disease, death, and increased health care costs in the United States. Health care systems can create barriers to adherence by limiting access to health care and having prohibitively high costs for drugs or copayments, among other things. To improve the patient's ability to follow a medication regimen, all potential barriers to adherence need to be considered (Osterberg & Blaschke, 2005).

Table 4: Medication Utilization (Adherence) – Average Proportion of Days Covered Significant Findings

Medications	Group	Sample Size[1]	Baseline[2]	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Beta adrenergic agonists[3] (for respiratory conditions)	Intervention	143		54%	44%	
	Control	75		41%	35%	
	Difference (I - C)			**13%***	**9%***	
ACE inhibitors (for hypertension)	Intervention	329		71%	65%	
	Control	190		66%	64%	
	Difference (I - C)			**5%***	**1%**	
Biguanides (for diabetes)	Intervention	159		72%	64%	
	Control	77		65%	63%	
	Difference (I - C)			**7%***	**1%**	
HMG-CoA reductase inhibitors (for high cholesterol)	Intervention	251		69%	63%	
	Control	144		61%	59%	
	Difference (I - C)			**8%***	**4%**	
Insulin (for diabetes)	Intervention	102		71%	64%	
	Control	58		63%	63%	

	Difference (I - C)			8%*	1%	

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

1   Sample size for pharmacy analyses was 1,214 participants who were prescribed at least one of 17 medications used to treat chronic conditions.

2   These measures were not tracked at baseline.

3   There are two types of Beta Adrenergic Agonists (B1 and B2). B1 agonists are used to treat cardiac related illness such as heart attack. B2 agonists are bronchiole dilators used to treat respiratory conditions such as asthma and COPD.

Pharmacy Persistence

Group differences in medication persistence were also examined for prescription drugs used to treat chronic health conditions. Medication persistence represents how long patients follow medical advice (i.e., the duration of time from the initiation to a significant break or discontinuation of drug therapy). Medication persistence was measured using the number of days from the date of the first prescription to the date of the last prescription before a break of at least 35 days occurred (after taking into account the number of pills in the last prescription) during two periods: 0-12 months after enrollment and 13-24 months after enrollment. Statistically significant differences in persistence were seen between groups placed on ACE inhibitors and biguanides agents at 12 months and beta adrenergic agonists at 24 months (Table 5). The results indicate that the intervention group was more likely to persist in continuing on ACE inhibitors and biguanides from the date of first prescription starting the initial month after enrollment through the 12th month.

**Table 5: Percentage of Participants without a Break in Prescriptions
Significant Findings**

Medications	**Time Period**	**Sample Size***	**Intervention**	**Control**	**Difference**
ACE inhibitors (for hypertension)	12	466	68%	60%	8%
Biguanides (for diabetes)	12	198	65%	52%	13%
Beta adrenergic agonists (for respiratory conditions)	24	184	35%	22%	13%

* Sample size for medication persistence was based only on those participants who had at least one prescription for that specific drug/equipment.

Self-Reported Behavioral and Physical Health Status

> Key Point:
>
> ***DMIE had few effects on behavioral and physical health status.***
>
> - The intervention group was more likely to say that their physical health was "good" or better.
> - For all other measures of health, there was either no difference between the intervention and control groups or the control group fared better.

Table 6, below, shows the statistically significant results for outcomes related to self-reported behavioral health. Only one (1) of the nine (9) outcomes for behavioral health, which included the BASIS-24 and its six subscales as well as the SF12 mental component summary (MCS) and participants' direct self-rating of their mental health, showed differences between the intervention and control groups at either 12 months or 24 months into the study. At 12 months, the intervention group, relative to the control group, had a higher average rating on the psychosis sub-scale of the BASIS-24 which is an indication that individuals in the intervention group may have been experiencing more psychotic symptoms. However, the average score on this subscale for both the intervention group and the control group are so low that clinical significance is questionable. Also, there were no differences between the intervention and control groups on the overall BASIS-24 scale, indicating that the groups were functioning on equivalent levels and neither changed significantly between baseline and 24 months.

Table 6: Behavioral Health
Significant Findings

Outcome	Group	Sample Size[1]	Baseline	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Average score on the Psychosis sub-scale as measured by the BASIS sub-score (range 0 – 4; lower score = better)	Intervention	832	0.52	0.55	0.51	-0.01
	Control	647	0.49	0.47	0.44	-0.05*
	Difference (I - C)		**0.03**	**0.08***	**0.07**	**0.04**

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

[1] Sample size for analysis was 1,480. Specific outcomes with a sample size less than 1,480 resulted from non-response or invalid response.

Table 7, below, shows the statistically significant results for outcomes related to self-reported physical health. One (1) of the four (4) outcomes for physical health, which included the SF12 physical component summary (PCS), showed a difference between the intervention and control groups at 24 months. The intervention group had a statistically significant increase between

baseline and 24 months in the percent who rated their physical health as "good" or better while the control group stayed the same.

Table 7: Physical Health
Significant Findings

Outcome	Group	Sample Size[1]	Baseline	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Percent rating their physical health as "good" or better	Intervention	832	54%	57%	60%	6%*
	Control	644	57%	58%	57%	0%
	Difference (I - C)		-3%	-1%	3%*	6%*

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

[1] Sample size for analysis was 1,480. Specific outcomes with a sample size less than 1,480 resulted from non-response or invalid response.

Employment and Earnings Outcomes

> Key Point:
>
> ***DMIE had few effects on most measures of employment and earnings.***
>
> - The intervention and control groups were similar on most measures of employment and earnings, including number of months and hours worked, earnings, and family income.
> - Fewer than 3% of either group transitioned to unemployment during the study period.

Fourteen (14) outcomes for employment and earnings were studied. Overall, the intervention and control groups were very similar on these measures at each time period, with two exceptions: scores on the Positive Work Motivation Scale and satisfaction with their job (Table 8), both of which were higher for the control group (although the difference in job satisfaction was only significant at 12 months). At 12 months, there was no difference between groups on Positive Work Motivation, while at 24 months, the control group showed higher motivation. It is unclear why the control group increased their level of motivation between baseline and 24 months, while the intervention group remained at the same level. The intervention group's lower motivation ratings may reflect a phenomenon known as 'response-shift bias' in which their rating criteria may have changed over time as a result of rising expectations or changes in their feelings about work due to discussions with their case managers (Howard, 1980).

Table 8: Employment and Earnings Outcomes
Significant Findings

Outcome	Group	Sample Size[1]	Baseline	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Percent who scored high on the Positive Work Motivation scale	Intervention	832	78%	79%	81%	3%
	Control	646	78%	79%	86%	8%*
	Difference (I - C)		**0%**	**0%**	**-5%***	**-5%***
Percent satisfied with their job	Intervention	830	N/A[2]	77%	76%	
	Control	641	N/A[2]	81%	79%	
	Difference (I - C)		N/A[2]	**-4%***	**-3%**	

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

[1] Sample size for analysis was 1,480. Specific outcomes with a sample size less than 1,480 resulted from non-response or invalid response.

[2] This measure was not asked at baseline.

Unemployment Outcomes: Unemployment status information for participants was collected from the Texas Workforce Commission (TWC). Quarterly data from TWC identified the amount of unemployment income received by participant. The outcome used for analysis was whether participant was unemployed during the quarter (yes/no) based on whether they had received any unemployment income for that quarter. The unemployment outcome has been adjusted for participants' sex, age, race/ethnicity, occupational group, education, diagnosis, overall health status, and recruitment cohort; in other words, any difference found between the intervention and control groups is net of the effect of those other factors.

For the desired outcome of lower transition to unemployment, no difference was found between the intervention and control groups across the two year period with fewer than 3% of both groups receiving unemployment benefits. It should be noted that about 12% of DMIE participants were working in jobs that were apparently not covered by unemployment benefits (i.e. there was no TWC data for them.)

University of Texas at Austin – Addiction Research Institute

Participant Quality of Life

Key Point:

DMIE improved participants' satisfaction with health care services.

- The intervention group was more likely to be satisfied with their access to health care services.
- The intervention group was also more likely to be satisfied with the health care they received.

Of the six (6) outcomes studied to measure quality of life, three (3) showed significant differences between the intervention and control groups at either 12 months, 24 months or both time points. The percent satisfied with their access to health care was higher among the intervention group, as compared to the control group, at both 12 and 24 months (this measure was not asked at baseline). There was also a significant difference between the intervention and control group in the percent that was satisfied with the health care they received. On this measure, the intervention group increased in the percent satisfied at 12 months while the control group decreased in the percent satisfied. These percentages remained consistent at 24 months. Also, at 12 months, the control group was more likely than the intervention group to report satisfaction with their personal finances. This difference was no longer significant at 24 months.

Table 9: Quality of Life
Significant Findings

Outcome	Group	Sample Size[1]	Baseline	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Percent satisfied with their access to health care services	Intervention	833	N/A[2]	69%	69%	
	Control	645	N/A[2]	62%	61%	
	Difference (I - C)		N/A[2]	**7%***	**8%***	
Percent satisfied with the health care they received	Intervention	831	74%	77%	77%	3%
	Control	642	75%	73%	73%	-2%*
	Difference (I - C)		-1%	**4%***	**4%***	5%*
Percent satisfied with Finances	Intervention	833	N/A[2]	34%	39%	
	Control	647	N/A[2]	39%	41%	
	Difference (I - C)		N/A[2]	**-5%***	**-2%**	

* Difference, either between the intervention and control groups or between baseline and 24 months, is significant.

Federal Disability Benefits

> Key Points:
>
> ***DMIE had no <u>overall</u> effect on receipt of disability benefits.***
>
> - There was no significant difference between the intervention and control groups in application for or receipt of SSI, SSDI, Medicaid or other public assistance.
> - About 12% of both groups had applied for SSI or SSDI and about 9% had received them.
>
> ***DMIE decreased receipt of disability benefits for <u>younger participants</u>.***
>
> - Among younger individuals, applications for disability were stabilized for the intervention group but increased significantly over time for the control group.
> - Among older individuals, both groups increased in applications for disability but the intervention group increased more than the control group.

Of the six (6) outcomes that looked at application for and receipt of federal disability benefits (SSI or SSDI), Medicaid and other public assistance, none showed a significant difference between the intervention and control groups at either time period. The percent of participants in each group that reported **receiving** SSI or SSDI was nearly equivalent (intervention 9% and control 8% at 24 months), and the two groups were also nearly equivalent in the percent reporting having **applied** for benefits (13% vs. 11% at 24 months).

Looking at the data more closely, intervention/control differences were detected within the two age groups in regards to applications for SSI or SSDI. Among the younger participants (age 20 to 44) the intervention group was significantly less likely to apply for benefits at 24 months, as compared to the control group (6% intervention vs. 11% control). Although the younger intervention group showed a slight decrease in the likelihood of applying for benefits between baseline and 24 months (from 10% to 6%; not significant), the control group nearly doubled in the percent who had applied for benefits (from 6% to 11%; a significant increase). Among the older participants (age 45 to 60), both the intervention and control groups increased their likelihood of applying for SSI/SSDI but the intervention group increased significantly more (from 7% to 15%, a significant difference) compared to the control group (going from 8% to 11%, not a

significant difference). Thus, the intervention's effects on applications to SSI or SSDI appear to benefit the younger age group yet encourage disability applications for the older age group.

SSA Administrative Data on Disability Applications and Benefits

Key Points:

DMIE intervention participants were less likely to apply for disability depending on time period and sub-group.
- From 0-12 months, the intervention group was marginally less likely to apply for disability.
- From 0-12 months, the intervention group was less likely to receive disability benefits.
- Differences at 13-24 months were smaller than at 0-12 months.
- Younger DMIE intervention participants were less likely to apply for and receive disability benefits (similar to self-reported disability outcomes) although these results were not statistically significant.

In addition to the information on disability from participants' self-reports discussed above, data was obtained from the Social Security Administration's (SSA) SSI Longitudinal File (SSI) and Master Benefit Record (MBR-SSDI), which document disability applications and receipt of benefits. The SSA provided data for 1,575 of the 1,616 DMIE participants whose Social Security numbers, first and last names, birth dates and gender could be matched.

Two outcomes were studied: whether an application for SSI/SSDI was filed and whether benefits were paid. These outcomes were looked at separately for the periods 0-12 months and 13-24 months after participants enrolled in the DMIE study. SSDI applications for retirement (rather than disability) were excluded from this analysis..

Table 10 shows the adjusted percentages for the intervention and control groups at 0-12 and 13-24 months[4]. There were no statistically significant differences between the percentage of DMIE participants who applied for disability at 0-12 months and those who applied at 13-24 months. The 2.6% fewer intervention participants than control participants applying for disability at 12 months was very close to the criterion for statistical significance (p=.0579). This result fits with the combined Minnesota-Texas results reported by Mathematica Policy Research Institute (Gilman et al., 2010). There were no additional differences in applications between the intervention and control groups depending on individual characteristics such as age, gender, race/ethnicity, occupation, education, recruitment cohort, or ACG score. DMIE participants in

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[4] Statistical adjustment was made using the same covariates used in other analyses in this report, namely sex, age, race/ethnicity, education, occupational group, diagnosis, recruitment cohort, ACG health risk score, and days between end of services and the 24-month survey.

both groups who were health support workers were more likely than those in other occupational groups to apply for disability in the 0-12 month period, and those with higher ACG scores were more likely than those with lower scores to apply for disability in both periods.

In terms of receipt of disability benefits,, the intervention group (2.2%) was significantly less likely to receive benefits in the 0-12 months after enrollment than the control group (3.9%); however, no differences were found between study groups in receipt of benefits in the 13-24 month period. Participants in both groups with higher ACG scores and those who worked as health support workers were more likely to receive benefits at both periods.. There were no additional differences in receipt of benefits between the study groups depending on individual characteristics such as age, gender, race/ethnicity, occupation, education, recruitment cohort, or ACG score.

Table 10: Applications for and receipt of either SSI or SSDI based on SSA data

Outcome	Group	Sample Size[1]	Baseline	Adjusted 12M Score	Adjusted 24M Score	Total Change BL to 24M
Percent applying for either SSI or SSDI benefits based on Social Security Administration data	Intervention	884	N/A[2]	6.4%	9.8%	
	Control	691	N/A[2]	9.0%	9.9%	
	Difference (I - C)		N/A[2]	**2.1%**	**.3%**	
Percent receiving either SSI or SSDI benefits based on Social Security Administration data	Intervention	884	N/A2	2.2%	5.0%	
	Control	691	N/A2	3.9%	3.5%	
	Difference (I - C)		N/A2	**1.7%***	**-1.5%**	

The self-reported data reported earlier had shown differences between the study groups in disability status depending on their age, and a similar pattern was seen in the SSA data (although the differences did not attain statistical significance). Based on the SSA data, Figure 1 shows that younger intervention participants were about 6% less likely to have applied for disability and 3.4% less likely to have received disability benefits as compared to younger control participants. These results support the conclusion that DMIE-type interventions targeting younger working adults with significant health issues may achieve a greater impact in reducing disability applications than those targeting older individuals.

Figure 1: Study Group Differences in Disability Applications and Receipt by Age Group
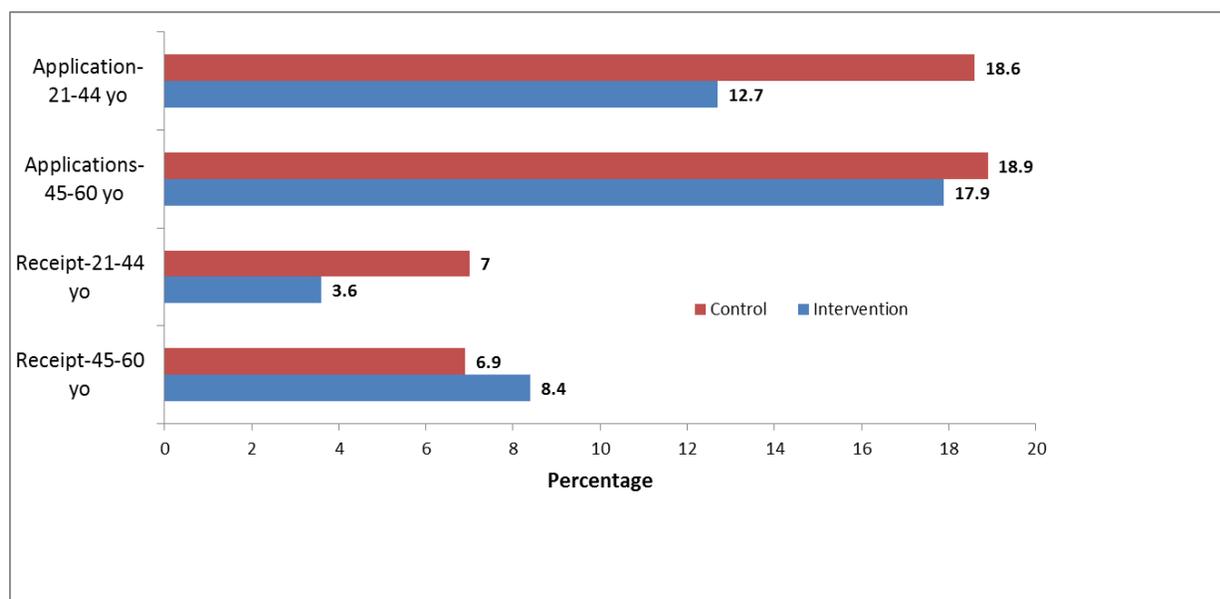
Do Outcomes Differ for Subgroups of Individuals?

Two questions that can be asked are: are individual characteristics (e.g. gender, age, race/ethnicity) related to outcomes "in general"; and did the DMIE intervention affect different subgroups of individuals in different ways?

<u>Are Individual Characteristics Related to Outcomes?</u>
Regardless of which study group they were in, individuals with different characteristics differed on certain study outcomes. For example, **men** reported better mental health than women, as well as more satisfaction with the health care they received and more satisfaction with their finances; however, they were less likely than women to have received any routine health care or dental care, and they were more likely to have had episodes of unemployment. **Non-whites** rated their physical health better than did whites and reported more satisfaction with their access to health care, their finances and their ability to continue to work; yet they received less mental health care than whites. **Older** individuals reported better mental health, more use of routine health care, more satisfaction with health care access, better adherence to medication but lower income, as compared to younger individuals. Individuals diagnosed with **serious mental illness**, as compared to those with other diagnoses, were employed fewer months and were less satisfied with their ability to work, their job, their finances, their personal relationships, and their overall

quality of life.[5] Such findings may be thought of as propensities for these subgroups to have these outcomes in the absence of an intervention. They may be similar to findings seen in other populations (e.g. men's lower tendency to seek preventive health care) or may be unique to this particular study sample; however, they can be thought of as applying to the DMIE sample "across-the-board," for the intervention and control groups alike.

Did the Intervention Affect Different Subgroups in Different Ways?
In many cases, the DMIE intervention affected subgroups differently. One notable example was the different effect the intervention had on younger and older participants regarding their likelihood of applying for disability benefits (discussed on p. 19). The intervention did not, however, necessarily directly affect the propensities mentioned above. For instance, while men overall were less likely than women to receive routine care, the intervention did not seem to increase use of routine care for men; and, in fact, men in the intervention group were more likely than men in the control group to have used the emergency room. Similarly, while men were generally happier than women with their finances, men in the intervention group were less satisfied with finances as compared to men in the control group. These findings do not necessarily suggest that the intervention was the cause of worse outcomes for men; for example, the intervention may have helped men access needed emergency care that they otherwise may have deferred receiving until too late; or it may have increased men's financial aspirations and motivation for higher earnings that made them feel dissatisfied in the short term even at the same level of income or financial security as their control peers. Without further investigation and information beyond that available from the project data, it is hard to directly interpret the meaning of these findings.

Another example of an intriguing, but ambiguous finding is the fact that, while older individuals in both study groups reported better mental health than younger ones, older people in the intervention group were more likely than older people in the control group to have had a mental health visit. Since there was no indication from other study measures that older people in the intervention group had poorer mental health than those in the control group, this finding seems to suggest that the intervention group had better access to needed mental health care; perhaps their case managers helped them identify areas in their lives that could be addressed by professional mental health care, and then helped them access those services, while the control group went without. It is not immediately clear, however, why this difference was not seen among the younger age group.

While it would take more in-depth investigation to completely understand the causes or import of these differences (keeping in mind that the specific ones found here would not necessarily be

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[5] A complete listing of all the statistically reliable associations between individual characteristics and outcomes and different effects of the intervention on different subgroups that were observed in this study is contained in Appendix I.

robust in other settings), future implementations of DMIE-type programs might usefully examine whether there are inherent differences within their target populations in such things as the propensity to use health care services or their mental and physical health status and needs, so that the intervention can be designed to specifically address disparities in these areas. It could also be helpful, over the course of a long-term intervention, to use early data to examine whether subgroups appear to be benefiting differentially from the services available, so that the populations targeted by the program and the services offered can be best matched.

Effects of the End of Services on Participant Outcomes

Due to a rolling enrollment in DMIE, with participants being enrolled between April 2007 and May 2008, there was a sizeable time difference between those who were recruited earlier and those who were recruited later. The implications of this difference in recruitment time are that
   1) intervention participants who were recruited earlier in the project may not have had all enhanced services available to them immediately due to some services being in the contracting phase at the beginning of the project; and
   2) for most participants (70%), the intervention phase of DMIE ended prior to their 24 month survey, and thus results seen on that survey includes a time period without the availability of the DMIE enhanced benefit package.

To determine the effects of this time differential, differences in health care outcomes between the intervention and control groups were looked at separately for participants who had access to enhanced benefits up to and after the completion of their 24 month survey (earlier recruits) and those who completed their 24 month interview after services had already ended (later recruits).

Key Points:

There were few effects of having a full 24 months of services or not having a full 24 months of services.

- Two outcomes indicated that being recruited later in the program (thus entering when a full continuum of services was available but having less time in the intervention) may have been more beneficial for health care access. Yet earlier recruits were more likely to be adherent to diabetes testing equipment.

For outcomes of health care access, earlier recruits in the intervention group were more likely than those in the control group to have had an inpatient encounter at 24 months. Among later recruits, the intervention group was less likely than the control group to have delayed receiving durable medical equipment due to costs.

For pharmacy outcomes, differences were seen only among the earlier recruits where the intervention participants were more likely than the control participants to receive a prescription for dyspepsia/ulcers (proton pump inhibitors) and were also more adherent to their diabetes testing equipment.

For behavioral and physical health outcomes, only one difference was found by recruitment subgroup. Among the later recruits, the intervention group had slightly better scores on the SF-12 Physical Component Subscale when compared to the control group.

There were no differences among participants recruited earlier or later for employment and earnings outcomes and for quality of life outcomes. There were no differences in application or receipt of benefits between earlier and later recruits.

V.   DMIE STUDY FINDINGS – HYPOTHESIS II

Case Management

Key Points:

DMIE case management services were provided at higher levels to those who had higher need with high levels of care being related to better outcomes.

o   Findings suggest that individuals who had poorer mental and physical health were appropriately receiving more health-related case management services (e.g., more health care utilization.)

- Higher amounts of case management time were related to mixed outcomes for behavioral health status, such as worse scores on a scale for depression but a higher likelihood of rating their mental health as "good" or better.
- Higher amounts of case management time were also related to lower income and more challenges with employment. This is likely because individuals with greater employment-related needs received more case management services. However, once need was accounted for, higher amounts of case management were related to higher income and higher work motivation.
- Higher amounts of case management time were related to higher satisfaction with several measures for quality of life.
- High case management time was related to lower hospitalization at 24 months.

Case management services were a vital part of the DMIE intervention. Case Managers facilitated nearly every intervention benefit, including access to expedited appointments, dental care, vision care, enhanced behavioral health care, and employment counseling/support. The study sought to determine the effect that case management services had on DMIE intervention group outcomes discussed in the previous section. The tables below show significant relationships between the focus of case management time (health, employment, other) and specific outcomes for intervention group participants. In addition to looking at these direct relationships to outcomes, additional analyses looked at non-linear relationships; in other words, did high levels of case management hours have additional benefit to participants?

Health Care Access and Utilization

Table 11, below, shows the significant results for outcomes related to health care access and utilization. Overall, the amount of case management time spent on health and employment matters was positively associated with use of outpatient, inpatient and emergency services as well mental health services. This is to be expected since participants with higher health care needs would have higher utilization of health care services and would require more assistance from their Case Manager. Also, among those participants who had received employment-related case management services, there was a positive association with perception of timeliness of care - more participants felt that they received routine healthcare as soon as they needed.

**Table 11: Health Care Access and Utilization
Significant Findings**

More Case management time that focused on…	Was significantly related to…
Health	• A higher likelihood that the participant had an outpatient encounter • A higher likelihood that the participant had an inpatient encounter • A higher likelihood that the participant had an emergency room encounter • A higher likelihood that the participant had an mental health service encounter • A higher average number of physical health encounters • A higher average number of routine health care visits (self-report) • A higher likelihood that the participant had an urgent care visit (self-report) • A higher likelihood that the participant visited a mental health professional (self-report) • A higher likelihood that the participant had a hospitalization (self-report) • A higher likelihood that the participant reported needing urgent care
Employment	• A higher likelihood that the participant had an mental health service encounter • A higher likelihood that the participant reported receiving timely care if he/she said they needed it

More Case management time that focused on…	Was significantly related to…
Other (Non-health or non-employment related hours which could include dealing with personal issues)	• A higher likelihood that the participant had an outpatient encounter • A higher average number of physical health encounters • A higher likelihood that the participant had a routine care visit (self-report) • A higher average number of routine health care visits (self-report) • A higher average number of urgent care visits (self-report) • A higher likelihood that the participant had a dental and/or vision visit (self-report) • A higher likelihood that the participant had a hospitalization (self-report) • A higher average number of hospitalizations (self-report)

Analyses of non-linear relationships showed that high levels of case management hours that focused on health were related to increased outpatient encounters and mental health encounters (as reported by the health care provider and self-report), but also a higher likelihood of having a visit to urgent care and more likely to delay getting durable medical equipment due to cost.

High levels of employment-related case management time was related to a higher likelihood of delaying surgery due to cost. And high levels of other case management hours were related to higher probability of at least one urgent care encounter and a higher average number of physical health encounters.

Behavioral and Physical Health

Table 12, below, shows the significant results for outcomes related to physical and behavioral health. Overall, greater case management time spent on health matters and other matters (excluding employment) was associated with mixed positive and negative outcomes. For example, more case management time was related to more individuals receiving some prescriptions and rating their mental health as "good" or better, while it was also related to worse scores for depression and substance abuse. These findings suggest that individuals who have poorer mental and physical health were appropriately receiving more health-related case management services (which included mental health services).

Table 12: Behavioral and Physical Health Outcomes
Significant Findings

More Case management time that focused on…	Was significantly related to…
Health	• A higher likelihood of receiving a prescription for an NSAID pain reliever • A higher likelihood of the participant rating their mental health as good or better • Worse (higher) scores on the BASIS 24 subscale for depression • Worse (higher) scores on the BASIS 24 subscale for substance abuse • A higher likelihood that the participant had <u>no</u> limitations in Instrumental Activities of Daily Living (IADLs)
Employment	• A higher likelihood of receiving a prescription for an anxiolytic • Better adherence to thiazide diuretics
Other (Non-health or non-employment related hours which could include dealing with personal issues)	• A higher likelihood of receiving a prescription for a proton pump inhibitor

Analyses of non-linear relationships show that high levels of case management hours that focused on health were related to a higher likelihood of being prescribed ACE inhibitors. Also, high levels of health-related case management time were related to a high probability of rating mental health as good or better. However, health-related time was also related to worse scores on the BASIS 24 substance abuse subscale. High levels of employment-related case management hours were related to better scores on the BASIS-24 subscale measuring emotional lability.

Employment and Earnings

Table 13, below, shows the significant results for outcomes related to employment and earnings. Overall, greater case management time was related to individuals having lower income and more challenges regarding health and employment. For example, participants who received more case management hours worked fewer hours and had lower annual income. This is to be expected since participants with more needs received more case management time. However, there was some indication that hours spent on employment were related to higher work motivation.

Table 13: Employment and Earnings Outcomes
Significant Findings

More Case management time that focused on…	Was significantly related to…
Health	• Lower average number of hours worked in the previous 12 months
Employment	• Lower average number of hours worked in the previous 12 months • Lower average number of months worked in the previous 12 months • Lower average earnings as reported by TWC • Lower average household incomes (self-report) • Higher scores on the negative work motivation scale • Higher likelihood that the participant is satisfied with his or her job • Higher likelihood that the participant received unemployment benefits
Other (Non-health or non-employment related hours which could include dealing with personal issues)	• Lower average number of hours worked in the previous 12 months • Lower average number of months worked in the previous 12 months • Higher scores on the positive work goals scale

Non-linear analyses show that high levels of employment and other case management hours were related to a higher likelihood of scoring high on the Positive Work Goals Scale. High levels of case manager hours focused on health were related to a higher self-reported household income.

Quality of Life

Table 14, below, shows the significant results for outcomes related to quality of life. Overall, those who received more case management time reported higher satisfaction with several areas, including quality of life, personal relationships, finances, and the place where he or she lived.

Table 14: Quality of Life
Significant Findings

Increase in case management time that focused on…	Was significantly related to…
Health	• A higher likelihood that the participant is satisfied with his or her quality of life • A higher likelihood that the participant is satisfied with his or her finances
Employment	• A higher likelihood that the participant is satisfied with his or her quality of life • A higher likelihood that the participant is satisfied with his or her relationships • A higher likelihood that the participant is satisfied with the place he or she lives
Other (Non-health or non-employment related hours which could include dealing with personal issues)	• A higher likelihood that the participant is satisfied with his or her quality of life • A higher likelihood that the participant is satisfied with his or her finances

Analyses of non-linear relationships indicated that high levels of case management hours that focused on health were related to higher satisfaction with quality of life.

Focus Group Themes

Themes identified in focus groups with Case Managers provide context for many of the quantitative outcomes. Case Managers described their clients' experience with work and health as interdependent and fragile. Although many participants were reportedly somewhat stable, many others benefited greatly from the extra supports that helped them maintain their health and employment. Case Managers reported that they encountered a few barriers to implementing the program but found ways to overcome obstacles and to advocate for their clients when needed. Case Managers reported that they seemed to be most effective with participants who were proactive in contacting their Case Manager when they need assistance; participants who spoke up when they needed something. Characteristics of proactive participants included having a strong, positive relationship with their Case Manager (feeling a personal connection) and having previous experience working with a Case Manager. Regarding health, Case Managers said that they taught participants to be more proactive about their health – not waiting until the last minute to address health issues or refill prescriptions and how to assert their rights as a patient. Case Managers discussed how participants also needed to be proactive with employment services such as TWC and DARS. These services can be very effective; however, participants have to apply themselves and ask for what they need from the service. Since being successful in work and in health requires participants to advocate for themselves, Case Managers saw their role as a trainer and as a source of encouragement and support.

A second focus group with Case Managers identified many areas that affected implementation of the program. Case Managers pointed out barriers such as the lack of some enhanced services at the beginning of the project, confusion about procedures, and lack of a consistent case management model. One commonly reported barrier to participants maintaining their health was difficulty getting an appointment in the HCHD system. Case managers also reported that some participants did not want case management services and felt patronized by being "checked on" regularly.

VI.   DMIE STUDY FINDINGS – HYPOTHESIS III

Hypothesis 3: Given the costs of delivering the services and the program benefits shown by improved participant outcomes, there will be positive cost-benefit to DMIE services.

Costs of Implementing a DMIE Program

A cost analysis was conducted to identify the costs of delivering the DMIE Intervention. In considering the potential financial impact of implementing DMIE benefits similar to those in Working Well, costs were calculated for the key features of the intervention: case management and elimination of co-payments for medical visits and pharmacy. Dental costs were not included due to difficulties experienced by Working Well in implementing those benefits as well as changes in the maximum benefit over the study period. Vision costs were also included since Medicaid includes vision benefits. For both medical and pharmacy costs, the cost of the intervention was estimated by taking the average difference between the intervention and control groups during the periods 0-12 months and 13-24 months and translating those differences into a Per Member Per Month (PMPM) cost.

Pharmacy Costs

Table 15 shows the average number of prescriptions and costs for the intervention and control groups for the 24 months after enrollment (a separate analysis showed there was no difference between 0-12 months and 13-24 months for either intervention or control group, so the two time periods were collapsed). The differences in number of prescriptions filled and costs between intervention and control groups were statistically significant. On a PMPM basis, the intervention group received 0.67 additional prescriptions at a cost of $20.08 over the costs for the control group.

Table 15: Average number of prescriptions filled and associated cost for intervention and control groups across for the 24 months after enrollment

For 0-24 Month Post Enrollment Period	Interven-tion	Control	Difference	PMPM
Average Rx Count	40.98	32.95	8.03	0.67
Average Rx Cost	$1124	$883	$241	$20.08

Medical Costs

Table 16 shows the average per participant costs for emergency, inpatient and outpatient medical visits for the 24 months after enrollment by intervention and control groups. The expected cost of the DMIE intervention was estimated as the difference between the average costs for the intervention and control groups. These differences were summed and then divided by 24 to obtain a per member per month (PMPM) expected cost. If a participant did not have a visit in a particular category (e.g., inpatient), they were assigned a cost of $0.

Although separate analyses showed some differences in costs between 0-12 months and 13-24 months, the two time periods were collapsed to be consistent with Table 3 and consistent with the overall goal of calculating the total DMIE program cost on a PMPM basis.

On average, emergency care cost the least and outpatient care cost the most, which is a positive finding suggesting that resources were being directed towards primary and preventive care. Outpatient medical visits included both primary care visits in community health centers and specialty care visits (both hospital and community center based). Higher average costs for outpatient care are due to the greater number of visits, higher costs for outpatient specialty care, and the greater number of patients experiencing outpatient visits compared to emergency or inpatient visits. Overall, the intervention group had higher costs across the 24-month period for all three types of visits, although only the difference in emergency costs was statistically reliable.

Table 16: Average medical costs by type of visit for intervention and control groups for the 24 months after enrollment

Type of Visit	For 0-24 Month Post Enrollment Period		
	Intervention	Control	Difference
Emergency	$813	$613	$200
Inpatient	$1,106	$800	$306
Outpatient	$9,438	$9,050	$388
Total Difference			$894
PMPM Estimate			$37.25

Case Management Costs

The average salary for Shorman Solutions case managers was $57,607 ($69,129 including 20% fringe). With an average case load of 75 DMIE participants, the annual cost per participant was $921.71 and the monthly cost per participant was $76.81. The DMIE PMPM program cost was partially due to the research focus of the project which entailed hiring staff for a limited time period (requiring a financial incentive to attract high quality candidates), a preference for highly educated staff with significant experience, a requirement for at least monthly contact with each participant, and the limited number of participants in the study.

In terms of work time, records show that the average PMPM time spent by DMIE case managers was 1.11 hour per month for the first 12 months and .94 hours for months 13-24. This relatively low number suggests that case managers did not input all of their time consistently and/or that time spent traveling or on administrative issues was not counted in this total. Based on the amount of time available per month (173.3 hours, based on an annual full-time equivalent of 2,080 hours divided by 12), an estimated 150 clients per case manager would be feasible and more than 200 could be possible if most clients were stabilized and had a longer history with the case manager. (This higher case load might not be possible if a significant percentage of caseloads represented new patients requiring more assistance.) Table 17 shows a range of PMPM costs based on different caseloads and salaries.

Table 17: PMPM Costs by Salary and Caseload

	Salary			
Caseload	$45,000	$55,000	$65,000	$75,000
100	$45.00	$55.00	$65.00	$75.00
150	$30.00	$36.67	$43.33	$50.00
200	$22.50	$27.50	$32.50	$37.50
250	$18.00	$22.00	$26.00	$30.00
300	$15.00	$18.33	$21.67	$25.00
350	$12.86	$15.71	$18.57	$21.43
400	$11.25	$13.75	$16.25	$18.75

Vision Costs

The average vision benefit costs for the intervention group was $349 dollars for 0-12 months after enrollment and $382 for 13-24 months after enrollment. No significant difference was found in average costs between 0-12 months and 13-24 months, so the two time periods were collapsed resulting in a final average total cost across 24 months of $448. The PMPM cost for the intervention group was $19.67 for participants using vision services.

DMIE Program Cost Summary

An estimate of the PMPM cost for DMIE-like case management services, assuming a caseload of 200 per case manager at a $55k annual salary, would be $27.50. The added costs of the medical, pharmacy and vision benefits would be $77 on a PMPM basis. These additional services would comprise no co-payments for medical visits, medications or vision benefits. The case management services would emphasize effective self-management of chronic health conditions, health navigation, motivation for change, and psychosocial counseling where needed. Note that these cost estimates are based on the increased costs associated with the short-term nature of the intervention and could go down over a longer implementation. The up-front costs of implementing these DMIE-like services would be expected to result in long-term cost benefits by preventing deterioration of chronic conditions that would result in higher future health care costs.

Potential Financial Impacts

The DMIE results suggest that increasing health care access may result in higher medical costs in the 24 months after enrollment but could be offset by reducing the number of individuals with chronic health issues who receive SSI/SSDI payments. The 24-month Working Well outcomes related to receipt of SSI/SSDI show that 5% fewer intervention participants aged 21-44 received SSI/SSDI compared with control group participants (although 4% more intervention group members aged 45-60 received them). Although this is a small percentage difference in the number of recipients, the net cost offset over time could be significant when looking at the lifetime value of someone who becomes eligible for disability. Lifetime value represents the total value of disability income and health benefits across expected lifespans. Autor and Duggan[6] estimated a lifetime value of $245,000 for a 50-year-old person.

Table 18 shows that applying Autor and Duggan's estimate to the DMIE sample numbers, there would be a net deficit of $4,635 million looking only at a 50-year old person (subtracting the 45-60 costs from the 21-44 costs). However, if we assume a double life-time cost for someone 35-years-old, there would be a net benefit of over $1,587 million (subtracting the 45-60 costs from the 21-44 costs).

Table 18: Potential Reductions to Federal Direct Disability Costs

Age group	N	Intervention % Receiving Disability	Control % Receiving Disability	Intervention N Receiving Disability	Control N Receiving Disability	Study Group Diff	Lifetime Cost Impact (50-year-old)	Lifetime Cost Impact (35-year-old)
21-44	508	6%	11%	31	56	25.4	$ 6,223,000	$12,446,000
45-60	1108	15%	11%	166	122	44.3	$10,858,400	$10,858,400

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[6] Autor DH & Duggan MG (2006). The growth in the Social Security disability rolls: A fiscal crisis unfolding. *The Journal of Economic Perspectives, 20(3),* 71-96.

VII. PROCESS EVALUATION

> Key Points:
>
> - *DMIE participants reported that variation in the hours worked was largely due to available hours from employers.*
>
> - *Participants who stopped working and applied for disability typically did so because of a decline in health.*

During DMIE services, three rounds of interviews with DMIE participants were conducted that focused on process evaluation; one in August 2008 with 32 participants in the intervention and control groups, one in February 2009 with 31 participants in the intervention group, and another in August 2009 with 45 intervention and control participants.

The focus of the first round of participant interviews was to understand the situational and experiential attributes of the population. Participants discussed how their health affected their work, barriers to receiving health care, and their experiences in the early stages of the project. The second round of participant interviews attempted to identify services, situations or qualities of intervention participants that allowed them to improve their health or work or that caused their health or work to decline. The primary focus of the third round of participant interviews was to determine how and why changes in reported work hours occurred.

Overall, the findings were that individuals' fluctuations in their reported hours worked were most typically due to variability in hours available from the employer, including seasonal work. Although maintenance of work ability, rather than an increase in work hours, was the purpose of the DMIE study, fluctuations in available hours offered by employers should be considered when reviewing employment outcomes for this project. Participants who had reported that they had stopped working typically did so because their health had declined. Results from interviews with these participants indicated that connecting participants to training resources may be helpful to those who feel they can no longer perform the job they had been doing for years. Participants who stopped working and applied for disability may benefit from retraining to maintain at least part-time work or from assistance to re-enter the workforce once their health has improved.

> **Key Points:**
>
> - *The end of DMIE services caused significant disruption to participants, however, the percent of those who said their physical or mental health was good remained stable.*
>
> - *A higher percentage of DMIE participants said they found it easier to get an appointment in the months after the program ended.*
>
> - *Employment for participants remained steady after DMIE services ended.*

After DMIE services ended on September 30, 2009, evaluation staff conducted brief phone interviews with intervention participants to acquire information about how participants were faring in the transition away from DMIE benefits. The response rate varied each month but averaged 89% (the lowest response rate was 85% in October; the highest was 92% in March).

Overall trends showed that the end of DMIE services did cause significant disruption to participants' lives, although each individual was affected differently. The percentage of participants who said their physical health was good or better remained stable during the eight months after the end of DMIE services, with an average of about 69% of participants reporting good health each month post services. Similar results were found with mental health, with an average of 79% of participants reporting good mental health each month.

Findings also suggest that participants found it easier to obtain appointments during the months after DMIE services ended, as indicated by a higher percentage of participants who reported that they were able to get an appointment within a month of the request (45% in the first month post-services up to 54% after 8 months post-services) and a higher percentage of participants who said their appointment was "soon enough" (from 60% reporting "soon enough" up to 77% eight months later). Among participants who requested a doctor's appointment during each of the post-intervention months, about half said that their appointment was within a month of the request, while about a third said they were unable to get an appointment. About half of the intervention participants said that they had no problems accessing health care. Among those who did have a problem, cost was the most mentioned barrier. The cost of medications was the most often mentioned financial concern regarding health care.

Employment for participants, overall, remained steady after the end of DMIE services. The percent of participants who indicated that they were employed remained consistent between the first and eighth month post-services at around 79%.

It is a positive finding that that majority of participants remained fairly stable post-DMIE. Comments from surveys indicated that often times payments from DMIE survey participation helped alleviate the burden of paying for medication and doctor visit copayments, thus highlighting the importance of financial support to healthcare access.. Comments also indicated that although many participants struggle with obtaining doctor's appointments on their own, others have learned ways to get their health care needs addressed due to the help provided to them during the project. Participants' stability post-services could be at least partially attributed to the case managers working to promote self-sufficiency and self-efficacy of participants.

IX. PARTICIPANT NARRATIVES

Key Points:

- *DMIE participants balanced internal resources, social capital, material resources, health, social support and job flexibility in deciding whether to apply for disability benefits or continue to work.*

- *DMIE can impact some, but not all, of these factors, meaning that DMIE services can contribute to, but not guarantee participants' ability to maintain work.*

The narrative portion of the DMIE study was designed to understand what life was like for successful participants of DMIE, how they managed chronic illness/disability and work/life, how DMIE helped them to continue or increase their work hours, and what differentiated them from those who applied for or received disability payments.

Methods

In order to answer these questions, during the summer of 2010, DMIE evaluators conducted narrative interviews with 20 DMIE participants. The first round of interviews focused on "successful" participants (n=13). Participants were chosen as "successful" because they were working, because case managers identified them as successful, and because their responses on the post-intervention interview indicated that the participant had applied for disability in the past but no longer felt that they needed it. The second round focused on participants who were receiving disability or who had applied for disability and were continuing in that process (n=7). For a description of participant demographics, see Table 1 in Appendix III.

In conjunction with DSHS staff and case managers, evaluators developed an interview guide designed to elicit participant's stories about their experiences (see Appendix II). Interviews were conducted in-person, primarily in the participants' homes and were audio taped and transcribed verbatim. Interviewers wrote extensive field notes that also detailed the setting in which the interviews took place.

Data analysis focused on developing a one page narrative summary of each participant's experience (see samples in Appendix IV), looking for themes across participants, then comparing and contrasting themes and narratives to look for underlying processes. The analysis was highly interpretive but followed a procedure designed to insure that the findings represent the views of participants in a trustworthy fashion. For more details about the analysis process, please see Appendix III.

Findings: A Tenuous Balance

DMIE participants maintain a tenuous balance between the demands of work and the demands of maintaining their health. Nearly everyone interviewed was working, whether they were receiving or applying for disability or not (see Table 2 in Appendix III). Only one of the twenty participants interviewed, Robert, did not work at all. At the same time, nearly 2/3 had applied for disability. The primary reason people said they worked was because they had to. As Jackie said, "I have to make money, for one thing. I have to pay bills, so I got to stay at work instead of walking out." Even those who received disability still had to work because the disability payments were so low. When asked if receiving disability payments made life a bit easier, Milly said, "No, 'cause you don't get as much money as you do when you work."

All participants expressed a preference to work, though some, like Larry, only wanted to do the jobs they were trained to do. Some participants talked about enjoying their work. For example, Jackie loved working with patients in the nursing home, and Thomas spoke excitedly about his work in a mental health center. Others, like Liz and Dottie, said that staying busy kept them from focusing on their illness. Coco and Richard talked about the respect from others that comes with working. However, all the participants we interviewed had low-wage jobs. Most were in the service sector, such as home health care. These jobs, in addition to providing limited financial remuneration for workers, also had few or no benefits and were relatively unstable.

In order to maintain these jobs, participants with chronic illnesses and disabilities required assistance. All of the participants interviewed had multiple chronic physical problems, most commonly diabetes, high blood pressure, and Hepatitis C, and/or mental health problems, most commonly Bipolar Disorder (see Table 3 in Appendix III). One quarter of the participants had a previous substance abuse problem that had contributed to their current physical health problems.

Many DMIE participants spoke of support family gave them to help them maintain work. For example, Coco relied on her daughter to help her get dressed for work. A family member drove Jeannie to and from work. Other participants, such as Leah and Edward, were able to survive on low-wage work because they lived with extended family. Religious faith and the ongoing emotional and spiritual support of a church community were important to a majority of participants. A few participants also received support from formal support groups. Judy, in particular, benefited from a referral to a professional women's group by her case manager.

DMIE participants seemed to be able to stay employed when they had the following six qualities (which overlap, to some extent) in some kind of balance:

- **Material resources** refer to financial resources like a car, another family income, owning a home, having insurance.
- **Internal resources** refer to motivation, faith, optimism, cognitive capabilities, and the capacity for insight.
- **Social capital** refers to education, training, skills, previous experience and connections with others who have resources.
- **Social support** refers to people who can provide emotional and instrumental support
- **Job flexibility** refers to how the workplace accommodates the emotional and health needs of a particular employee.
- **Health** refers to the severity of illness and disability and the extent to which they are managed through drugs, surgery, or lifestyle change.
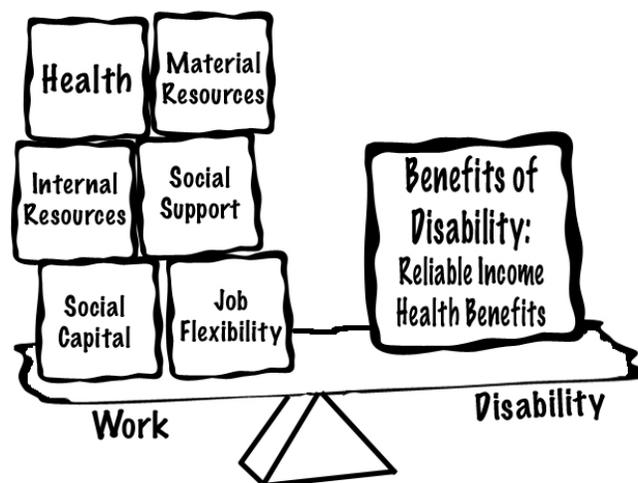
It appeared that it was not the individual characteristics that mattered in the outcome for participants; it was the interaction between them at a given time. For example, a participant may have had extraordinary health problems, but with a flexible job and social support, they were able to maintain employment.

Nancy illustrated how this operated in a successful case. As a result of numerous obesity-related problems, Nancy could barely move and was in near constant pain. Her doctors recommended that she go on disability. However, she received a car and a home in a divorce settlement. She had very supportive friends and family, and her DMIE case manager helped her find a job sitting for an elderly client with dementia that involved no lifting. The hours were long, but ended in the early afternoon so that Nancy could schedule doctors' appointments. With few other work skills and serious physical limitations, without this type of job flexibility, it is doubtful that Nancy

would have been able to continue employment. Without a car, she wouldn't be able to take advantage of the flexibility, since her work hours were from 2 a.m. to 2 p.m., outside the hours of public transportation. Nancy's balance of the six factors looked roughly like the one below where the factors that support work outweighed the benefits of disability.
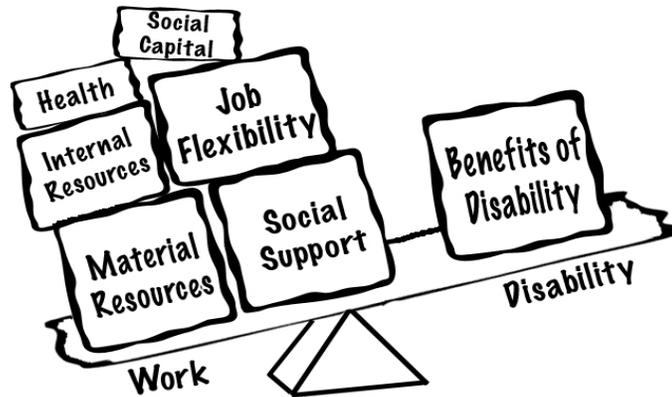
Similarly, Paula was currently in a balanced, but tenuous situation that currently identified her as a "success." Shortly after getting on the DMIE program, Paula got married and got private medical insurance on her husband's job, so she did not use any of the financial assistance of the program. Both she and her husband had full time jobs and she had a car. She was working hard to recover from substance abuse addiction. She had been clean and sober for almost four years and was an active member of Narcotics Anonymous and her local church. Twice a month she drove four hours to lead recovery groups in prison. At the same time, she was dealing with a number of medical problems such as obesity, serious back problems, depression, and insomnia. Her history of substance abuse made pain management a challenge. Paula said that even with private insurance, she often had to make a choice between working and taking care of her medical problems because the appointments conflicted with work time. Her employers were becoming increasingly annoyed at the time she spent at the doctors, and as a result, she was forgoing needed physical therapy. Paula's case manager provided emotional support that was critical for Paula at this crossroad: deciding whether to go forward with more surgery and to continue to try to work, or to give up and apply for disability.

Conversely, Dottie was a relatively young woman, whose primary diagnosis was depression and Bipolar II, which she described as "lots of lows and very few highs." She was highly motivated to work, as staying busy tended to keep negative thoughts at bay. However, both her depression and anger made it hard for her to keep a job and she had not found a medication that could help her maintain. . Like Paula, Dottie was also in recovery from substance abuse, but unlike Paula, she had very few material resources – she rents her housing and she does not own a car. She had very little support outside of her church. Further, she had "negative social capital" in the form of a felony conviction for drug possession which seriously narrowed her employment options. Dottie

had applied for disability three times and even with the intervention of DMIE (which she was overall very pleased with), she still considered disability the only route to financial stability. Dottie did not have the balance of factors necessary to maintain employment. For her, the benefits of disability outweighed the 6 factors that support work.
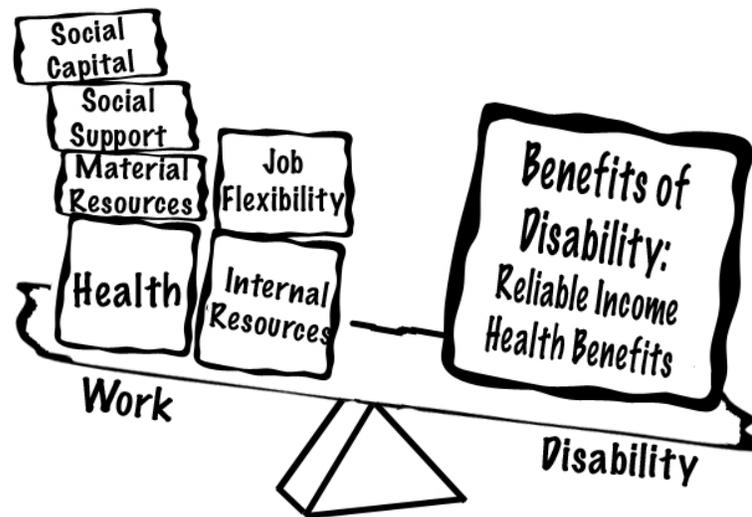
Similarly, Coco had an imbalance of factors that made her choose disability payments as the most secure income strategy. After years of hard work and supporting herself and her family, two years ago Coco was diagnosed with Multiple Sclerosis (MS). Even though she wanted to continue working, she realized that she was becoming progressively more limited in what she could do. She said, "I was a person that used to work two jobs and when it came down to this, I think I was kind of going a little crazy, cause it's not normal [not to work and be active]." Even though she applied for and received disability payments, Coco still works for a few hours per week as a home health aide, making sure that her clients understand her physical limitations. For her, work is a way to maintain self-esteem. She has a lot of family support in her efforts to continue to work and take care of herself. Her religious faith provides strong motivation for her to continue to do whatever she is able to do and maintain hope and optimism. However, with a progressive disease like MS, which will involve increasing physical limitations and medical care, Coco chose disability payments and the accompanying access to healthcare that go with it, as the best way to secure her income, while working to maintain her health and independence for as long as she can.

DMIE Assistance

Participants discussed the important contribution that DMIE made to their ability to maintain work and illustrated some effective and creative problem solving by case managers. As

mentioned above, Nancy's case manager referred her to her current job. Jeannie talked about how her case manager advocated for her to get a raise. The financial assistance in the form of no-cost medical appointments and prescriptions, dental care, and purchase of medical equipment allowed some participants to survive on their low wages and thus continue to work. Leah talked about how the payments for participating in surveys and interviews helped her put gas in her car and pay for little extras. Such relatively small amounts of financial assistance might prevent a financial crisis that could provoke job loss. They might also provide the means to increase work hours, such as helping Dottie to purchase a car. Ann benefitted from her case manager's referral to a local agency for rental assistance when Ann's substitute teaching work was slow. Assistance in arranging medical appointments outside work hours was crucial for some participants. Richard's employers were very inflexible and allowed no personal calls during work hours. Since he worked 8-5 Monday through Friday, without his case manager's help in arranging appointments, he would have been hard-pressed to continue his treatment for Hepatitis C. Finally, many participants talked about the encouragement that case managers provided to them as they struggled to manage their conditions and maintain work.

It is important to note that DMIE was able to affect only some of the six factors that influenced employment for people with chronic health conditions. It could increase participants' material resources somewhat by providing limited financial assistance, health by increasing participants' access to health care, and social support through the counseling of the case managers. However, it had relatively little direct impact on participants' internal resources, social capital, or job flexibility. Edward and Sylvia, for example were disappointed in the lack of assistance they received in increasing their skills or finding more suitable employment. The kind of low-wage jobs that DMIE participants have are typically much less flexible than professional jobs and offer the least in terms of capital (pay and benefits).

At least four of the factors (capital, social support, job flexibility, and health) are dynamic and not static – illnesses may worsen or improve, spouses may lose a job and health coverage, employers may grow tired of an employee's constant absences. For example, Thomas, who had struggled with mental health problems for a long time, did not apply for disability until his father with whom he lived, died. This flux in important resources may be what makes it hard to clearly distinguish successful participants and those who applied for disability at any given time. The three key services that DMIE provided: financial assistance for medical appointments and prescriptions, better access to healthcare, and emotional support from case managers all substantially improve, but do not guarantee, the chance of success for any given participant.

Participants gave a range of suggestions for ways that services could be expanded or improved to enhance their ability to maintain work and health. However, one key issue that came up repeatedly was the time required to make and keep appointments. Robert talked about being on the phone for up to 30 minutes only to learn that there were no appointments available. Others talked about waiting hours in the clinic for a scheduled appointment. Paula put it succinctly: "I

would like to have access past 5 o'clock. That would be a big thing, I mean, to be able to take care of both things [work and healthcare] so that, you know… one is not at the expense of another."

In summary, the interviews we conducted with successful DMIE participants and those who had applied for disability indicated that successful participants are those who are able to maintain a balance of material resources, internal resources, work flexibility, social capital, health, and social support. Many of these resources fluctuated over time for individual participants helping to explain, to some extent, why successful participants and disability applicants appeared to be so similar at any given time. Further, while the majority of participants had good things to say about the program and in particular, their case managers, DMIE interventions addressed some, but not all, of these factors. This means that DMIE can contribute to, but not guarantee participants' ability to sustain employment.

X. LEARNING COMMUNITIES

In April 2010, Texas Department of State Health Services (DSHS) implemented a state-level partnership which built upon the lessons of the Texas DMIE. Five interagency teams (one state-level, four localities) participated in a pilot learning community (LC), based on the Institute for Healthcare Improvement LC model. The purpose of the Texas LC was to improve competitive, integrated employment of adults with severe mental illness (SMI). The guiding lessons of Texas DMIE included:

- Certain factors may be more predictive of future disability status. These include a diagnosis of **severe mental illness**. People with SMI were less likely to qualify for DMIE due to lack of employment and more likely to become disabled before enrollment in DMIE.
- Workers with severely disabling health conditions, such as severe mental illness, have a **strong commitment** to work but a potentially **fragile** connection to work. Over 80% of working age adults with SMI in the public mental health system at the Texas Department of State Health Services (DSHS) are not currently working.
- Local, state and federal health and employment supports, although potentially very useful in maintaining independence, are **complex and difficult** for an individual with health conditions to navigate unaided, therefore they are not used to their full potential. Building the **relationships** and connections to effectively navigate these systems is an essential and continuous process.
- **Navigation** of health and employment services via trained professionals empowered with knowledge of these systems and **evidence-based** skills can potentially be important in maintaining independence and employment.

A steering group partnered to implement initiatives addressing DMIE lessons and enlisted the five teams that included the mental health and substance abuse authority (DSHS), encompassing both the DMIE and Mental Health Transformation Grant teams; vocational rehabilitation agency; Medicaid Infrastructure Grant administrator and team; Medicaid Agency; workforce commission; regional and national Social Security Administration and consumers. Initiatives included:

- Developing and implementing an executive level steering committee to coordinate vocational and mental health policies across agencies.
- Developing / initiating a four year plan to improve employment for mental health consumers.
- Offering two-day regional trainings on the Dartmouth Individual Placement and Support (IPS) evidence-based supported employment (EBSE) model to local mental health authorities (LMHAs) and vocational rehabilitation providers' state-wide.
- Implementing the learning community (LC) itself. The LC provided monthly training and technical assistance calls, webinars and quarterly expert conferences with the state-level team and four local teams. The local teams were comprised of the same types of partner agencies and consumers as the state partner team. Technical assistance was provided in numerous topics, including: supported employment; outcomes measurement and quality improvement; vocational rehabilitation; motivational interviewing; vocational rehabilitation; benefits counseling strategies; Medicaid buy-in; SSA work incentives; health / wellness promotion; and peer support.

Independent evaluation of the LC indicates that it succeeded in initiating positive changes at the state and local level, and should be continued. Texas has applied for a grant from the National Association of State Mental Health Program Directors (NASMHPD) to develop the infrastructure needed to expand and sustain the LC process / partnerships.

The evaluation assessed whether the learning community structure effectively assisted the four participating local communities and the state-level team in achieving their goals supporting employment.

Interviews and Observations

To evaluate the implementation and effectiveness of the learning community, the evaluation team conducted interviews with participants and observed learning sessions and conference calls. The findings include:

1. As a result of the learning community, participants reported feeling more empowered in their ability to support employment for people with SMI and reported having new and stronger relationships among the members of the local communities.
2. Local community participants used the information and relationships developed during the learning community project to find new opportunities for supporting employment for people with SMI.

3. Two barriers for the LMHA supported employment programs were a lack of emphasis on employment and a lack of understanding of how employment affects Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI).
4. The information presented at the learning sessions and local trainings was useful to interviewees.
5. Although participants expected to achieve higher rates of employment as a result of their participation in the learning community project, they wanted to continue the learning community process at some level to sustain their success.
6. State-level team members benefited from the learning community but did not fully realize opportunities for collaboration among their agencies at the state level.
7. While interviewees were overwhelmingly positive about the structure and process of the learning community, some believed there was room for improvement.

Participant Surveys

Evaluators surveyed participants at the beginning and at the end of the learning community process to measure changes in participants' perceptions and understanding of supported employment over the course of the project. The results of the survey indicated that:

1. By the conclusion of the learning community project, more learning community participants were aware of programs in their community that assist people with SMI.
2. Perceptions of programs within local communities improved among participants although the majority agreed that their programs need improvement.
3. Perceptions of relationships among providers, agencies, and advocates improved, with an increase in agreement that those relationships resulted in successful outcomes for participants.
4. Learning community participants agreed that their local organizations and communities will benefit from their involvement in the learning community.

Recommendations

The following recommendations have been developed to serve as a tool for DSHS to use in fostering supported employment and in implementing future learning communities.

1. Local communities and the state-level team should continue to use the learning community to build on successes.
2. Local communities, in which consumers lack access to SSI and SSDI benefits counseling or in which relationships with the employer community are weak, could benefit from having skilled, cross-trained supported employment staff at the local mental health authorities (LMHAs).
3. The learning community structure should have more built-in accountability to ensure stronger participation.

4. The learning community process should encourage more networking and sharing across communities.
5. The learning community membership should be expanded to include potential collaborators to enhance supported employment services for people with SMI and to direct more eligible consumers toward employment.

XI. CONCLUSIONS

Hypotheses

The DMIE evaluation was designed to answer three broad hypotheses.

Hypothesis 1: The intervention group will show more positive outcomes than the control group at each evaluation time point, including a decreased rate of transition to unemployment and less dependence on federal disability benefits.

The DMIE intervention had a positive effect in particular areas, notably in increased access to services and medications, better adherence to medications, and increased satisfaction with healthcare. In terms of **disability status**, there was no overall difference between the two groups in self-reports of having applied for or received federal disability payments; however, among younger participants, the intervention group was significantly less likely than the control group to have applied for benefits, while the opposite was true for older participants. The official SSA data showed lower rates of application for SSI/SSDI for intervention participants (as compared to control participants) during their first 12 months in the study; however, by 24 months, there was no difference between groups. Similarly to self-report, the SSA data also showed lower rates of application for and receipt of disability for intervention participants in the younger age group, as compared to control participants in that age group.

Hypothesis 2: A higher 'dose' of intervention will be associated with better outcomes for participants in the intervention group.

The amount of case management and other services received during individuals' tenure in DMIE seemed to reflect pre-existing need, with those in greater need getting more case management and health care services. For instance, the investment of more hours on a participant by a case manager was related to higher health care utilization of all types (outpatient, inpatient, emergency, mental health), fewer hours worked, and lower income/earnings. Yet, having more case manager hours was also related to better participant ratings of their mental health, fewer functional limitations, and higher satisfaction in several areas, including jobs, quality of life, finances and relationships. While the 'linear' findings that more hours sometimes translated into worse outcomes may reflect the fact that case manager time investment was related to participant need (participants with higher need received more hours), analysis done at earlier periods had

suggested 'curvilinear' effects for some outcomes such that, once need was accounted for, more case manager time led to more positive outcomes. However, these positive curvilinear effects were not, on the whole, seen at 24 months. The fact that these positive curvilinear effects were not seen during the 13-24 month period may reflect that fact that, due to rolling enrollment, not all intervention participants received a full 24 months of services. Although the analyses included time since end of services as a covariate, which partially controlled for its effect on the observed outcomes, the varying number of months of service received by intervention participants in the second year may have attenuated the positive curvilinear effects that had been seen during the first year.

Additionally, as the end of services drew near, case managers worked intensively with all intervention participants to get any remaining care needed, which may also have affected the curvilinear relationships during this time period.

Although it was anticipated that case manager hours spent on health versus employment versus other activities would be directly related to participants' outcomes in those specific areas, it was observed that hours spent in one area often translated into outcomes in other areas. This finding probably reflects the holistic nature of case manager interactions with participants, in which they addressed participant's interrelated needs in all areas of their lives.

Hypothesis 3: Given the costs of delivering the services and the program benefits shown by improved participant outcomes, there will be positive cost-benefit to DMIE services.

The estimated PMPM cost for DMIE-like case management services, assuming a caseload of 200 per case manager at a $55k annual salary, is $27.50. These case management services would emphasize effective self-management of chronic health conditions, health navigation, motivation for change, and psycho-social counseling where needed. In addition, the expected cost of the medical, medication, and vision services with no copayments for medical visits or medication would be $77 PMPM. These costs could be offset over time through the prevention of long-term disability. A 2% reduction in the number of people receiving direct disability income assistance could result in savings of over $219 million in one year, $1 billion in five years, and over $2.1 billion in 10 years. While there are many factors that influence participants' decisions to apply and obtain disability, the DMIE intervention addresses several key components related to health that are critical. Given that the intervention benefited younger participants more than older participants, targeting younger workers with significant health disabilities may be the most cost-effective strategy when considering the total lifetime cost of disability.

Discussion

On the ultimate outcome of interest, the intervention's effect on application for and receipt of disability, findings at 24 months did not show the desired reduction for the intervention group as a whole. Yet an encouraging trend was observed for younger individuals, among whom the rate of application for SSI/SSDI remained stable for the intervention group from baseline to 24 months, while the control group significantly increased their rate of application. Among this group, almost twice as many control group participants (11%) as intervention group participants (6%) had applied for SSI/SSDI at 24 months. The fact that among older individuals more intervention participants than control participants had applied for disability may mean that despite the support of the intervention, their health had already deteriorated to a point where their options to continue working were slim and seeking disability benefits was the best economic solution. Across the two years of the DMIE intervention, the strongest impact of the program appeared to be in the area of increasing access to and use of appropriate health services. At both 12 and 24 months, the intervention group, as compared to the control group, showed higher use of outpatient, mental health and dental services, fewer delays in getting medical care, and higher receipt of and adherence to prescribed medications. While there was no difference between groups in use of inpatient or emergency care, the higher use of outpatient services is important because it suggests better preventive health care that may be expected to reduce the eventual need for inpatient or emergency care over the longer term.

Again, at both survey periods, the intervention group was more likely than the control group to be satisfied with their access to health care and with the health care they received. While at 12 months the intervention group had been less satisfied than the control group with their finances, at 24 months both groups were equally satisfied.

There were few meaningful differences between the intervention and control groups on outcomes measuring their physical or mental health, although the intervention group was more likely than the control group at 24 months to self-report their physical health as "good" or better. This may be partially a result of a shift in their frame of reference, whereby the intervention caused them to re-evaluate their perception of health. In terms of employment and earnings, the intervention and control groups were similar on all measures, such as work hours, earnings and family income. According to TWC reports, fewer than 3% of both groups transitioned to unemployment during the 24-month study period, which is remarkable given the current economic situation and testifies to how important maintaining work, even at low levels, is to this low-income but highly motivated population. At 24 months, there was a small difference between the groups in one out of four measures of work motivation used in this study (with the control group increasing its motivation from baseline while the intervention group stayed at the same level); however, the

difference was likely not meaningful in terms of its effect on getting or keeping a job, since overall work motivation was quite high for both groups.

The 24-month findings suggest, as did findings at earlier periods, that the intervention might have a differential impact on particular subgroups of participants. The meaning of these differences was not always clear, however, and varied by outcome. Future implementations of DMIE-type programs might usefully examine whether there are inherent differences within their target populations in such things as the propensity to use health care services or their mental and physical health status and needs, so that the intervention can be designed to specifically address disparities in these areas.

In terms of the effect of the dose of intervention (i.e. number of hours of case management received), findings were mixed. High amounts of time received from case managers seemed to reflect pre-existing need, with participants having the highest needs receiving the most time. Interestingly, although it might have been expected that case management activities focused on health would most strongly affect participants' health and activities focused on employment would most strongly affect employment, there was not always a clear distinction, and hours spent in one area often affected outcomes in other areas. The dose of case management seemed to have the strongest association with increased access to and use of health care; it may be that improvements in this area are a prerequisite to seeing improvements in areas such as employment.

Case managers emphasized that their most important function was to help participants become proactive in addressing their health and employment needs and to advocate for themselves. They also noted that participants themselves had to be interested and willing to avail themselves of case management services (after reasonable attempts to engage them had been made).

The analysis of narrative interviews with DMIE participants suggested that the decisions that participants with chronic physical and/or mental health issues made about whether to continue to work or to apply for disability involved weighing not only their physical and emotional capacities against their current work situations, but also the kind of social support, financial resources, skills, and internal resources at their disposal. Given the proper supports, information, and encouragement, most people with chronic physical and/or mental health challenges interviewed preferred to work. Work provided income, respect, an outlet for their talents, and a distraction from the problems of chronic illness. Those interviewed praised the financial assistance and help setting appointments that DMIE provided as well as the emotional and instrumental support of case managers, calling DMIE "wonderful," and a "blessing." However, there were situations where there were not enough supports, even with DMIE intervention, to sustain work and the instability of their income led participants to apply for disability benefits. DMIE could not address some problems, like lack of transportation, poor education, criminal

history, or lack of training that would make a participant ineligible for higher-wage work. Some older participants, nearing retirement, decided that the personal investment in re-training was not worth the effort. Providing reliable, free, and more immediate access to medical care for people with chronic physical and/or mental health challenges was identified as critical for continuing work, but it was not a guarantee. DMIE participants struggled with additional issues common to low-income people that DMIE could not address.

Trends

The tables presented in this report show findings from both 12 and 24 months so that trends across the study period can be easily observed. While a few findings gained or lost statistical reliability between 12 and 24 months, overall the conclusions drawn from both time periods were robust. A notable trend across time for both groups was the decrease in use of outpatient health care between baseline and the end of the study that was likely due to regression to the mean; however, the intervention group decreased less than the control group, thus maintaining their significantly higher usage at both 12 and 24 months. Also, both groups increased their use of dental care over the project period, but the increase was significantly greater for the intervention group. The intervention group, but not the control group, increased their use of mental health services over time, which is an important positive finding among this population with high needs for mental/behavioral health care.

After the Intervention Ended

An important measure of the intervention's success would be any enduring impact that may last after services ended. The monthly brief phone calls conducted with intervention participants in the eight months post intervention (see Section VIII) suggested that, overall, they maintained their mental and physical health and levels of employment and were able to access needed health care even without the assistance of case managers. Participants' stability post-services are likely to be at least partially attributable to the case managers' focus on promoting self-sufficiency and self-efficacy. It is not known, however, how their well-being compared with control group participants, who were not queried at the same time. Participants did note that they would miss the annual survey payments that some used to alleviate the burden of paying for medication and doctor visit copayments, and this would probably have affected the control group equally.

In more in-depth interviews conducted with intervention participants at the end of the project, participants reported that they had benefited greatly from the DMIE program. The case management helped participants realize the importance of getting preventive checkups and taking their medications as prescribed, and the project's financial benefits allowed them to afford to do so. Participants appreciated easier access to appointments, freedom from worry about how to pay for their health care, and the emotional and social supports received from their case managers. Participants faced many barriers to taking care of themselves, including finances, lack

of time, and family and work stress, but they demonstrated various paths of resiliency, including making efforts to maintain a healthy lifestyle and seeking emotional or material support from family, friends and church. For the most part, DMIE participants maintained their ability to work and stated that the supports they received through the program were very helpful in staying employed. Most DMIE participants said that they did not plan to apply for disability benefits in the future and that they fully intended to continue working through retirement. For these participants, the desire to keep working was fueled by a sense of responsibility for their family and by their belief that working and staying active helps keep them healthy.

Few differences in outcomes were seen between intervention participants who received the full 24 months of services ('earlier recruits') and those whose 24-month survey occurred at some time after the end of services ('later recruits'). Among earlier recruits but not later ones, the intervention group was more likely to have had an inpatient stay in the second year, possibly implying that having fewer than 12 months of intervention services in the second year reduced the likelihood of getting this type of health care (it is not known whether later recruits were not able to get needed medical care or whether they just happened to need these services less). Yet, conversely, intervention participants recruited later experienced less delay due to cost in obtaining medical equipment than control participants. (It is possible that they obtained this equipment in the months before their services ended). While these are intriguing findings, it should be remembered that on the vast majority of outcomes, the time of recruitment had no impact.

32-Month Survey Results
An additional survey was conducted with both intervention and control group participants at 32 months, 8 months after the conclusion of the Texas DMIE intervention services. At 32 months, 737 (82%) of the intervention group and 575 (81%) of the control group completed the survey. Results show that the intervention group was able to sustain some of the positive results of higher utilization of health care services, notably more routine and dental visits. However, because the time period asked about in the survey partially overlapped with time during which the intervention services were still being delivered, these results may be a result of higher service utilization during that overlapped time period rather than sustained increased utilization post-intervention. Also at 32 months, participants in the intervention group were still more likely to rate their health as "good" or better as compared to the control group (percentages for each group remained the same, however the difference at 32 months was not significant due to a smaller sample size). Additionally, the intervention may have had a positive effect on men since men in the intervention group were less likely than men in the control group to report at 32 months that they had applied for SSI/ SSDI or Medicaid. The results at 32 months were less positive for participants who were recruited in person, where the intervention group was more likely to report receiving SSI or SSDI than the control group. No other benefits of the DMIE intervention that had been seen after two years in the project were still observed eight months later at the 32-month survey. A more detailed report of the 32-month findings is contained in Appendix VI.

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Some participant characteristics were associated with certain outcomes, regardless of study group and some significant differences were found for specific subgroups of participants for certain measured outcomes. Below is a discussion of how different groups of participants fared on the outcomes.

Health Care Utilization

- Gender – Across both study groups, men were less likely than women to report requesting an appointment for and receiving routine care. Men were also less likely to self-report needing and receiving urgent care. Additionally, they were less likely to report getting dental care, but men were also less likely to delay getting dental care due to cost. When comparing the intervention and control groups among **men**, the intervention group was much more likely to have had an emergency room encounter at both 12 and 18-month time periods. Men in the intervention group were also more likely than men in the control group to report that they had delayed dental care due to costs (there is no baseline for this measure to determine if this difference existed prior to the intervention and the difference was no longer present at 24 months). Among **women**, the intervention group was less likely to report having delayed going to a family doctor due to cost (there is no baseline for this measure).

- Race/Ethnicity – Race/ethnicity was associated with several outcomes for both study groups. Non-whites were less likely than whites to receive mental health care (according to self-report and health care system encounters) and had fewer mental health visits on average. Non-whites self-reported receiving more routine care and more dental care than did white participants. Non-whites were also less likely to report needing urgent care. Interestingly, when urgent care was sought, African Americans were more likely to say they received timely urgent care than whites and Asians/other ethnicities were three times as likely as white participants to report having received timely urgent care.

- Age – Age was also a factor for outcomes across both study groups in that older participants were more likely to have had an outpatient encounter, received more outpatient care on average, and were more likely to report needing routine care. Older participants were less likely, however, to report having an urgent care visit. When comparing study groups among **older** participants (age 45 to 60), more intervention participants had a mental health encounter during both time periods as compared to the control group. **Younger** participants (age 20 to 44) in the intervention group also had more mental health encounters during both time periods when compared to the younger control group. Also among the younger cohort, intervention participants were less likely than control participants to report that they had delayed filling a prescription due to costs

(at both reporting time periods). The same was true for the **older** group (age 45 to 60); however a significant difference existed only at 12 months.

- Education – Across study groups, participants who had a **high school education or less** were less likely than those with more than a high school education to have seen a dentist yet were less likely to report that they had delayed seeing a dentist due to cost. Those with a high school education or less were less likely to report requesting a routine care appointment and were less likely to report needing urgent care. This group also had fewer mental health visits, on average. When comparing study groups among participants who had **more than a high school education**, fewer intervention participants than control participants reported at 24 months that they had delayed dental care due to costs. However, among participants who had **a high school degree or GED**, the intervention group was more likely to report having delayed dental care at 24 months (there is no baseline for this measure).

- Occupational Category – Across study groups, participants in the sales/service occupational category and those in the health support category were more likely than those in the "other" occupational category to have had a mental health visit. Those in the sales/service category w ere more likely to report a delay getting specialist care due to cost, and those in the categories sales/service and health support were more likely to delay getting hospital care due to costs. Among **health support workers**, more intervention participants self-reported having a mental health visit during both time periods as compared to the control group. Similar results were found for participants in the **occupational category "other"** (not health support and not sales/service). Among participants in the **sales/service occupational category**, fewer intervention participants reported that they had delayed getting needing durable medical equipment due to costs.

- Serious Mental Illness (SMI) – Not surprisingly, participants with a serious mental illness were nearly four times as likely as those without a serious mental illness to have had a mental health encounter and they had a higher average count of mental health visits. Those with an SMI were also more likely to report delaying specialty care due to cost. Among participants who did <u>not</u> have a **serious mental illness** (SMI), those in the intervention group were more likely than control participants without an SMI to have had a mental health encounter during both reporting time periods. Compared to the baseline year, nearly double the percent of intervention participants (among those without an SMI) had accessed mental health services in the second year of DMIE as before.

- Recruitment Cohort – Across study groups, participants recruited through the mail were less likely than those recruited in person to have had an outpatient encounter. When comparing the intervention and control groups among those **recruited through the mail**, more intervention participants, as compared to control, had an outpatient encounter. Also among those recruited through the mail, more intervention participants reported that they had needed urgent care during the 12 month time period. There was no difference at 24 months, however, and when compared to baseline data, it was the control group who

reported a decline in the need for urgent care while the intervention group remained constant. Among participants who were **recruited in person**, the intervention group, as compared to the control group, was less likely to report having delayed a needed surgery due to costs and they were less likely to report that they had delayed getting needing durable medical equipment due to costs.

- Adjusted Clinical Group (ACG) Scores – Participants with higher ACG scores (across both study groups), thus having higher health morbidity, had more utilization of services including outpatient care, urgent care, inpatient care, and mental health care (according to both self-report and health care encounters). Those with higher ACG scores were, however, less likely to report delays in getting routine care and specialist care due to costs.

Pharmacy

- Gender – Across both study groups, **men** were more likely to receive prescriptions for two medications used to treat hypertension (ACE inhibitors and dihydropyridines). **Women** were more likely to receive prescriptions for five other medications, including those to treat depression, anxiety, dyspepsia/ulcers, pain and allergies. **Women** in the intervention group were more likely than women in the control group to be persistent with sulfonylureas (for diabetes) while **men** in the intervention group were less likely to be persistent with this drug than men in the control group.

- Race/Ethnicity – Differential receipt of medications by race/ethnicity could be due to differential prevalence rates for those disorders. **Non-white** participants, over both study groups, were more likely to receive prescriptions to treat diabetes (insulin, sulfonylureas, biguanides, and diabetes test equipment). Non-whites were also more likely to receive prescriptions for medical devices. They were less likely to receive prescriptions for asthma (beta adrenergic agonists), pain (opiate agonists), depression, and anxiety. Medications for hypertension were prescribed differently for different racial groups. All non-white groups were more likely to receive a prescription for ACE inhibitors. But **African Americans** were more likely to receive dihydropyridines, thiazide diuretics, and beta blocking agents, while those in the **Asian/mixed/other** racial group were less likely to receive dihydropyridines and beta blocking agents. Non-whites had a lower average number of days adherent to antidepressants and beta blockers for hypertension. **African Americans** in the intervention group were more likely to be persistent for proton pump inhibitors than those in the control group, compared with whites where the control group was more persistent. African Americans in the intervention group were more likely than those in the control group to be persistent with biguanides (for diabetes), compared with whites in the intervention group who did not differ from whites in the control group. Among **Hispanics,** those in the intervention group were more likely to be persistent with biguanides and insulin compared with Hispanic control group members. It is possible

that this finding reflects the implementation benefit of having bilingual case managers to help with medication education and encouragement.

- Age – Age was positively related (i.e. as age when up, so did prescriptions) to receipt of prescriptions for eight medications used to treat chronic conditions, including those used for hypertension, high cholesterol, diabetes and pain. Age was also positively related to a higher average days of adherence to five medications. Older participants were less likely, however, to receive a prescription for antidepressants.

- Education – When comparing the intervention and control groups among participants grouped by education level, among those with a **high school education** the intervention group had a higher average number of days of adherence to antidepressants as compared to those in the control group. Also among those with a high school education, the intervention group was more adherent to HMG CoA reductase inhibitors for high cholesterol as were those with **more than a high school education**. But among those with **less than a high school education**, those in the intervention group were less adherent to HMG CoA reductase inhibitors. Among those with less than a high school education, intervention group participants were also less likely than their control group counterparts to be adherent to thiazide diuretics for hypertension. Participants with **less than high school education** in the intervention group were less likely than those in the control group to be persistent with medications to treat hypertension (ACE inhibitors and thiazide diuretics). Those with a **high school education** in the intervention group were more likely be persistent for antidepressant medication when compared to their counterparts in the control group.

- Occupational Category – Participants in both study groups who were in the **sales/service** or the **health support** occupational categories were more likely to receive prescriptions for pain (opiate agonists) and antihistamines as compared to other occupations. Those two occupational groups were less likely, however, to receive a prescription for sulfonylureas for diabetes.

- Serious Mental Illness (SMI) – Across study groups, participants with an **SMI** were three times as likely as those without an SMI diagnosis to have received a prescription for antidepressants. They were also more likely to receive a prescription for thiazide diuretics for hypertension. Participants with an SMI were less likely to receive prescriptions for ACE inhibitors for hypertension, as well as HMG CoA reductase inhibitors for cholesterol, proton pump inhibitors for dyspepsia/ulcers, and sulfonylureas for diabetes. Future research should examine potential reasons for these findings, such as whether the care received by those with SMI was focused mainly on mental health issues. Looking at differences between the intervention and control groups among participants who did not have a serious mental illness, the intervention group was more adherent to insulin at 12 months, although no difference was found at 24 months.

- Recruitment Cohort – Regardless of study group, participants who were recruited through the mail were less likely to receive prescriptions for three medications – ACE inhibitors

(for hypertension), HMG CoA reductase inhibitors (for high cholesterol) and insulin (for diabetes). Some differences were found between the intervention and control groups depending on the participant's recruitment cohort. Among those **recruited in person**, the intervention group was more likely to receive a prescription for beta adrenergic agonists (for respiratory conditions, asthma) as compared to the control group that was recruited in person. And intervention participants **recruited through the mail** were more likely than the control group recruited through the mail to have received a prescription for insulin. Also among the mail recruitment cohort, the intervention group was more adherent to their diabetes testing equipment as compared to the control group. Intervention participants who were **recruited in person** were more likely to be persistent with biguanides (for diabetes) and beta andreneric agonists (for asthma) when compared to the control group participants who were recruited in person.

- Adjusted Clinical Group (ACG) Scores – **Higher ACG** scores (indicating higher health risk) were related to higher receipt of prescriptions for 15 of the 17 studied medications and devices. Higher ACG scores were also related to a higher average days of adherence to proton pump inhibitors (for dyspepsia, ulcers), however, it was related to a lower average days of adherence to thiazide diuretics for hypertension. Among study participants with **higher ACG scores**, those in the intervention group were more likely than those in the control group to be persistent with medications for diabetes (biguanides and sulfonylureas) and asthma (beta andrenergic agonists). This indicates that the intervention helped increase persistence the most for people with the highest health morbidity.

Behavioral and Physical Health Outcomes

- Gender – Regardless of study group, **men** were more likely than women to say that their mental health was good or better. However, men were also more likely to have a worse (higher) score on the substance abuse subscale of the BASIS 24. **Women**, on the other hand, were more likely than men to report having at least limitation in Instrumental Activities of Daily Living (IADL). Comparing the intervention and control groups among **men**, those in the intervention group reported worse (higher) scores, compared to the control group, on the BASIS 24 Relationship subcomponent at the 12 month time period indicating more difficulties in their personal relationships. However, there was no difference on this measure for this group at 24 months and neither the intervention group nor the control group changed significantly on this measure from baseline to 24 months. Similarly, men in the intervention group reported higher scores, compared to the control group, on the BASIS 24 Emotional Lability subcomponent (appropriate expression of emotions) at the 12 month time period, indicating more difficulties controlling their emotional expressions. However, there was no difference on this measure for this group

at 24 months and neither the intervention group nor the control group changed significantly on this measure from baseline to 24 months.

- Race/Ethnicity – Across both study groups, **African Americans** and participants in the race/ethnicity category **Asian/mixed/other** scored worse on the relationships subcomponent of the BASIS 24, indicating more difficulties in their personal relationships. **Hispanics** scored better on this subcomponent compared to white participants. On the BASIS 24 subcomponent measuring emotional lability (appropriate expression of emotions), African Americans and Hispanics scored lower than whites while Asian/mixed/other participants scored better. And on the psychosis subscale of the BASIS 24, all non-white racial/ethnic categories fared worse than the white participants indicating a higher rate of psychosis symptoms among these groups. However, all non-white racial/ethnic categories were also more likely to rate their physical health as good or better when compared to whites.

- Age – Across both study groups, as age increased participants scored better on the BASIS 24 and four of its subcomponents (depression, relationships, self-harm and emotional lability). Also, as age increased, so did the scores on the SF-12 Mental Component Summary where a higher score indicates better mental health.

- Occupational Category – Overall, participants who were in a **sales/service** or **health support** occupation scored worse on the BASIS 24 overall scale and the depression/functioning scale when compared to other occupations. Also, these two occupational groups were more likely to report having at least one limitation in Activities in Daily Living (ADL) and at least one limitation in Instrumental Activities of Daily Living (IADL). Looking at intervention-control group differences among participants in the **occupational category "other"** (not health support and not sales/service), participants in the intervention group scored lower (worse) than those in the control group on the SF-12 Mental Component Scale at both the 12 month time point and at the 24 month time point. The intervention group reported no significant change on this measure from baseline to 24 months while the control group saw an improvement that was significantly significant.

- Serious Mental Illness (SMI) – Participants who had a diagnosis of an **SMI** were more likely to score worse on the overall BASIS 24 scale as well as the subscales for depression/functioning, self-harm, and emotional lability. They also scored worse on the SF-12 Mental Component scale.

- Recruitment Cohort – Across study groups, participants who were **recruited through the mail** were more likely to rate their mental health and their physical health as good or better. Additionally, they tended to score better on the SF-12 Physical Component Scale. The mail recruits were also less likely to have a limitation in at least Activity of Daily Living (ADL).

- Adjusted Clinical Group (ACG) Scores – As ACG score increased (indicating higher health risk), the likelihood of having at least one limitation in Instrumental Activities of Daily Living (IADL) also increased.

Employment and Earnings

- Gender – Across both study groups, **men** were more likely than women to have received unemployment benefits. Among men, participants in the intervention group scored lower than those in the control group on the Quality of Work scale at both time periods. Despite this significant difference between the intervention and control groups, neither group showed a significant difference in their scores between baseline and 24 months. There was a significant difference between the intervention and control groups among **women** on the Quality of Work scale, as well, although this difference was only found at 12 months. A subgroup difference was not found between the two groups at 24 months. Women in the intervention group did report a significantly higher score (improvement) on the Quality of Work scale between baseline and 24 months, whereas women in the control group did not change.
- Race/Ethnicity – Across both study groups, self-reported household income was lower for **African Americans** and those in the **Asian/mixed/other** ethnic category while **Hispanics** reported higher annual household income. Also, regardless of study group, African Americans were more likely than white to have received unemployment benefits. All non-white ethnic groups were more likely than white participants to be satisfied with their ability to continue to work. Also, African Americans and Hispanics were more likely to score high on the Positive Work Motivation scale and the Positive Work Goals scale, while those in the Asian/mixed/other category were less likely to score high on these scales. Among participants of **Asian, mixed or other ethnicity**, those in the intervention group reported a higher average number of hours worked per month compared to the control group at 24 months. Control group participants in this subgroup reported a significant decrease in hours worked compared to baseline while the intervention group remained essentially consistent.
- Age – Among all study participants, as age increased self-reported household income and TWC-reported income decreased. Older participants were less likely to score high on the Negative Work Motivation scale. Among **younger participants** (age 20 to 44), more participants in the intervention group, compared to the control group, reported at the 12 month time period that they had worked more hours or the same hours in that year as they had in the previous year. However, there was no intervention-control difference on this measure among the younger cohort at 24 months and neither the intervention nor the control group reported a significant change on this measure from baseline to 24 months.
- Education – Across study groups, those with **a high school education** reported having worked more months in the past year than did those with less than a high school

education and those who had more than a high school education. Also, those who completed high school were more likely (compared to those with more than a high school education) to report that they had worked at least the same number of hours or more as they had in the previous year. However, despite these positive outcomes for the less educated participants, they also had a lower self-reported annual household income when compared to those who had more than high school. They were also less likely to score high on the Positive Work Goals scale and more likely to score high on the Negative Work Goals scale indicating that the less educated participants had fewer positive regards towards working.

- Occupational Category – Overall, participants in **sales/service** occupations and **health support** occupations fared worse on employment outcomes when compared to participants with other occupations. The "other occupations" group comprised professional, trade and other miscellaneous occupations, and represented individuals who may have had more education and technical training. The sales/service and health support groups had lower averages of number of hours worked in the past ear, had lower TWC-reported earnings and income, lower self-reported household income, and were more likely to have received unemployment benefits. Sales/service and health support workers were more likely to say they had accomplished less than they would have liked in the past year. They were also less likely to have high scores on the Positive Work Goals scale, the Plans to Work in the Future scale, and were less satisfied with their ability to continue working. Differences between the intervention and control groups emerged among each occupational category. Among participants who were in the occupational category **sales/service,** the intervention group had a higher score on the Quality of Work scale at 24 months. In this subgroup of participants, the intervention group reported a significant improvement in scores from baseline to 24 months, whereas the control group for this subgroup did not change. **Health support workers** in the intervention group reported higher Quality of Work scales at 12 months as compared to health support workers in the control group, however, there was no difference between the intervention and control group at 24 months. Two occupational subgroups, sales/service and "other", reported differences between the intervention and control groups on the percent who said they had accomplished less than they would have liked in the past year. Among participants in the sales/service occupation, the intervention group was less likely to report having accomplished less than they would have liked as compared to the control group at 24 months. Among participants in the "other" occupational group, more participants in the intervention group reported having accomplished less than they would have liked as compared to the control group at 12 months. There was no difference on this measure for the "other" occupational group at 24 months. Workers in sales/service and health support occupations may lack the human capital (education, training and competencies) that workers in professional or skilled trade occupations have, and they may particularly benefit from help connecting to services such as DARS and other resources.

- Serious Mental Illness (SMI) – Participants with a diagnosis of a severe mental illness fared worse on several employment outcomes compared to those without an SMI diagnosis. Those with SMI tended to be employed fewer months in the past year, were less satisfied with their ability to work and were less satisfied with their job. They also tended to score lower on the Plans to Work in the Future scale and higher on the Negative Work Motivation scale. It is not surprising that SMI was associated with more negative outcomes for individuals. While the intervention may have helped people with SMI to improve their situation, it did not eliminate the differences in outcomes between them and people with other diagnoses.
- Recruitment Cohort – Across both study groups, participants who were **recruited by the mail** were less likely than those recruited in person to report that they had accomplished less than they would have liked in the past year. Also, among participants who were **recruited in person**, the intervention group was more likely to report not having accomplished as much as they would have liked as compared to the control group at 12 months. There was no intervention-control difference among this subgroup at 24 months. Those recruited in person were also more likely to have received unemployment benefits.
- Adjusted Clinical Group (ACG) Scores – Across study groups, several outcomes related to employment and earnings declined as ACG scores (health morbidity) increased. Participants with higher health risk worked fewer months over the year, worked fewer total hours, and earned less according to TWC. Those with higher health morbidity also scored lower on the Quality of Work and Plans to Work in the Future scales when compared to those with lower ACG scores and also were less likely to be satisfied with their ability to work and less satisfied with their job. This suggests that high health risk scores, such as the ACG, can be used to help identify people most likely to need interventions such as DMIE.

Quality of Life

- Gender – Among all participants (intervention and control), **men**, compared to women, tended to be more satisfied with the health care they received as well as their finances. Among **men**, fewer intervention participants were satisfied with their finances at 12 months as compared to the control group. There is no baseline for this measure so it cannot be determined if this difference existed upon entry into the study, and there was no intervention-control difference among men at 24 months. Among **women**, those in the intervention group were more likely to be satisfied with the health care they received at both time points.
- Race/Ethnicity – Across study groups, **non-white** participants tended to be more satisfied with their access to health care services. Non-whites also tended to be more satisfied with their personal finances as compared to white participants.

- Age – For all participants, regardless of study group, as age increased so did the likelihood of being satisfied with access to health services. However, as age increased, satisfaction with personal finances tended to decrease.
- Education – Participants who had a **high school grade education** tended to be more satisfied with the health care they received while those who had **less than high school** tended to be less satisfied with their health care services. Less educated participants, when compared to those who more than a high school education, were more satisfied with their finances and more satisfied with the place they lived. Among participants who had **less than a high school education**, participants in the intervention group were less likely than those in the control group to be satisfied with their finances at 24 months. Among those had a **high school education**, intervention participants were less likely than control participants to be satisfied with their finances at 12 months. There is no baseline for this measure so it cannot be determined if this difference existed upon entry into the study, and there was no intervention-control difference among this group at 24 months.
- Occupational Category – Participants in sales/service and health support occupations tended be less satisfied with their overall quality of life.
- Serious Mental Illness (SMI) – Across study groups, participants with a diagnosis of an SMI were less satisfied with their finances, their personal relationships and their overall quality of life.
- Adjusted Clinical Group (ACG) Scores – Overall, as ACG score increased (higher health morbidity), participants were less likely to be satisfied with their overall quality of life.

Federal Disability Benefits

- Age – For all participants, regardless of study group, as age increased so did the likelihood of applying for SSI or SSDI.
- Occupational Category – Participants in the **sales/service** and **health support** occupations were more likely than those in other occupations to apply for SSI or SSDI.
- Serious Mental Illness (SMI) – Participants with an SMI diagnosis were nearly twice as likely as those without it to apply for SSI or SSDI. It would be helpful to implement Learning Communities for supported employment more broadly for those with SMI. In particular, key elements of the Learning Communities would be to identify local community resources that could be more effectively utilized. For example, Local communities, in which consumers lack access to Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) benefits counseling or in which relationships with the employer community are weak, would benefit from having skilled, cross-trained supported employment staff at the local mental health authorities (LMHAs).
- Recruitment Cohort – Across both study groups, participants who were recruited through the mail were less likely to receive SSI or SSDI as compared to those who were recruited in person.

- Adjusted Clinical Group (ACG) Scores – Participants with higher ACG scores (higher health risk) were more likely to apply for and receive SSI or SSDI. Health risk scores could be used by health care systems and payors to identify people most likely to benefit from early intervention. For example, on a routine basis, health care systems and other payors could use their clinical and administrative data to identify patients for contact to determine if they are following medical advice or needing assistance to address chronic health conditions. In particular, the latest version of the ACG software allows health care organizations to identify participants most at risk for future hospitalizations.

Other Government / Public Benefits – including Medicaid, TANF, SNAP (food stamps), housing assistance, vocational rehabilitation services, and unemployment insurance benefits

- Gender – Across both study groups, **women** were more likely than men to have applied for Medicaid and to have applied for and received other forms of public support (excluding SSI/SSDI).
- Race/Ethnicity – **African American** and **Asian/mixed/other** ethnic groups were more likely than white participants to apply for and receive other forms of public support.
- Age – **Younger participants** were more likely to apply for and receive Medicaid and other forms for public support.
- Occupational Category –Among participants in the **sales/service occupational** category, the intervention group was more likely than the control group to have received other types of public support at 24 months. Among those in the "**other**" occupational category, the intervention group was less likely to have applied for other forms of public assistance.
- Recruitment Cohort – Across both study groups, participants who were recruited through the mail were less likely to receive other public support.
- Adjusted Clinical Group (ACG) Scores – Regardless of study group, those with higher ACG scores (higher health risk) were more likely to receive Medicaid and other forms of public support. This finding suggests that ACG scores could be used to help identify individuals who could most benefit from early intervention using recommendations identified above.[7]

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[7] The Johns Hopkins Adjusted Clinical Groups (ACG) scores (Weiner et al., 1991), are used as measures of health morbidity. ACG scores have demonstrated reliability and validity (Rosen et al., 2001; Starfield et al., 1991; Weiner et al., 1996) and they compare favorably to other measures of health burden (Perkins et al., 2004). The Johns Hopkins Adjusted Clinical Groups (ACG) Case-Mix System measures overall patient morbidity or health risk. The ACG System assesses health risk based on disease pattern, age and gender. It relies on ICD-9 diagnostic code information and prescriptions filled, as recorded in administrative health care data. Examining all diagnoses and medications provides a more complete picture of individuals' overall health risk than does just the disease being currently addressed. The ACG Case-Mix System assigns all ICD-9-CM codes to one of 32 diagnosis groups, known as Adjusted Diagnosis Groups (ADGs.) Diseases are classified into a diagnosis group (ADG) based on five clinical dimensions: duration (acute, recurrent or chronic); severity (minor/stable or major/unstable); diagnostic certainty (symptoms or diseases); etiology (infectious, injury or other); and specialty care (medical, surgical, obstetric, hematology, etc.). An individual is assigned to an ACG

ID#_____

Introduction:

Thank you for agreeing to be interviewed. I know you have already answered a lot of questions during the course of this study about your health, your work, and your involvement in the DMIE program. We've had a chance to take a look at some of that. What I'd like to talk with you about today are your successful strategies for working, living, and staying healthy – what works for you. I'm going to ask about different times in your life and I'd like for you to tell me as much about what was going on and how you managed it as you're willing to tell me. I will be recording this as well as taking some notes, so I can remember as much of what you tell me as I can.

Before we begin . . . have you had a chance to take a look at the consent form? It's very similar to the one(s) you've signed before. I just want to emphasize that what you tell me will only be used for the research – it won't go to your case manager or anyone involved in your health care.

Also, would you like to choose a pseudonym (fake name)? When we write our notes, we will use this name to identify you. This is another way to protect your privacy.

Pseudonym: _____

1. Can you tell me about the first time your health started affecting things like work, chores, going to school? Can you tell me what kind of health problem you were having? What did you do to manage the situation? What did you do next? (Elicit key health-related experiences throughout the participant's life and how he/she coped/managed the challenge. Ask about medications and how they work/side effects. Ask about diet and exercise) Potential probes: What did you do to keep working or going to school? Maintain relationships? Stay involved in social activities? Did you lean on family/friends for support? What kept you going? How do you keep your spirits up?

2. Was there ever a time during this period that you considered applying for disability? If so, can you tell me about that? (If participant did not apply for disability: What made you decide not to apply? What motivated you to keep working rather than try to go on disability?)

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based on his or her particular combination of ADGs, as well as his or her age and gender. Thus, individuals within a given ACG have experienced a similar pattern of morbidity and resource utilization over the course of a given year. Some examples of ACGs are: Chronic Medical, Unstable; and Chronic Medical, Stable. Future health risk scores are created by applying weights to each ACG unique category.

3. Moving to the present, can you tell me about a recent typical workday (or typical day, if the participant is not working)? I'd like to know what you did from the time you woke up until the time you went to bed – every single thing. (Probe for getting up, getting dressed, taking medications, getting to work, the work day, meaning of work, work colleagues, work activities, coming home, chores, leisure, relationships, sleeping. Focus on things that he or she does to stay healthy and keep working—how does it help?)

4. Do you find that you have "good" days (days when your body feels good you and can go about your normal activities) and "bad" days with your health? Can you think about a recent good day? What was that like – what made it "good"? (Potential probes: What kinds of things did you do? How did you feel? How did you interact with other people?)

5. What about a recent bad day, can you tell me about that? (Potential probes: What kinds of things did you do? How did you feel? How did you interact with other people? How did you manage it -- for example, ask for help, pray, go to the doctor, take extra medications, etc.) What keeps you going? WHICH DO YOU HAVE MORE OF: GOOD DAYS OR BAD DAYS?

6. Can you think about when you first became involved in the DMIE project? What was going on with your health at that time? Can you tell me about becoming part of the project? What has changed in your life since becoming part of the project? (Probe about services involved in within HCHD already, vs. those coordinated by the case manager, relationship with case manager and positive changes that it brought to participants' life, services they felt they needed but didn't receive).

7. What do you think is the key to your success in staying healthy? (If working: What about keeping a job?) Managing daily life? What keeps you going (motivated)?

8. What would you want like the people who make the rules (politicians/policy makers) to know about what you need to keep doing that (staying healthy, keeping a job and managing daily life?) ALTERNATIVE WORDING: If you had talked to Congress during the health care debate, what would you have said?

The narrative portion of the DMIE study was designed to illustrate what life was like on a day-to-day basis for successful participants of DMIE and to try to understand how they managed chronic illness/disability and work/life. We were interested in what motivated them and what strategies they brought to bear to overcome obstacles. We were also interested in how participants felt DMIE helped them to continue or increase their work hours and what additional services they thought would help in this. Finally, we hoped to understand how successful participants differed from those who applied for or received disability payments.

In order to answer these questions, during the summer of 2010, we conducted narrative interviews with 20 DMIE participants. The first round of interviews focused on "successful" participants (n=13). Participants were chosen as "successful" because they were working, because case managers identified them as successful, and because their responses on the post-intervention interview indicated that the participant had applied for disability in the past but no longer felt that they needed it. The second round focused on participants who were receiving disability or who had applied for disability and were continuing in that process (n=7). For a description of participant demographics, please see Table 1 in this Appendix.

We conducted these interviews using a narrative analysis framework. As Riesmann (2002) writes, "Personal narratives provide windows into lives that confront the constraints of circumstances" (p. 707). Asking participants to talk about their lives in this way allowed us to see how the various elements of illness, interacting with healthcare systems, health maintenance, maintaining work, and deciding whether or not to apply for disability looked in an individual circumstance. We were not concerned with generalizability in the statistical sense, but rather with describing situations in context, from the perspective of those that experience them, in an effort to understand the mechanisms that create and support a social problem or an intervention. The goal was to develop a holistic understanding of a situation and the meanings participants make of them (see for example, Creswell, 2007).

The interviews employed a semi-structured interview guide, developed in conjunction with DSHS and case managers. It was designed to elicit narratives. Participants were interviewed in person, in their homes or, in very rare situations, in another location specified by the participant. Seeing participants in their own environment provided insight into the way disability impacted their daily lives.

Each participant received a gift card for participation. We audio-recorded the interviews and wrote extensive field notes, describing what we heard and saw and felt during the interviews. Audiotapes were transcribed verbatim. Transcripts were spot-checked against the audiotapes for accuracy.

The analysis process was highly interpretive. "The approach does not assume objectivity; rather, it privileges positionality and subjectivity" (Riessman, 2007, p. 696). That is, we understand that research participants craft their stories for a particular audience at a particular time (in this case, the research interview). What information was included and what was left out, how experiences were framed, the metaphors or language used, and the information emphasized are part of the storyteller's attempt to be a "good" research participant, to present themselves in the way they want to be seen, and address dominant cultural themes (Jones, 2002; Mishler, 1995; Riesmann, 2007). In the same way, we as researchers are also engaged in storytelling as we re-interpret and re-present the collective stories (Mischler, 1995; Smith, 2002) through our own experiences, theoretical sensitivities, and the goals of the project.

Despite the highly interpretative nature of narrative analysis, we followed a procedure designed to help insure that the final product represents the views and experiences of participants. It was also guided by the desire to move from description of individual experiences, to higher and higher levels of abstraction for the purpose of discovering processes that would address the research questions.

As is common in qualitative research, the analysis process began as soon as the first interviews were completed, as we compared notes on initial interviews. One striking observation was how many people who themselves has substantial disabilities were providing home health care to others with disabilities.

Based on the field notes and transcripts, we then created one-page narrative summaries for each participant (see Appendix III). We tried to maintain a sense of the participant in context, creating a narrative "snapshot" of the day-to-day life of a DMIE participant. In the process, we also identified key themes that emerged such as the types of support mentioned, participants' expressed motivation for working and maintaining health, how they maintained their health, and the meaning of work. Themes were entered into an excel spreadsheet and counted (see Tables 2-6). Counts should not be considered to have statistical meaning – they were simply used to identify trends.

The next step involved comparing and contrasting both the summaries and the identified themes, looking for characteristics or qualities that might explain similarities and differences (for example, how were successful DMIE participants different from those who received or were pursuing disability payments?). There were no immediately obvious differences between successful participants and disability applicants. They all expressed the desire to work. At the same time, nearly 2/3 had applied for disability. Most had access to the same kinds of supports, though some had more or less than others. After further reading, comparing, and discussion among the research team, the idea of a balance of risks (such as poor health and low support) and

resiliencies (such as optimism, faith, and financial resources) emerged. What distinguished successful participants from disability applicants was not a static event, situation or characteristic, but rather the dynamic interplay of a number of factors at a given time.

After this tentative model was developed, we re-examined the transcripts, looking for material that would support, extend, or refute the emerging model. We also discussed the model as a team, thinking about how it might explain some of the quantitative findings. We believe that the findings we present represents the "best fit" for the data.

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Appendix III
Table 1: Participant Demographics (n=20)

	Number	Percent of Total
Status		
Success	13	65%
Disability applicant	7	35%
Gender		
Female	15	75%
Male	5	25%
Ethnicity		
European American	6	30%
African American	10	50%
Hispanic	4	20%
Age		
21-44	5	25%
45-60	15	75%

Appendix III
Table 2: Employment/Disability

	Number	Percent
Employment		
Home health care	9	45%
Office work	5	25%
Food service	2	10%
Other	5	25%
Unemployed	1	5%
Applied for disability		
Never	7	35%
Once	7	35%
Twice	3	15%
Three times	3	15%
Currently on disability	3	15%

<p style="text-align: center;">**Appendix III**</p>
<p style="text-align: center;">**Table 3: Disabling Conditions**</p>

	Number	Percent
Physical disorders		
Diabetes	7	35%
High blood pressure	7	35%
High cholesterol	3	15%
Hepatitis C	5	25%
Other	10	50%
Mental health disorders		
Depression	4	20%
Bipolar disorder	4	20%
Substance abuse	1	5%
Prior substance abuse	5	25%

Note: Numbers do not sum to 100% because participants gave multiple answers.

<p style="text-align: center;">**Appendix III**</p>
<p style="text-align: center;">**Table 4: Motivation and Support**</p>

	Number	Percent
Motivation		
To pay bills	13	65%
Family	7	35%
Faith	8	40%
Enjoys work	6	30%
To stay busy	6	30%
Other	4	20%
Supports		
Family	12	60%
Friends	5	25%
Faith	13	65%
Other	6	30%

Note: Numbers do not sum to 100% because participants gave multiple answers.

Appendix III
Table 5: How DMIE Helped

	Number	Percent
Financial assistance	16	80%
Case manager emotional support	11	55%
Case manager instrumental support	8	40%
Making appointments	14	70%
Extra care	5	25%
Dental	7	35%
Not much help/unhappy with DMIE	4	20%

Note: Numbers do not sum to 100% because participants gave multiple answers.

Appendix III
Table 6: Advice to Policymakers

	Number	Percent
Keep DMIE	3	15
Decrease waiting time	7	35
Other	14	70

Note: Numbers do not sum to 100% because participants gave multiple answers.

Participant

Successful DMIE Participant:

Paula

"Do I put my job first or do I put my health first?"

Paula's story is one of juggling work and taking care of her health, different doctors' opinions about her care, and the demands of dealing with different illnesses. She is a Hispanic woman in her late thirties.

Paula pinpoints the beginning of her health problems to 1985 when she began to struggle with depression and substance abuse as a result of incest. She was an active alcoholic and drug abuser for 24 years. Through Narcotics Anonymous (NA), she got clean and sober in October, 2006 and her participation in NA meetings, church, and service work is her primary means of dealing with her illness and pain.

Paula described herself/her medical situation as "a mess." She has Hepatitis C, hypertension, Type II diabetes, high cholesterol, depression/Bipolar Disorder, back problems, sleep problems, and possible fibromyalgia. She's had carpal tunnel surgery, shoulder surgery, hernia repair, and gallbladder surgery -- nine surgeries last year alone. She is also at least 70 pounds overweight. The various doctors involved in her care don't always agree on her diagnoses or treatment, leaving Paula feeling caught in the middle. She is in a lot of pain, but she weighs effective pain management against the possibility of a relapse. One of the drugs she takes causes weight gain, and she can't get surgery for her back until she loses 70 pounds. While she has the support of her NA group, her husband, father, and daughter, she said she doesn't really like to talk with them about her illnesses because, as she says, "I feel like a broken record."

Despite this, Paula has been working full time as an office manager for a company for the past three years. However, she has been thinking about applying for disability more recently as she says she now has only "bad days and worse days," and her employer has expressed concern about the amount of time she misses from work due to illness and doctors' appointments.

Paula first became involved with DMIE while she was receiving care at the HCHD psychiatric clinic three years ago where she was receiving treatment for her depression and Bipolar Disorder. Shortly after this, she married and had access to private insurance, so she didn't get the full benefit of the DMIE program. Paula said she spoke with her case manager about once a month and described her as "very caring." Of particular benefit was that her case manager worked at night (apparently at a second job) and Paula could talk to her in the middle of the night, when she had insomnia. She appreciated the flexibility and emotional support. Flexibility is very important in Paula's assessment of medical care: "I would like to have access past five o'clock. That would be a big thing, I mean, to be able to take care of both things [work and healthcare] so that, you know . . . so one is not at the expense of another."

Successful DMIE Participant:

Nancy
"I'm grateful to be alive here . . . I just keep on keeping on"

Despite a dazzling smile and cheerful attitude, Nancy has been dealing with chronic weight problems and health issues for over thirty years. She is a European-American woman who looks to be 100-150 pounds overweight and moves slowly and painfully.

Nancy dates the beginning of her health problems to 1981. She was laid off, gained a lot of weight with her first pregnancy, and became depressed due to her emotionally abusive marriage. Since then she has tried various approaches to losing weight, but is still overweight and has had a number of related foot, knee, and ankle problems. She was diagnosed with diabetes five years ago, and suffers from insomnia.

In 1994, Nancy went back to work, but due to her weight and time out of the job market, she took a job in childcare. Her husband left her in 1996 and she got the house and a car. She said that she worked because she "had to work." Nancy has had no health insurance since her divorce, and has received her medical care through HCHD. For the most part, she's been happy with it, though she was not happy with a recent ankle surgery. She also wanted policy makers to, "Not make us wait so long for an appointment." She attended a weight management program at the HCHD and learned that, "It works when you do what they say." However, she admits that she's often too tired to cook or prepare healthy foods for herself.

Last year, Nancy started working as a home health care provider for seniors. She suffered a near-fatal pulmonary embolism in April, 2010. As a result, she is very short of breath and because Celebrex is contraindicated, she experiences more pain. While she works a long and unusual shift (2:30 a.m. to 2:30 p.m.) her employers held the job during her recovery and it requires very little heavy work. Further, her work schedule doesn't interfere with her medical care, as she can schedule clinic appointments in the afternoons.

Nancy said that her doctors have recommended that she go on disability, but she has heard how difficult the application process is and feared it would be like "throwing poop in a fan."As a result, Nancy continues to work and manage her household, with the help of her adult son who lives with her. She does most of her own grocery shopping, cooking, and cleaning. She still goes to church and out with friends at least twice a week. When she has a particularly "bad" day she says, "I just suck it up and go on." She gets support from spiritual books, religious shows, and friends from church. She said, "I guess I'm stronger than I thought I was." She loves her grandkids and wants to be part of their lives.

Nancy was recruited by the DMIE program and she described her case manager as "awesome." Her case manager referred her to DARS and also helped her get her current job. DMIE paid Nancy's co-pays and helped her get dental care. While Nancy did not experience an improvement in getting appointments, she did say that she got some additional respect when she presented the purple card.

Disability Applicant:

Coco
"You know one day this is gonna happen"

Coco is an African American woman in her 40s who lives with the knowledge that she could end her life blind or in a wheelchair. Coco was diagnosed with Multiple Sclerosis (MS) two years ago. Her sister and grandmother had the disease and an aunt died of the disease the week before our interview. She also has diabetes, high blood pressure, high cholesterol, back problems, and an assortment of mental health diagnoses, including depression.

Coco admitted that she had avoided going to the doctor for several years because she was afraid of the possible diagnosis. However, since she has been diagnosed, Coco is an active participant in her care. She takes the shots for her MS even though they have severe side effects (depression and flu-like symptoms for three days out of each week). She makes regular appointments with her psychiatrist and neurologist, takes the prescribed medications, tries to exercise and eat healthy foods. Five years ago, Coco lost over 200 pounds and has kept most of it off. Again, she was aware of what can happen with unregulated diabetes – both of her parents were blind and her brother is waiting for a kidney transplant.

Coco has had to adjust to limited physical activity, because she said, "I was a person that used to work two jobs and when it came down to this, I think I was kind of going a little crazy, cause it's not normal" Coco was approved for disability in October, 2009 after she realized how little she could work. She now says that receiving disability is "a blessing" because she can see "a good doctor," have her disease closely monitored, and was able to get glasses which are very important to her because of the pleasure and relaxation she gets from reading.

However, it has been important to Coco to work a few hours per week. She feels without a job, "Some people just don't respect you and think you just poor and not want to work." Coco works part-time as a home health aide for clients that are aware of her limitations. Not pushing herself past her limits is one of the ways that Coco takes care of herself.

When asked, "What keeps you going?" Coco answered, "Prayer." Going to church and reading the Bible are also motivating. Her family, especially her college-age daughter, who provides help at home, and her sisters, who see that she gets out and to the gym, also provide critical support. Coco has also received much-needed assistance from DMIE. She was extremely grateful for the free medications, help with appointments, and the nonjudgmental caring that she received from her caseworker. ". . . she talk to you like and not look at you like you're -- you know, handicapped, sick person, she don't do anything like that."

Coco works hard to manage her illness and maintain her independence and optimism in spite of her poor prognosis. As she said, "They tell you all those diseases and as young as I am -- it hurts to, cause I have, I, I just, I don't want to be like that. I do not."

Demographic Characteristics of Intervention and Control Groups at Baseline

Demographic Characteristics	Intervention	Control	Significance
Sample Size	*904*	*712*	
	%	%	*p-value*
Male	22.5	24.9	.26
Female	77.5	75.1	
21 – 44 years old	32.0	30.8	.60
45 – 60 years old	68.0	69.2	
Mean age	*46.9*	*47.1*	*.67*
White	21.8	24.7	.19
African American	43.5	38.2	
Hispanic	30.1	32.0	
Asian/Mixed/Other	4.6	5.1	
SMI	11.8	9.8	.20
Non-SMI	88.2	90.2	
Sales/Service	37.2	41.4	.22
Health support	19.2	17.8	
Other occupation	43.6	40.7	
Less than HS	29.5	32.5	.36
HS graduate/GED	31.4	31.2	
More than HS	39.1	36.3	
Mail recruitment cohort	58.4	56.6	.47
In-person recruitment cohort	41.6	43.4	
Mean ACG score	*1.01*	*0.98*	*.33*
Early recruits	30.1	31.6	.52
Late recruits	69.9	68.4	
Mean days since service end	*98.2*	*95.9*	*.58*

The significance column refers to differences between the intervention and control group. A p-value greater than .05 indicates that there is no significant difference between the groups. Thus, this table shows that, at baseline, the intervention and control groups did not differ on any of these variables.