



Medicaid/Medicare Studies Year 3 Report

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June 2003

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Suggested citation:

Policy and Services Research Data Center (2003). *Medicaid/Medicare Studies: Year 3 Report*. Tampa FL: Department of Mental Health Law & Policy, Louis de la Parte Florida Mental Health Institute, University of South Florida

Submitted to the Florida Agency for Health Care Administration as a deliverable under contract M0308.

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Submitted to the

Florida Agency for Health Care Administration

by the

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EXECUTIVE SUMMARY

Background: The Florida Agency for Health Care Administration (AHCA) has again contracted with the Louis de la Parte Florida Mental Health Institute (FMHI) to conduct several studies to examine the relationship and interaction of Florida’s Medicaid system and the federal Medicare system. This report presents the questions and methodological approaches that were used in this examination of Florida Medicaid and Medicare data.

Methods: This document provides findings on 3 separate studies (mental health and dual eligibility, comorbidity for specific mental-physical health combinations, and adult protective services and service integration). Study questions and methods are provided for each investigation. Questions addressed included:

Mental Health and Dual Eligibility

1. What are the service and cost patterns for several subpopulations of the dual eligible (Medicare-Medicaid) population with mental health problems – with a particular focus on pharmacy patterns?
2. What are the outcomes of service use by dual eligibles compared to persons with similar disorders who are Medicaid enrolled only or Medicare enrolled only?

Comorbidity

3. What are the relative “physical health” service costs & patterns for persons with schizophrenia, major depression, substance dependence, and mental health-substance abuse co-occurring disorders?
4. What are the relative MH/SA service costs and patterns for persons with various physical disorders (i.e. diabetes mellitus, hip fracture, acute myocardial infarction, stroke, coronary artery bypass graft surgery, and lung cancer)?

Adult Protective Services and Service Integration

5. What categories of abuse and neglect result in the most service use and costs?
6. Do persons suffering from self-neglect use more mental health/substance abuse (MH/SA) services and incur more costs than others categories that involve a perpetrator?

Results:

- Florida Dual Enrolled (DE) account for 13.2% of enrollees and 31.5% of costs in Medicaid (comparable to 16% of enrollees and 35% of costs in Medicaid nationally). In contrast, Florida DE’s account for 8.7% of enrollees and 16.4% of costs in Medicare (compared to 17% of enrollees and 30% of costs nationally). Dual enrollees who access mental health services tend to be non-minority (white) and slightly younger than those dual enrollees who do not use mental health services. This is not unexpected as other research has indicated that minorities may experience access and cultural barriers to receiving mental health services, and that these problems increase with age (Pies & Keast. 2002).
- Those with treated mental health problems are receiving fewer resources on average in both Medicaid and Medicare compared to the general enrollee population; which may reflect reduced access to physical health services by those with mental health problems. Medicare picks up a much greater portion of costs for care with dual enrollees across cohorts (it is the primary payer), however Medicaid does assume a substantial amount of costs for the group

comprised of persons with serious mental illness – possibly reflecting the relative lack of parity in mental health benefits in the Medicare program.

- The highest costing psychotropic medications to Medicaid for dual enrollees are the atypical antipsychotics, followed by SSRI antidepressant medications. Eighty-one percent of the costs of these psychotropic medications were for dual enrollees who had a MH service – thus 19% of costs are for those who are not also receiving mental health services. Almost half of the psychotropic cost of those dual enrollees who are not receiving mental health services is accounted for by SSRI antidepressant medications. Three-quarters (74%) of psychotropic costs for dual enrollees receiving MH services are for those with SMI and almost 60% of those costs are for atypical antipsychotics.
- Analyses of basic functional outcomes indicators suggests that individuals who are only enrolled in Medicaid are showing more group gains over the year than those in only Medicare and dually enrolled individuals.
- The amount paid per user for physical health services for persons with comorbid MH/PH service use was much higher than the amount paid per user for persons with only physical health service use. Comorbid MH/PH conditions not only increased the mental health service costs to the public health system in Florida, but it also increased the physical health service costs, which were much greater in magnitude. The physical health cost per person in Medicaid is highest for comorbid persons with a hip fracture, followed by comorbid persons with a stroke. The absolute cost is highest in Medicaid for persons with co-occurring mental illness and stroke, followed by persons with co-occurring mental illness and diabetes.
- Individuals experiencing one of four serious and persistent mental health problems (schizophrenia, major depression, substance dependence, and co-occurring MH/SA disorders) receive substantially less physical health services than those with less severe mental health problems. For example, those with schizophrenia had less than one third of the physical health paid claims than those who had a disorder other than schizophrenia.
- As hypothesized, it appears that both Medicaid and Medicare enrollees who are also being served by the adult protective services (APS) systems utilize behavioral and physical health services more than do enrollees not being investigated for possible signs of mistreatment (Non-APS enrollees) as indicated by the discrepancies in the penetration rates. For Medicaid enrollees, with respect to behavioral health service users, penetration rates for APS clients were more than twice the rates and costs were 1.3 times greater than those for Non-APS enrollees. Those Medicaid enrollees utilizing only physical health services also demonstrated greater penetration rates and more than twice the costs. With respect to Medicare, those APS clients using behavioral health services had more than six times the penetration rate and 1.7 times the costs than Non-APS clients. For physical health services only, the Non-APS clients had a higher penetration rate. However, cost per user still favored the APS clients (2.9 times the amount of Non-APS).

Policy Implications: Several policy implications were realized from these studies, including:

- Florida Medicaid needs to be aware of access and cultural barriers for minority enrollees and do what it can to reduce them.
- Medicare picks up a much greater portion of costs for care with dual enrollees across cohorts (it is the primary payer), however Medicaid does assume a substantial amount of costs for the more seriously mentally ill group – possibly reflecting the relative lack of parity in mental health benefits in the Medicare program. Florida Medicaid may wish to encourage more mental health parity in the Medicare program as well as more aggressive use of Medicare benefits by dual enrollees.
- The high proportional use of atypical antipsychotics suggests that expenditures to create effective disease management protocols may increase cost effective treatment of serious mental illness.
- Although the functional outcomes indicator findings may just reflect a situation where the Medicaid group is younger and more unstable with lower base scores (therefore more able to change and thus improvements are greater), more inquiry is warranted to seek out why this is the case.
- Persons with comorbid physical-mental health problems clearly have higher per person costs for physical health services. On a per person level, Medicaid is most fiscally impacted by comorbid persons experiencing hip fracture and stroke. On an absolute cost level, Medicaid is most impacted by comorbid persons with a stroke (over \$70 million/year), followed by comorbid persons with diabetes (over \$60 million/year). Persons with these conditions should be considered for special programs/health policies, such as disease management programs to not only ensure good care, but also aimed at reducing overall health care costs to the state.
- Some have suggested that depression screening should be considered the “6th vital sign” and implemented on an ongoing basis in all medical care facilities and offices. Clearly the results of these analyses suggest that such screening would improve care, but also potentially reduce costs in the long view.
- Individuals experiencing serious mental health problems receive substantially less physical health services than those with less severe mental health problems. This finding is confirmed by other research and is not unique to Florida. Some suggest that this is caused by improper training and referral by primary care physicians and/or specialty mental health professionals, and that targeted training would not only improve care, but also decrease costs by decreasing the need for crisis care. This is a direction that Florida Medicaid might wish to pursue.
- Both Medicare and Medicaid enrollees who are served by the adult protective service (APS) system utilize both behavioral and physical health services at a significantly higher rate than those who are not in the APS system. Costs are also significantly higher for those in APS. Florida Medicaid may wish to target care management for these individuals to ensure effective, coordinated care is provided in a cost efficient manner.

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1.0 INTRODUCTION

The Florida Agency for Health Care Administration (AHCA) has again contracted with the Louis de la Parte Florida Mental Health Institute (FMHI) to conduct several studies to examine the relationship and interaction of Florida's Medicaid system and the federal Medicare system. The studies are extensions of investigations conducted over the past two years. This report presents the questions, methodological approaches, findings and policy recommendations from this examination of Florida Medicare and Medicaid data.

The public mental health system in Florida is largely funded by three sources: state general revenue funds (GR), Medicaid program funds, and Medicare program funds. For a number of years, FMHI has been examining the support of the public mental health system by the first two funding sources (GR and Medicaid). However, such analyses only allow a partial picture of service use and cost – particularly in a state with large elderly and disabled populations like Florida. The influence of the Medicare program has a profound impact on the management and cost of public mental health services to Medicaid and state GR. Thus, the addition of Medicare data to the analysis mix allows us to address more complex and comprehensive policy issues.

2.0 DEVELOPMENT OF THE FMHI MEDICARE DATA SYSTEM

A significant part of the activities over the first two years of this project, involved procuring, cleaning, organizing, and understanding the large files of Medicare data reflecting billing in the state of Florida over a one-year period (calendar year 1999). The studies in this report used the data system created in those first two years, however, we have also started the process of expanding the number of data years to establish a 4-year data set organized to examine more longitudinal issues.

2.1 *Data Acquisition Process*

The 1999 Medicare claims and denominator data were purchased from the Centers for Medicare & Medicaid Services (CMS). We conducted several conference calls with CMS (known as HCFA at the time) staff and refined our 45-page data request several times before it was processed successfully by CMS. When the initial tapes were read into the server in the State Data Center on Aging in the late spring/early summer of

2001, it was discovered that some of the tapes were corrupted and needed replacement. Ultimately, all files (with the exception of the Durable Medical Equipment file) for Florida residents (the “beneficiary” files) were uploaded successfully and data extraction, organization and manipulation began in late Fall 2001.

2.2 *Structure of Raw Medicare Data*

The claims data files, CMS’s Standard Analytic Files (SAF), primarily included final action, fee-for-service claims submitted to CMS for services provided to beneficiaries of the state of Florida in the 1999 calendar year. The Beneficiary SAFs contained all in-state and out-of-state health care claims for all beneficiaries who were residents of Florida. Types of SAFs received by the Policy and Services Research Data Center (PSRDC) at FMHI included the following: Home Health, Hospice, Inpatient, Outpatient, Skilled Nursing Facility, Physician/Supplier Part B and Durable Medical Equipment.

The claims files had one of two main record layouts, which correspond to the two different types of forms used by providers to submit a claim for payment. The HCFA-1450 form (a.k.a. UB-92) is used to collect information and submit a claim for the “institutional” files, including Home Health, Hospice, Inpatient, Outpatient and Skilled Nursing Facility. The HCFA-1500 form is used to collect information and submit a claim for the “medical” files, including the Physician/Supplier Part B and Durable Medical Equipment. Additionally, each SAF file type was distinctly different from the others in respect to the variation in variable layout between files of the same record layout. For example, a variable with the same root name might have the prefix or suffix of OP for Outpatient, IP for Inpatient, etc. Such variation proved to be very challenging in the development of standard production datasets. Information received from the Research Data Assistance Center (ResDAC) through a training course and via the web was relied on heavily to understand and manage the data successfully.

Enrollment and eligibility information was stored in two files: Denominator and the Health Insurance Skeleton Eligibility Write-off (HISKEW). The Denominator file contained a snapshot of all enrollment information for persons who were classified as Florida Medicare beneficiaries on March 31, 2000. The HISKEW file contained a cross of Health Insurance Claim (HIC) identification numbers with social security numbers

(SSN) for the purpose of identifying persons across different public mental health data systems (e.g., the AHCA Medicaid data system, the Department of Children and Families' (DCF) Integrated Data System (IDS), the Department of Elder Affairs (DOEA) data system, and AHCA's Adult Protective Services (APS) data system). As this report was being finalized we were informed that a finder file was missing as we linked data sets using SSN. This will be corrected in future analyses and may account for a slight (less than 10%) underestimate of individuals with dual enrollment.

2.3 *FMHI File Organization*

The raw files were converted to SAS files, the extraneous variables were omitted, the service records were broken out, and the remaining variables were formatted correctly before a final production data set was suitable for analyses. Final action claims, as described by CMS, were claims to which no further adjustments were to be made. Certain final action claims were identified in the raw data files as "late charges" and were not included in the final production data sets.

The final action claims were broken down from several services per record to one service per record for the purpose of creating final, production data sets to be used in analyses. Up to 57 services, defined by the revenue center billing code, could be included in one original final action institutional claim. Similarly, up to 13 services, defined by the Health Care Common Procedure Coding System (HCPCS), could be included in one original final action medical claim. Each of these "service" records was linked to one original "header" record by a unique claim serial number created by the PSRDC. The separated header and service records could be linked together by the unique serial number to recreate the original claims.

Each of the institutional claims also included a revenue center code that indicated the total claim charge amount, which was a sum of all individual revenue center charges. This summary record was removed into a separate "sum" file, in order to prevent miscalculations in charges per service. Also, a certain revenue center code was used by CMS to indicate a skilled nursing facility (SNF) prospective payment claim. Because this code was used as an indicator of billing status rather than identifying a specific service that was received by the beneficiary, the service records associated with it were not included in the production data set. The combined raw files totaled approximately

250 gigabytes of computer disk storage space, and the combined final production files equaled about 65 gigabytes.

2.4 *Service Classification*

A service categorization scheme similar to the one used to categorize services in the Medicaid data system was developed for the Medicare data system before the production data sets were finalized. A detailed description of the service categorization scheme used by the PSRDC and its developmental history can be examined in the PSRDC Catcaid & PSRDC Catcare documentation papers included in Appendices A & B, respectively. The category labels, description and variables used in the algorithm to assign the category codes have been included in the appendices.

2.5 *Longitudinal Data Procurement*

One of the goals of our Medicare activities this year, was to obtain permission to use and organize additional years of Medicare data so that more sophisticated longitudinal analyses could be conducted. The State Data Center on Aging received three additional calendar years of Medicare denominator and claims data (1998, 2000 and 2001) in late 2002 for a study mandated by legislation in 2001. We submitted an application to CMS to reuse the additional data for our already proposed longitudinal studies as a third party user (*i.e.* where the data does not come directly from CMS, but rather through another users who already has such data) in Winter 2003. Our application was approved in early April 2003 and we have already begun the process of obtaining data extracts and data organization. Much of our activities next year will involve integrating the additional voluminous data into our current structure and running preliminary analyses with it.

3.0 STUDY METHODS & FINDINGS

The original concept paper proposed four distinct studies be conducted this year exploring the interaction of Medicare and Medicaid in the public mental health system. These four studies included: 1) additional examinations of mental health and dual eligibility with particular focus on pharmacy use; 2) access for traditionally underserved groups; 3) comorbidity for specific mental-physical health combinations; and 4) adult protective services and service integration.

The second study (access for traditionally underserved groups) relied on our accessing data from the CARES and CIRTS data systems of the Florida Department of Elder Affairs (DOEA). Although discussions with DOEA began in the Fall 2002, permission to use the data was not secured until Spring 2003. We have received a data use agreement that will hopefully be executed by the end of this contract year (June 2003). Thus, as we have not received any DOEA data, the second study was not possible to complete this year and thus only findings from the other three studies will be reported here. Each of the three completed studies is discussed below.

3.1 *Study 1: Mental Health and Dual Eligibility*

3.1.1 **Background and Methods**

Background. As reported previously, the population of dually enrolled, chronically ill individuals covered by Medicaid and Medicare in the state of Florida has been predicted to increase significantly. This population warrants study because neither Medicare, Medicaid, nor other health care providers have developed satisfactory care delivery or financing models for their care (Fitzner, Bennett, Weinraub, et al., 2002).

Last year's initial Medicare/Medicaid analyses examined two broad exploratory questions: What were the service and cost patterns for dually enrolled (Medicare-Medicaid) elders with mental health problems; and what were the service and cost patterns for persons with serious mental illness who are dually enrolled? These initial studies found that dual enrollees charged almost \$4 billion (representing \$1.6 billion in paid claims) to Medicare and \$1.3 billion to Medicaid in 1999 with physical health services accounting for 90% of Medicare charges by dual enrollees and non-mental health institutional claims (*e.g.*, nursing home charges) accounting for 70% of the Medicaid billings. Over two-thirds of Medicare charges for mental health services by dual enrollees were for persons with serious mental illness. Dual enrollees represented about 23% of all Medicaid enrollees, but accounted for 38% of all Medicaid pharmacy costs in 1999. Mental health pharmacy claims represented about 16% of all paid pharmacy claims for dual enrollees.

In this year's studies, in order to further our understanding of the patterns of care for this growing dual enrolled population, we examined service and cost patterns for several subpopulations of dually eligible persons with particular emphasis on pharmacy

patterns. In addition, we examined outcomes of service use by persons who are dually enrolled compared to persons enrolled in Medicare or Medicaid alone.

Methods.

Data Sets. Study data included calendar year 1999 medical, institutional and pharmacy claims and eligibility records from Medicaid and Medicare (excluding durable medical equipment in Medicare).

Study Populations. A total of 253,638 persons were dually enrolled in both Medicaid and Medicare in 1999 in Florida. Among these, 190,477 (75.1%) had at least one claim in Medicaid, and 200,956 (79.23%) had at least one Medicare claim.

One target subpopulation in this study was mental health (MH) service users. The service categorizations used to define a service as mental health vs. physical health are called catcaids in the Medicaid system and catcares in the Medicare system. The catcaid categorizations are based on values of the following variables: procedure code, diagnosis code, record type, claim form, appropriations code, treatment provider type, treatment provider specialty, pay to provider type and age. Similarly, the variables used in the catcare categorizations are as follows: record identification code, diagnosis code, HCPCS procedure code, type of service, place of service, and treatment provider specialty code. A mental health service has a catcaid value < ‘21.00’ in Medicaid or a catcare value < ‘121.00’ in Medicare. For more information on the catcaid and catcare categorization schemes, see Appendices A & B.

A second subpopulation included persons with a diagnosis of serious mental illness (SMI). Persons with an ICD-9-CM diagnosis of ‘295’ (Schizophrenia) or ‘296’ (Major Depression) were included in the SMI subpopulation. The distribution of persons within each subpopulation (SMI and general MH subpopulations) by public health system is included in Table 1.

Table 1. Distribution of persons in target subpopulations by public health system

Subpopulations of Dual Enrollees (n=253,638)	Number of Users Within Medicaid	Number of Users Within Medicare	Number of Users Within Either System
MH Service Users	36,349 (14 %)	71,120 (28 %)	75,775 (30 %)
Persons with SMI	10,269 (4 %)	35,350 (14 %)	36,497 (14 %)

Pharmacy Pattern. The psychoactive drugs were categorized and used to examine the MH pharmacy patterns of the dually enrolled population and subpopulations. Table 2 contains a listing of drugs included in the various drug categories.

Table 2. List of drugs included within the drug categories for the MH pharmacy analysis

MH Drug Types	MH Drugs Included Within Each Drug Type
SSRI	Prozac Zoloft Paxil Luvox Celexa
Atypicals	Clozaril Zyprexa Seroquel Geodon Risperidone
Newer Antidepressants	Desyrel Wellbutrin Effexor Serzone Remeron
Other Anti-depressants	Elavil Asenden Norpramin Adapin Tofranil Ludiomil Aventyl Vivactil Trimipramine Anafranil
Other Anti-psychotics	Thorazine Permitil/Prollixin Serentil Compazine Sparine Mellaril
Anti-dep/psych comb	Stelazine Vesprin Haldol Loxitane Moban Orap Navane
Anti-mania	Inapsine/Droperidol Levoprome Promethazine Torecan Etrafon/Triavil
	Eskalith etc Calan Tegretol
	Amytal Butisol Meberal Nembutal Seconal Xanax Librium
Anti-anxiety	Tranxene Valium Dalmane Ativan Serax Prosom Doral Versed
	Restoril Halcion Equanil Buspar Paxipam Trancopal
Anti-hyperkinesis	Ritalin Dexetrix Cylert Desoxyn Adderall Provigil DNZ-2 Neuro-Plus
Anti-Substance Abuse	Antabuse Naltrexone Methadone Orlaam

Outcome Study. Using results from the Global Assessment of Functioning (GAF) scale administered to individuals receiving services at all mental health providers contracted by the Florida Department of Children and Families, the outcomes of service use by dual enrollees were compared to persons with similar disorders who are Medicaid enrolled only or Medicare enrolled only. Two methods of analysis of variance (ANOVA) were employed in the comparisons. First, the last GAF score for a person in 1999 was chosen and compared between the following three groups: 1) dual enrollees, 2) Medicare only enrollees and 3) Medicaid only enrollees. The second method compared differences between the first and the last GAF scores during 1999 for the three comparison groups.

3.1.2 Findings

Demographics: Table 3 compares the demographics of dual enrollees who used mental health services with those who did not. Dual enrollees who access mental health services tend to be non-minority (white) and slightly younger than those dual enrollees who do not use mental health services. This is not unexpected as other research has indicated that minorities may experience access and cultural barriers to receiving mental

health services, and that these problems increase with age (Pies & Keast. 2002).

Nevertheless, Florida Medicaid needs to be aware of these barriers and do what it can to reduce them.

Table 3. Dual Enrollee Demographics

	Dual Enrollees with MH Claims		Dual Enrollees without MH Claims	
	Number	Percent	Number	Percent
White	49,406	65.2%	91,144	51.2%
Black	12,433	16.4%	44,036	24.8%
Native American	*	*	38	0.0%
Asian/Oriental	43	0.1%	192	0.1%
Hispanic	4,921	6.5%	16,222	9.1%
Others	8,961	11.8%	26,195	14.7%
Unknown	*	*	34	0.0%
Female	43,807	57.8%	103,869	58.4%
Male	31,968	42.2%	73,991	41.6%
Average Age (SD)	62.88 (19.9)		66.36 (16.9)	

* Because some cells had fewer than 11 individuals, data for these categories were removed per CMS policy.

Overall cost patterns: Table 4 provides the cost patterns for dual enrollees in both Medicaid and Medicare. Florida dual enrolled (DE) account for 13.2% of enrollees and 31.5% of costs in Medicaid (comparable to 16% of enrollees and 35% of costs in Medicaid nationally). In contrast, Florida DE account for 8.7% of enrollees and 16.4% of costs in Medicare (compared to 17% of enrollees and 30% of costs nationally). This finding may be caused by the much higher elder population in Florida, which dilutes the impact of dual enrollees (many of whom are young disabled) in the Medicare program.

Table 4. Overall Costs of Service for Dual Enrollees in Medicaid and Medicare

	Medicaid		Medicare		
	Persons	Cost	Persons	Cost	
Medicaid	1,926,898	\$4,559,124,954	Medicare	2,918,873	\$25,716,337,948
Dual	253,638	\$1,438,372,134	Dual	253,638	\$4,211,599,115
%	13.16%	31.55%	%	8.7%	16.38%
National level*	16%	35%	National level*	17%	30%

* From Vojta et al (2001).

Cohort user/per year cost patterns: Table 5 presents the total annual cost and per user per year (PUPY) cost of specific cohorts for all Medicaid and Medicare enrollees and dual enrollees. While overall Medicaid service costs are \$3,201 PUPY, those with mental health problems use services costing only 49% of that PUPY, and those with SMI cost 85% PUPY of overall Medicaid recipients. In Medicare, overall PUPY costs are \$12,947, with those with MH problems costing 25% of that PUPY and those with SMI 47% PUPY. Dual enrollees cost Medicaid for services were \$7,551 PUPY with those with any MH problem costing 11% of that figure PUPY and those with SMI costing Medicaid only 19% of that amount PUPY. Dual enrollees cost Medicare \$20,958 PUPY overall, with MH clients costing 27% of that amount PUPY and SMI costing 42% of that amount PUPY. Please note that these are “user” rates -- dollar amounts will be higher than “enrollee” rates. Clearly those with treated mental health problems are receiving fewer resources on average in both Medicaid and Medicare compared to the general enrollee population; which may reflect reduced access to physical health services by those with mental health problems. Medicare picks up a much greater portion of costs for care with dual enrollees across cohorts (it is the primary payer), however Medicaid does assume a substantial amount of costs for the SMI group – possibly reflecting the relative lack of parity in mental health benefits in the Medicare program. Nevertheless, there is substantial dual enrollee per user service costs for the Medicaid program (even without including pharmacy claims) and Florida Medicaid may wish to encourage more aggressive use of Medicare benefits by dual enrollees.

Table 5. Total and Per User Per Year (PUPY) Costs for Services Across User Cohorts

	Total cost	Total Persons	PUPY
Medicaid	\$4,559,124,954	1,424,488	\$3,201
Medicaid with MH	\$364,049,778	232,524	\$1,566
Medicaid with SMI	\$81,096,539	29,611	\$2,739
Medicare	\$25,716,337,948	1,986,236	\$12,947
Medicare with MH	\$940,055,644	287,293	\$3,272
Medicare with SMI	\$635,749,879	105,163	\$6,045
Dual in Medicaid	\$1,438,372,134	190,477	\$7,551
Dual with MH in Medicaid	\$30,950,043	36,349	\$851
Dual with SMI in Medicaid	\$14,499,133	10,269	\$1,412
Dual in Medicare	\$4,211,599,115	200,956	\$20,958
Dual with MH in Medicare	\$403,220,618	71,120	\$5,670
Dual with SMI in Medicare	\$309,346,299	35,350	\$8,751

Cohort Service Patterns: Detailed breakouts of cohort patterns of service use are provided in Appendix C. The patterns match expectations. In Medicaid, persons with SMI had a higher average cost per user per year (PUPY) for more intensive services (inpatient, emergency care, etc.) than general MH user population, and less costly PUPY for less intensive services (individual treatment, etc.). In Medicare, SMI have higher costs PUPY than those with less severe MH problems across almost all service categories.

Pharmacy Pattern/Cost Comparisons: Table 6 provides the patterns of pharmacy use and cost for four groups: Medicaid in general, those with dual enrollment, those dual enrollees with a mental health service claim in either Medicaid or Medicare, and those dual enrollees with an SMI service claim (diagnosis 295 or 296) in either Medicaid or Medicare. There is an increase in PUPY costs across almost all medications as we shift from Medicaid in general, to Dual enrollees, to dual mental health service users, to dual SMI. Clearly the highest costing medications PUPY are the atypical antipsychotics followed by SSRI antidepressant meds. Eighty-one percent of the costs of these psychotropic medications were for dual enrollees who had a MH service – thus 19% of costs are for those who are not also receiving mental health services. Almost half of the psychotropic cost of those dual enrollees who are not receiving mental health services is accounted for by SSRI antidepressant medications. Three-quarters (74%) of psychotropic costs for dual persons receiving MH services are for those with SMI and almost 60% of those costs are for atypical antipsychotics. The proportionally high use of atypical antipsychotics warrants more research, because although pharmaceutical companies have studied these drugs in clinical trials, little research has been done in community settings with actual prescribing and compliance behavior. Regardless, the high proportional use of atypicals suggests that closer disease management protocols may increase cost effective treatment of serious mental illness.

Table 6. Pharmacy Patterns and Costs for Dual Enrollees

MH drug types	Medicaid				Dual eligible			
	Total cost	Total units	Total Persons	PUPY	Total cost	Total units	Total Persons	PUPY
SSRI	\$46,986,567	603,424	149,034	\$315	\$20,297,976	258,694	41,485	\$489
Atypical	\$77,915,638	441,328	76,422	\$1,020	\$35,066,036	200,799	24,158	\$1,452
Newer Antidepressants	\$14,713,400	309,009	87,635	\$168	\$6,453,650	135,974	23,329	\$277
Other Anti-depressants	\$2,226,569	222,071	63,879	\$35	\$903,054	90,769	16,372	\$55
Other Anti-psychotics	\$8,248,094	346,771	148,078	\$56	\$3,406,112	132,583	26,185	\$130
Anti-dep/psych comb	\$79,923	9,325	2,222	\$36	\$29,136	3,293	544	\$54
Anti-mania	\$5,853,895	274,683	47,829	\$122	\$2,349,812	114,878	14,733	\$159
Anti-anxiety	\$21,961,470	980,663	197,058	\$111	\$9,596,840	417,955	59,753	\$161
Anti-hyperkinesias	\$6,285,531	185,278	39,933	\$157	\$267,503	6,258	1,121	\$239
Anti-Substance Abuse	\$423,040	11,387	3,324	\$127	\$211,009	5,621	1,031	\$205
Total	\$184,694,127				\$78,581,128			

MH drug types	Dual with MH				Dual with SMI			
	Total cost	Total units	Total Persons	PUPY	Total cost	Total units	Total Persons	PUPY
SSRI	\$14,174,980	176,624	27,057	\$524	\$9,021,353	108,488	16,020	\$563
Atypical	\$33,107,077	186,162	21,314	\$1,553	\$27,478,995	142,567	14,566	\$1,887
Newer Antidepressants	\$5,164,403	108,079	17,150	\$301	\$3,601,970	72,920	10,951	\$329
Other Anti-depressants	\$557,905	46,587	7,893	\$71	\$359,676	28,533	4,598	\$78
Other Anti-psychotics	\$2,892,678	105,835	17,536	\$165	\$2,342,365	77,777	11,319	\$207
Anti-dep/psych comb	\$15,748	1,668	296	\$53	\$10,452	1,066	192	\$54
Anti-mania	\$1,166,936	61,772	7,731	\$151	\$732,374	41,784	5,182	\$141
Anti-anxiety	\$6,249,564	234,787	30,572	\$204	\$3,575,388	131,314	15,810	\$226
Anti-hyperkinesias	\$191,116	4,541	817	\$234	\$135,781	3,076	546	\$249
Anti-Substance Abuse	\$158,301	3,779	698	\$227	\$116,566	2,667	498	\$234
Total	\$63,678,708				\$47,374,921			

NOTE: The total pharmacy figure in this year's report is slightly greater than that indicated in last year's report because of a more refined algorithm developed for this year's report.

Outcomes Analyses: Functional status using the Global Assessment of Functioning Scale (GAF) were examined for the 3 groups (Dual enrollees, Medicare only enrollees, and Medicaid only enrollees). The last GAF score for a person in 1999 was identified and compared across groups. Table 7 indicates significant differences among the 3 groups with dual enrollees exhibiting the lowest (worse functioning) scores followed next by Medicaid and then Medicare with the highest functioning scores. Table 8 breaks out the results by primary diagnosis and although patterns varied by diagnosis,

the only significant differences were evident for the most severe disorders (e.g., 295, 296). These results are not unexpected as dual enrollees, because of enrollment requirements, are the most disabled group, and the Medicare group includes more “normal aged” who are not enrolled because of disability or indigence.

Table 7. Last GAF Score

P value: <0.0001		
	Mean	Group
Dual	47.67	A
Medicaid	48.44	B
Medicare	50.38	C

Note: Dual, Medicare and Medicaid are 3 different groups

Table 8. GAF scores by Diagnosis and Group

	Means			P value
	Medicaid	Medicare	dual	
290='Senile/Organic Psychotic'	36.211	35.615	34.973	0.8377
291='Alcoholic Psychosis'	40.3	41.6	43.6	0.7125
292='Drug Psychosis'	42.5	37.6	51.5	0.0466
293='Transient Organic Psychosis'	48.7	50.9	46.1	0.161
294='Other Organic Psychotic Conditions'	38.9	42.1	40.6	0.5137
295='Schizophrenic Disorders'	45	48.5	46.3	<.0001
296='Affective Psychosis'	49	52	50	<.0001
297='Paranoid States'	46	52.5	47	0.0736
298='Other Non-Organic Psychoses'	45.6	47	45.7	0.596
299='Psychosis with Origin/Children'	49	54.5	44.2	0.0751
300='Neurotic Disorders'	52.8	55.6	52.6	0.0008
301='Personality Disorders'	49.6	54.3	48.7	0.4712
302='Sexual Deviations and Disorders'	31.6	64	52.5	0.0779
303='Alcohol Dependence'	48.2	46	48.6	0.6283
304='Drug Dependence'	48.9	46	49.3	0.6581
305='Non-Dependent Drug Abuse'	48.1	49.3	48.2	0.9436
306='Physical Condition from Mental Factors'	47.5	30	44.2	0.2006
308='Acute Reaction to Stress'	51.6	55.5	51.1	0.1372
309='Adjustment Reaction'	53.8	53.4	52.2	0.2157
310='Specific Non-Psych Mental Disorder'	51	50.6	49.1	0.0674
311='Depressive Disorder not Elsewhere Classified'	51.67	N/A	55	0.8675
312='Conduct Disturbance not Elsewhere Classified'	45.8	52.6	44.1	0.2002
313='Emotional Disturbance Specific to Adolescence'	38.24	55	50.4	0.4537
314='Hyperkinetic Syndrome of Childhood'	41.1	57.5	49.2	0.3383
315='Specific Delays in Development'	44.8	48.7	44.2	0.8673
317='Other'	N/A	40	48.3	0.5598

The functional outcomes were examined by comparing the differences between the first and the last GAF scores during 1999 for the three comparison groups. Such change scores might indicate the comparative magnitude of group improvement in functioning for those in each of the 3 groups over the 1-year period. Tables 9 and 10 provide the overall GAF group differences and breakouts by diagnosis. The dual enrollee and Medicare only groups had similar improvements in scores, but the Medicaid group had significantly higher increases in GAF scores overall compared to the other two groups. Significant changes in means again primarily occurred with those individuals with more severe disorders (*e.g.*, schizophrenia). This could be a result of a variety of factors including: 1) a situation where the Medicaid group is younger and more unstable with lower base scores (and thus more able to change and improve), so improvements are greater; 2) Medicaid providing better treatment for mentally ill; 3) regression to the mean. Regardless, despite the possibility of artificial statistical results due to a large sample, those individuals who are in the Medicaid only group are showing more group gains over the year than the other two groups and more inquiry is warranted to seek out why this is the case.

Table 9. Change in GAF Score from first to last assessment

P value: <0.0001		
	Mean	Group
Dual	0.6499	B
Medicare	0.6955	B
Medicaid	1.282	A

Dual and Medicare belong to the same group, and Medicaid belongs to diff group
 Note: If person has only one GAF in the whole year, his difference GAF will be counted as 0

Table 10. Change in GAF Scores by Diagnosis and Group

	Means			P value
	Medicaid	Medicare	dual	
290='Senile/Organic Psychotic'	-0.2535	-0.0385	0.7053	0.5354
291='Alcoholic Psychosis'	-0.714	1.25	0.947	0.5748
292='Drug Psychosis'	0.88	0	0.3941	0.3775
293='Transient Organic Psychosis'	2.528	0.577	0.615	0.1561
294='Other Organic Psychotic Conditions'	1.563	1.077	0.726	0.6965
295='Schizophrenic Disorders'	1.2498	0.6364	0.4036	<0.0001
296='Affective Psychosis'	1.1807	0.9294	0.6504	0.0503
297='Paranoid States'	1.762	2.2227	0.714	0.6832
298='Other Non-Organic Psychoses'	2.0838	0.7222	0.6759	0.0465
299='Psychosis with Origin/Children'	4	0.593	-0.04	0.707
300='Neurotic Disorders'	1.3483	0.2988	0.6561	0.0471
301='Personality Disorders'	1.282	0.6955	0.6499	0.7102
302='Sexual Deviations and Disorders'	0	0.25	0	0.9665
303='Alcohol Dependence'	0.853	1.964	2.672	0.4184
304='Drug Dependence'	2.167	1.818	-0.032	0.1523
305='Non-Dependent Drug Abuse'	2.564	4.059	0.3	0.2178
306='Physical Condition from Mental Factors'	0	0	-1.75	0.6007
308='Acute Reaction to Stress'	1.651	2.237	1.047	0.6424
309='Adjustment Reaction'	1.3082	1.5286	1.3536	0.9592
310='Specific Non-Psych Mental Disorder'	1.2427	0.928	0.5603	0.3258
311='Depressive Disorder not Elsewhere Classified'	N/A	N/A	N/A	N/A
312='Conduct Disturbance not Elsewhere Classified'	2.217	0.267	0.897	0.2805
313='Emotional Disturbance Specific to Adolescence'	0.524	0	3	0.9035
314='Hyperkinetic Syndrome of Childhood'	-0.525	0	1.6	0.3294
315='Specific Delays in Development'	1.917	0	1.667	0.8454
317='Other'	N/A	0	-1.25	0.685

3.2 Study 2: Comorbidity for specific mental-physical health combinations

3.2.1 Background and Methods

Background. Developmental studies examining comorbidity (physical/mental disease co-occurrence) were previously conducted by FMHI using only Medicaid data (Stiles, Dailey Larsen & Lo, 2001) and by integrating Medicaid and Medicare data (Stiles, Larsen, Dailey, Schonfeld, Dupree & Becker, 2002). These studies furthered the process of developing methods to examine comorbidity and to provide aggregate findings from which to plan future, more targeted analyses of service pathways.

The first study (2001) validated previous research findings that persons experiencing both mental and physical health problems or “somatic comorbidity”,

utilized more services and hence cost more for their respective physical health and mental health care than those who did not have comorbid disorders. Results obtained by examining the gross service utilization and cost patterns showed that those with comorbidity utilized more intensive treatments such as inpatient or institutional care compared to those without comorbidity, which at least partially explained the greater physical health costs for those with comorbidity (Stiles et al., 2001). It was unclear from these analyses what the sequencing or pathways of care were to treat their physical malady. Perhaps they received mental health care *because* they happened to be sicker and required hospitalization – and that was how they became a member of the “comorbid” group. Thus, the greater physical health costs of those with comorbidity may have been more related to the severity of their physical malady and/or the “opportunity” to receive mental health care in institutional settings, than to some inherent mental-physical health interaction. Viewing this from another perspective, persons with mental disorders may have used more physical health services because they had more physical disorders and greater disability, or they may have used more physical health services inappropriately due to a propensity for somatization or amplification of physical symptoms.

The second study (2002) extended the findings of the 2001 study to the Medicare/Medicaid dually eligible population examining cross system interactions. Persons with both physical and mental health needs, use considerably more services, and cost 3 times more per person, compared to enrollees with physical health or mental health problems alone. This is clearly an important public health population to monitor and research in a longitudinal fashion to identify how these “mind” and “body” diseases interact as well as how the public health systems interweave to support services for such individuals.

Interestingly, although health services researchers have been aware for some time that psychiatric and physical diseases comorbidity has major human and economic implications, it has been only recently that the true dimensions of the relationships and interactions have been studied (Savoca, 1999). Research on the amount and type of psychiatric comorbidity occurring in primary care settings has increased as studies have established reliable prevalence rates for psychiatric disorders of 16% to 48% in primary

care settings (Barrett, Barrett, Oxman & Gerber, 1988; Druss Bradford, Rosenheck, Radford, et al. 2000; Marsh, 1997). Exploration of the particular disorders focused on in this report were prompted by research literature that suggests a strong relationship between specific mental disorders, substance abuse and the physical disorders examined here (Ballenger, Davidson, Lecrubier, Nutt, et al., 2002; Holmes & House, 2000; Hoidrup, Gronbaek, Gottschau, Lauritzen, et al, 1999; Larson, Owens, Ford & Eaton, 2001; Lavretsky & Kumar, 2003; MacMahon & Lip, 2002; Musselman, Evans & Nemeroff, 1998).

For instance, with regard to cardiac conditions, health service researchers have gathered overwhelming evidence that cardiovascular disease, depression and anxiety are closely interrelated. Data show that major depression and anxiety are both independent risk factors for the development of coronary artery disease (Barefoot & Schroll, 1996; Ford, Mead & Chang, 1998). Further, while it is not yet established that individuals with more severe depression develop more severe cardiovascular disease, research data reveal that individuals with severe anxiety develop more severe, and hence more costly, cardiovascular disease (Kawachi, Colditz, Ascheno, Rimm, et al.1994).

Surprisingly, despite a growing literature regarding the increased costs associated with comorbidity and interactions of mental and physical disorders there has been little research on patterns of service use and potential barriers to appropriate medical care faced by individuals with serious mental disorders. For some conditions such as acute myocardial infarction, studies have found distinct diagnosis-based differences in rates of recommended cardiovascular procedures such as coronary artery bypass graft (CABG). For example, as part of a continuous quality improvement initiative for Medicare beneficiaries, the Health Care Financing Administration studied patients with and without mental disorder (classified as schizophrenia, major affective disorder, substance abuse/dependence or other mental disorder). Study results showed that compared with persons having no mental disorder, individuals with any co-occurring mental disorder were significantly less likely to undergo (CABG) surgery during hospitalization following a heart attack. After adjusting for demographic, clinical, hospital and regional factors, individuals with mental disorders were 41% for schizophrenia and 78% for substance abuse as likely to undergo revascularization and cardiac catheterization as

those without a mental disorder ($p < .0001$) (Druss et al. 2000). While earlier studies documented the fact that in general, persons experiencing comorbid disorders utilized more services and had higher expenditures than persons without comorbid disorders, these studies did not investigate diagnosis specific interactions or the pattern of service use and cost for specific conditions.

The goal of this year's analyses was to move our line of inquiry forward by focusing on comorbidity for persons with specific disorders. Thus we examined the relative "physical health" services and costs and patterns for persons with several severe mental illnesses: schizophrenia, major depression, substance dependence, and mental-substance abuse co-occurring disorders. In addition, we examined the relative mental health and substance abuse service costs and patterns for persons with several specific "physical" disorders: hip fracture, CABG, diabetes, stroke, acute myocardial infarction (AMI), and lung cancer.

Methods

Data sets: Study data included calendar year 1999 medical and institutional claims and eligibility records from Medicaid and Medicare (excluding durable medical equipment in Medicare).

Overall population: The comorbidity study population consisted of all persons dually enrolled in Medicare and Medicaid at one point in time during calendar year 1999 ($n=253,638$). Of the 253,638 persons dually enrolled, 198,075 (78%) persons used at least one service in Medicare and 190,477 (75%) used at least one Medicaid service.

In order to answer the above study questions, morbidity statuses and clinical subgroups were defined based on service category code (catcaid or catcare code), primary diagnosis code and/or procedure code.

Morbidity Statuses: A service was defined as either physical or behavioral health based on the catcaid or catcare code (service category) assigned to each record in the claims files. See Appendices A & B for additional information regarding the assignment of service category codes. Based on the catcaid or catcare code included on a person's claim, a morbidity status was assigned to each user in the study population (Table 11). A person's morbidity status was defined as "mental health only" if he or she had any claim (in Medicare or Medicaid) that included a behavioral health service, but no claims that

included physical health services. Similarly, a person’s morbidity status was defined as “physical health only” if he or she had any claim (in Medicare or Medicaid) that included a physical health service, but no claims that included behavioral health services. Finally, a person’s morbidity status was defined as “comorbid” if he or she had both a physical and behavioral health service recorded within the claims data sets (Medicare or Medicaid). The distribution of morbidity statuses in both data sets was approximately 63% physical health only, 1% mental health only and 37% comorbid (see Table 12).

Table 11. Definitions of morbidity statuses

Morbidity Status	Catcaid Code	Catcare Code
Physical Health Only	>21.00 only	>121.00 only
Mental Health Only	<21.00 only	<121.00 only
Comorbid Mental & Physical Health	Both >21.00 and <21.00	Both >121.00 and <121.00

*Documentation regarding the assignment of catcaid and catcare service category codes is included in Appendices A & B.

Table 12. Number and distribution of users per morbidity status within Medicare and Medicaid user populations

Morbidity Status	Medicare Users (n=198,075)		Medicaid Users (n=190,477)	
Physical Health Only	124,405	62.81%	119,149	62.55%
Mental Health Only	1,263	0.64%	1,352	0.71%
Comorbid Mental & Physical Health	72,407	36.56%	69,976	36.74%

Clinical Subgroups: A person was included in a clinical subgroup if his or her primary diagnosis met the ICD-9-CM¹ diagnosis code or if the procedure code met the CPT² procedure code definitions listed in Table 13. The largest subgroup, which included 23% of the dually enrolled users in Medicare, was the subgroup with a diagnosis of diabetes mellitus. Sixteen percent of dually enrolled Medicare users had a diagnosis of stroke, and 13% suffered from major depression. The number and percent of users within all of the clinical subgroups can be seen in Table 14.

¹ International Classification of Diseases, version 9, Code Manual (ICD-9-CM)

² Current Procedural Terminology (CPT) code manual, copyrighted by the American Medical Association

Table 13. Definitions of clinical subgroups

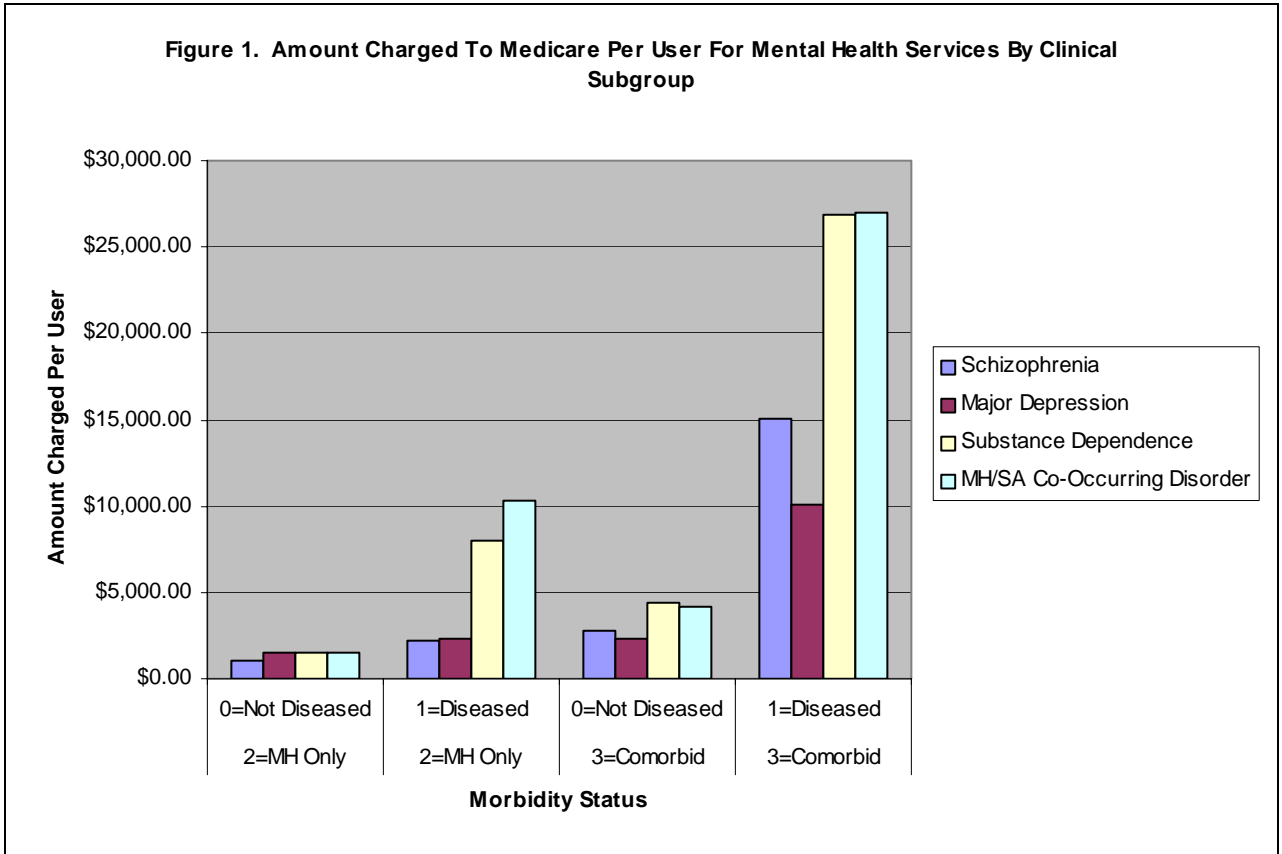
Clinical Subgroup	ICD-9-CM Diagnosis Code*
Schizophrenia	295
Major Depression	296
Substance Dependence	303.9, 304
Mental Health/Substance Abuse (MH/SA) Co-Occurring Disorder	291-293, 295-314
Diabetes Mellitus	250
Hip Fracture	808, 820
Acute Myocardial Infarction	410
Stroke	430-439
Lung Cancer	162.3, 162.4, 162.5, 162.8, 162.9, 197.0, 231.2, 212.3, 235.7, 239.1
Clinical Subgroup	CPT Procedure Code
Coronary Artery Bypass Graft (CABG) Surgery	3351%, 3352%, 3353%, 3354%**
*All codes beginning with the described set of characters, plus additional 4 th or 5 th digit modifiers	
**The % sign stands for any digit 0-9 that follows the previous 4 characters in the 5 digit CPT code	

Table 14. Number and distribution of dually enrolled users per clinical subgroup within Medicare and Medicaid user populations

Clinical Subgroup	Medicare Users (n=198,075)		Medicaid Users (n=190,477)	
	N	%	N	%
Schizophrenia	14,385	7.26%	11,328	5.95%
Major Depression	26,187	13.22%	14,405	7.56%
Substance Dependence	2,320	1.17%	1,500	0.79%
Mental Health/Substance Abuse (MH/SA) Co-Occurring Disorder	3,073	1.55%	1,749	0.92%
Diabetes Mellitus	46,036	23.24%	13,782	7.24%
Hip Fracture	5,472	2.76%	1,725	0.91%
Acute Myocardial Infarction	5,425	2.74%	1,504	0.79%
Stroke	32,914	16.62%	8,582	4.51%
Coronary Artery Bypass Graft (CABG) Surgery	905	0.46%	255	0.13%
Lung Cancer	2,966	1.50%	778	0.41%

Measurements/Comparisons: Within the different public systems of health care under study, Medicare vs. Medicaid, a total number of users, the sum of amount charged (Medicare) or paid (Medicaid) for services, and an amount charged/paid per user was calculated for each clinical subgroup, broken out by morbidity status. Additionally, the number of users and sums charged or paid was calculated for behavioral health and physical health services separately. Within each clinical subgroup, amounts charged/paid per user per morbidity status were compared to examine the impact of a comorbid physical or behavioral condition on costs of services. Also, these costs were compared between the different public systems of health care under study.

3.2.1.2 Findings



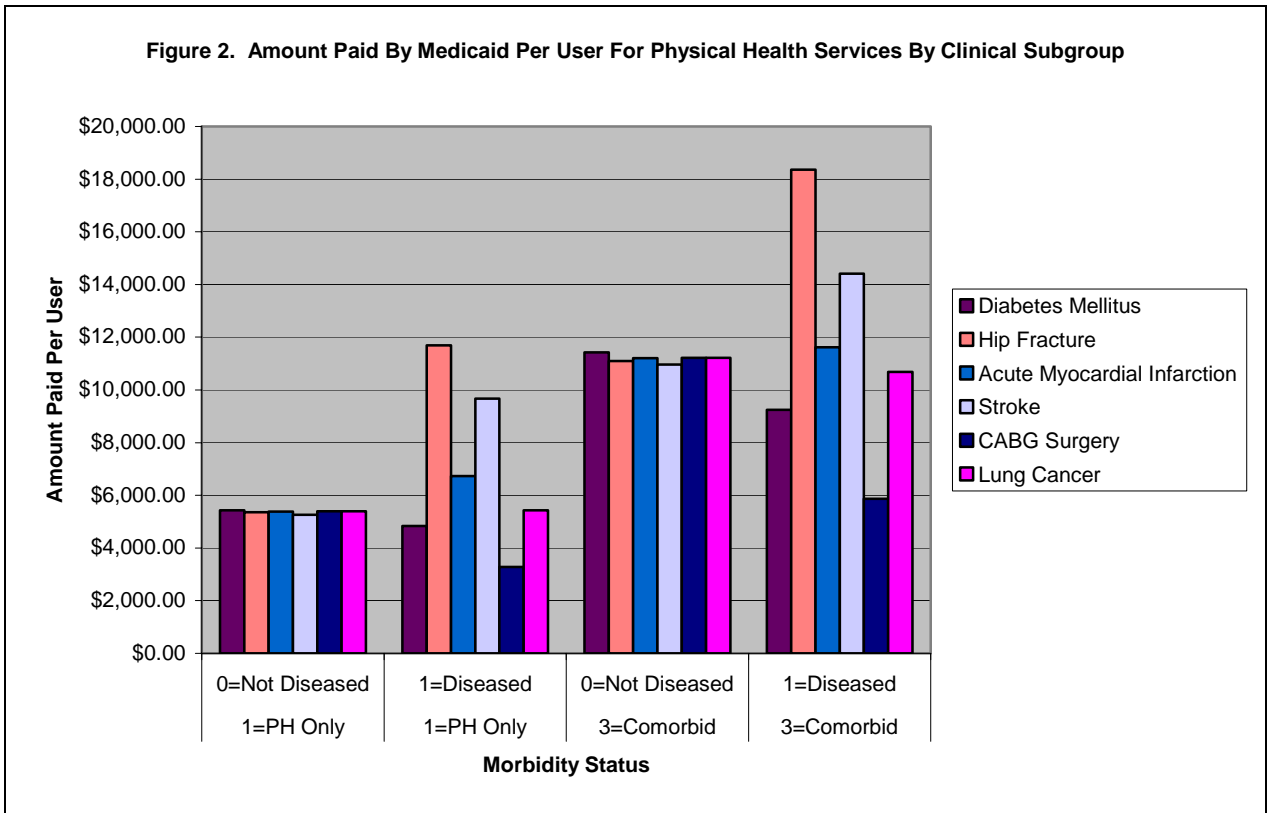
Mental Health Service Cost. Figure 1 shows the relative average amount charged for mental health services to Medicare broken out by 4 major diagnostic groups and whether the individuals received only mental health services in 1999 or received both mental health and physical health services (comorbid) – the figure for Medicaid services was similar. Persons with substance dependence or MH/SA co-occurring problems had double the charges of other diagnostic groups. The majority of the amount charged per user in Medicare for these groups reflected behavioral health inpatient charges. The amount charged per user for mental health services for persons with comorbid MH/PH service use was more than double the amount charged per user for persons with only mental health service use. The amount paid per user for mental health services in Medicaid for persons with comorbid MH/PH service use was much higher than the amount paid per user for persons with only mental health service use (Medicaid chart not shown).

This pattern of increased costs is not surprising given clinical research suggesting a biochemical relationship between many medical illnesses and psychiatric disorders (Krishnan et al., 1997; Lynne, 1996). The implication of current clinical research is that both physical and mental illnesses predispose individuals to risk of the other disorder. While the association between physical and mental illness has been well documented the exact origin of the association between specific physical and mental disorders is not completely known. The associations between physical and mental illnesses are quite complex. They likely involve both known and unknown interactions among psychological, physical, social and genetic factors (Lustman et al., 1997). Regardless of the causes for co-occurrence of illnesses, interactions at the social, behavioral and physiological levels are likely to complicate both the physical and mental illness thereby increasing the need for services and the cost of treating each condition. Early identification along with integrated treatment and patient education regarding comorbid conditions could well decrease the cost of treating each condition.

Given the interactions described above and the evidence that the early identification and treatment of physical and mental illness has therapeutic effects on both, it is essential that both medical and psychiatric providers be educated to recognize the potential risks and connections between physical and mental illness so that they are treated as early as possible and potential complications are minimized. Additionally, to reduce the likelihood of misdiagnosis, it is important that professionals be trained to recognize when symptoms (e.g. sad mood, weight loss or weight gain) are attributable to a medical condition and may indicate a physical illness, thus reducing the likelihood of misdiagnosis.

Unfortunately, psychiatric professionals and primary care physicians often lack sufficient training regarding comorbidity and they experience financial disincentives to perform psychodiagnostic testing to support their diagnostic impressions. It is currently estimated that depression is recognized only half the time in medical settings (Lustman & Anderson, 2002). Further, research shows that the average physician-patient interaction in the United States is only about eight to 12 minutes long, which is insufficient time to make a comprehensive diagnosis (Goldberg, 2002). It is suggested that a minimum of 20% of medical students' curriculum each year should be devoted to psychiatric aspects

of medical care, including both treatment and medical interviewing issues (Perkoff, 1989). Currently few medical schools provide the needed curriculum (Cohen et al.,1993). To improve treatment and outcomes for persons with comorbid physical and mental illness both the training needs of providers and financial disincentives in the current system must be addressed.



Physical Health Costs. Figure 2 presents the amount paid by Medicaid per user for physical health services by several major physical health disorders and comorbidity group. The amount paid per user for physical health services in Medicaid for persons with comorbid MH/PH service use was much higher than the amount paid per user for persons with only physical health service use. As expected, these data reveal that comorbid MH/PH conditions not only increased the mental health service costs to the public health system in Florida, but it also increased the physical health service costs, which were much greater in magnitude. A similar pattern of higher charges for persons with comorbid conditions than physical health conditions only (as shown for Medicaid in

the above chart) is seen in Medicare as well. The physical health cost per person to Medicaid is highest for comorbid persons with a hip fracture (\$18,355.62), followed by comorbid persons with a stroke (\$14,415.83). The absolute cost to Medicaid is highest for persons with co-occurring mental illness and stroke (\$70,882,631.80), followed by persons with co-occurring diabetes (\$60,796,449.24). Persons with these conditions should be considered for special programs/health policies, such as disease management programs aimed at reducing overall health care costs to the state.

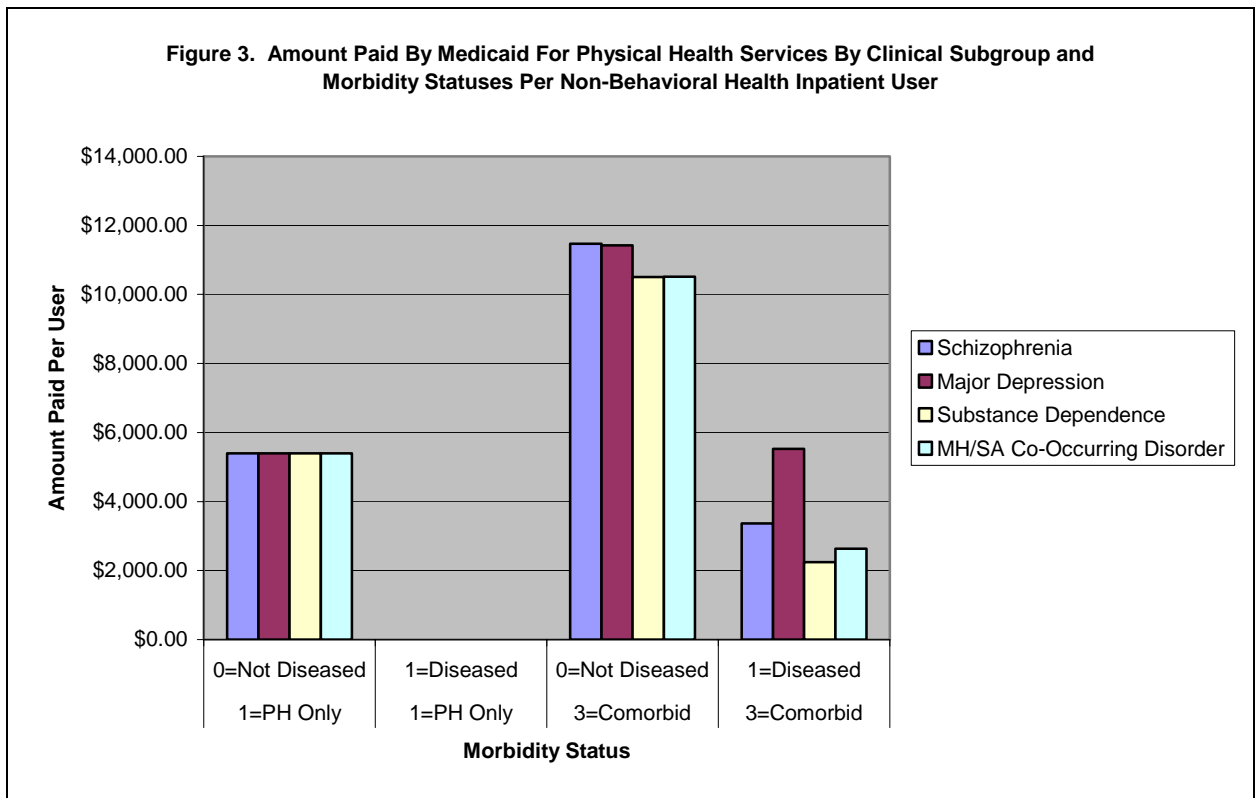


Figure 3 provides a display of the amount paid by Medicaid per user for physical health services by several major mental health disorders and comorbidity group. With one exception, the pattern of higher cost of all services for persons with comorbid MH/PH disorders persisted even after “high cost MH users” (a small subset of persons who used mental health inpatient services) were removed from the analysis. A striking pattern is evident through comparing the two comorbid groups (“diseased” or having one of the 4 serious MH diagnoses, and “not diseased” or not having the specified diagnoses). Clearly individuals experiencing one of the 4 serious and persistent mental health

problems receive substantially less physical health services than those with less severe mental health problems. For example, those with schizophrenia had less than one third of the physical health paid claims than those who had a disorder other than schizophrenia. One possible explanation could be that persons with a schizophrenic disorders are not accessing needed physical health services.

Some assert that once persons with these disorders arrive with needs at their primary care physician, they are not receiving optimal care (Druss et al, 2000) – and thus more education for physicians about proper treatment and potential bias against the mentally ill may be warranted. Mental health professionals could also be failing to refer their clients with SMI to needed physical health professionals. Just as general practice physicians should be aware of symptoms of mental illness and willing to recommend that a patient seek treatment from a mental health provider, so too should mental health professionals make an effort to recommend that their patients seek physical health treatment if needed.

It is also possible that the patient neglected his/her own care and thus perhaps more case management and outreach is needed. Another possible explanation could be that they were physically healthier than persons without the mental health disorders and did not need to access physical health services; however, nothing was found in the comorbidity literature that suggested persons with serious mental illness are physically healthier than persons without. To the contrary, in both cross sectional and prospective studies, mental illness has been associated with other factors such as physical inactivity, obesity and treatment noncompliance, which are all factors that contribute to poorer health (Anderson, Freedland, Clouse, & Lustman, 2001; Kawakami, Takatsuka, Shimizu & Ishibashi, 1999).

In conclusion, mental illness and physical illness commonly co-occur. Mental illness can be a physiologic consequence of physical illness and a reaction to it. It may also be a consequence of some medications. Given that effective treatment of the mental illness may promote better compliance, optimize the outcome of medical care, lower its cost, and improve the person's quality of life every effort should be made to insure that needed mental health care is provided on a par with physical health services.

3.3 *Adult Protective Services and Service Integration*

3.3.1 Background and Methods

Background. Elder mistreatment includes the various types of abuse, neglect, and exploitation experienced by older adults. Despite over 25 years of awareness in the aging field, little is known about the psychosocial factors related to mistreatment (Schonfeld, VandeWeerd, & Berko, 2000a; 2000b). Only one known study has compared the psychological effects suffered by victims of elder mistreatment in comparison to non-victims and that study was conducted in the Netherlands (Comijs, Penix, Knipscheer, & van Tilburg, 1999). Results showed that victims had significantly higher levels of psychological distress than did non-victims. However, no such study has been conducted in the U.S. Furthermore, little is known about the cost of mistreatment beyond the obvious human suffering and cost of investigations.

Although many older adults who experience mistreatment fail to be identified by the traditional adult protective services (APS) systems, the APS reporting systems provide the only source of data for known or suspected cases of mistreatment. The present study was conducted to test the hypothesis that older adults who are reported to APS as potential victims require more publicly funded behavioral health and physical health services and encumber more expenditures for such care than do older adults who are not reported for possible mistreatment.

Methods.

Data Sets. The Adult Protective Services (APS) data set was provided by the Florida Department of Children and Families for use in an earlier study conducted by the Department of Aging and Mental Health of FMHI/USF (Schonfeld et al. 2000a, 2000b) under contract with the Florida Department of Elder Affairs. These data were derived from the Florida Abuse Hotline Information System for cases reported from July 1998 through June 1999. For the purposes of the present study, only those reported cases occurring between January through June of 1999 were utilized. In addition, medical and institutional claims and eligibility records from Medicaid and Medicare (excluding durable medical equipment in Medicare) for calendar year 1999 were utilized. All subjects selected from all data sets were older adults, ages 65 and above.

Procedure. APS data were merged with the 1999 Medicare and Medicaid data to create one group of subjects: service users with reports of mistreatment (APS group). Those subjects were compared to all elders not reported for mistreatment (non-APS) on penetration rates, and cost of services incurred by both groups.

Penetration rates, total costs and costs per user were calculated for each of the service user categories and overall for the APS and Non-APS subsets within Medicare and Medicaid separately. The penetration rates, total costs and costs per user were then broken out by abuse type for persons in the APS subsets. Also, the rates and costs by abuse type were further subdivided by gender among the APS subsets. Categorizations of service users were developed based on the primary diagnoses included on every claim for each person. Table 15 shows the diagnoses used to define each service as mental health, substance abuse or physical health.

Table 15. Definitions of service use categories

Service Use Category	ICD-9-CM Diagnosis Code Definition
Mental Health	290, 293-302, 306-315
Substance Abuse	291-292, 303-305
Physical Health	<290, >315

3.3.2 Findings

Medicaid.

APS Group. A total of 3,763 Medicaid enrollees were in the APS data file for investigation of mistreatment. The median age was 81.2 years. Of these, 3,198 (85%) persons used at least one service. Of the four major categories of mistreatment used by APS, neglect was the most frequently reported (n= 1242, 38.8%), followed by self-neglect (n= 683, 21.4%), abuse (n= 953, 29.8%) and exploitation (n= 320, 10%). Of the 329,179 Non-APS enrollees in Medicaid, 205,031 (62%) persons used at least one service in 1999.

As shown in Table 16, the five most frequently reported categories of behavioral health services for both APS and non-APS groups were: Community mental health

(CMH) day treatment services, targeted case management, CMH Physician Services, Counseling/Therapy, and Rehabilitative Services.

Table 16. Most Frequent Behavioral Health Services Used by Medicaid Recipients (Who had a at least one claim with a BH diagnosis)

	APS		Non-APS	
	Frequency	Percent	Frequency	Percent
CMH: Day Treatment Services	2,644	28.6%	120,418	37.2%
Targeted Case Management	1,294	14.0%	39,941	12.4%
CMH: Physician Services	1,125	12.2%	33,101	10.2%
Counseling, Therapy, & Treatment Services	928	10.0%	31,095	9.6%
Rehabilitative Services	866	9.4%	30,476	9.4%
All Other Services (19 categories)	2,387	25.8%	67,984	21.0%
Total	9,244	100%	323,015	100%

Table 17 presents the highest frequency categories of physical health claims for APS and non-APS Medicaid clients with physical (medical) claims only as well as those with behavioral health services. These consisted of aged/disabled waiver services, institutional care claims, transportation services, assisted living/community support, and outpatient services.

Table 17. Medicaid Physical Health Claims for APS and Non-APS Subjects

Service Type	APS			Non APS		
	PH Only	BH/PH	Total	PH Only	BH/PH	Total
Aged/Disabled Waiver Services	37389	6594	43983	1855494	177383	2032877
Institutional Care Claims	21743	7429	29172	609114	191593	800707
Transportation Services	10025	6419	16444	382226	158331	540557
Assisted Living/ Community/Home Support Services	4504	1796	6300	400512	76201	476713
Outpatient Claims	4888	2083	6971	326020	59160	385180
All Other Categories	74045	22525	96570	1444852	302178	1747030
Total	96294	32695	128989	5018218	964846	5983064

In Tables 18 and 19, respectively, APS and non-APS Medicaid service users are compared with respect to penetration rates and costs. APS clients' penetration rates were higher in both categories and Chi square analyses indicated a significant relationship between mistreatment (APS vs. non-APS) and service type (behavioral plus physical health claims versus only physical health claims). Similarly, per user costs were significantly higher for APS clients, whether using behavioral health with physical health or physical health services only, and in general were twice as high in total service cost per user.

Table 18. Comparison of Penetration Rates for APS and Non-APS Medicaid Clients

Service Type:	Medicaid APS Subset		Medicaid Non-APS Subset	
	Total N: 3,763		Total N: 329,179	
	N	Penetration Rate	N	Penetration Rate
BH/PH	661	17.57%	23,641	7.18%
PH Only	2,537	67.42%	181,390	55.10%
Total	3,198	84.99%	205,031	62.29%

p<.0001, OR=2.0

Table 19. Cost of Services for APS and non-APS Medicaid Claims

Service Type:	Medicaid APS Subset			Medicaid Non-APS Subset			Higher Cost Factor for APS
	Total Expenditures	Users	Per User Cost	Total Expenditures	Users	Per User Cost	
BH/PH*	\$13,124,919	661	\$19,856	\$365,525,705	23,641	\$15,462	1.3
PH Only*	\$36,795,959	2,537	\$14,503	\$1,220,216,546	181,390	\$6,727	2.2
Total*	\$49,920,878	3,198	\$15,610	\$1,585,742,252	205,031	\$7,734	2.0

* t-test significance at the <.0001 level between mean cost per user per service category for APS versus Non-APS subsets.

Medicare Data Analyses

A total of 5,656 Medicare enrollees were in the APS data file for investigation of mistreatment. Their median age was 81.0 (sd= 7.92; range = 64-98). Of these, 73.8% used at least one service. Of the four major categories of mistreatment used by APS, self-neglect was the most frequently reported (n= 1893, 33.5%), followed by neglect (n= 1654, 29.2%), abuse (n= 1287, 22.8%) and exploitation (n= 822, 14.5%).

Of the 2,913,217 Non-APS Medicare enrollees, 58.8% used at least one service in 1999. This Non-APS group was much younger, with a median age of 74.0 (sd= 7.43; range = 64-98).

Penetration rates for Medicare enrollees are shown in the next table. These data indicate that the penetration rate for those APS clients using behavioral health services was nearly six times the rate for Non-APS clients, while the rate for those APS clients using only physical health services was lower than the penetration rate for non-APS clients.

Table 20. Comparison of APS and Non-APS Clients' Penetration Rates for Behavioral Health and Physical Health Services

Service Type:	Medicare APS Subset		Medicare Non-APS Subset	
	Total = 5,656 Medicare Clients		Total = 2,913,217 Medicare Clients	
	N	Penetration Rate	N	Penetration Rate
BH/PH	2,286	40.42%	200,444	6.88%
PH Only	1,887	33.36%	1,517,102	51.98%
Total	4,173	73.78%	1,717,546	58.84%

p<.0001, Odds Ratio = OR=9.1

Costs of services per user for the APS and Non-APS enrollees are compared in Table 21. Analyses indicate that differences are significant, with APS clients incurring almost twice the costs of behavioral/physical health services and with respect to services for physical health only, almost three times the costs.

Table 21. Comparison of Costs for Services for APS and Non-APS Medicare Clients

Service Type:	Medicare APS Subset			Medicare Non-APS Subset			Higher Cost Factor for APS over non-APS
	Total Expenditures	Per User	Per User Cost	Total Expenditures	Users	Per User Cost	
BH/PH*	\$50,472,872	2,286	\$22,079	\$2,596,269,625	200,444	\$12,952	1.7
PH Only*	\$24,579,714	1,887	\$13,025	\$6,832,032,871	1,517,102	\$4,503	2.9
Total*	\$75,052,586	4,173	\$17,985	\$9,428,302,496	1,717,546	\$5,489	3.3

*T-test significance at the <.0001 level between mean cost per user per service category for APS vs. Non-APS subsets.

Table 22 indicates the type of behavioral health services received by APS and Non-APS enrollees. The proportions were fairly close between the two groups, with the exception of a slightly higher proportion of inpatient services and a lower proportion of mental health outpatient services by APS clients.

Table 22. Most Frequent Behavioral Health Services Used by Medicare Recipients

	APS		Non-APS	
	Frequency	Percent	Frequency	Percent
Mental Health Ancillary Inpatient Services	12,065	29.4%	413,187	21.0%
Physician Services - Clinic or Outpatient (periodic treatment)	4,628	11.3%	301,932	15.3%
Lab Pathology with Mental Health Criterion	4,421	10.8%	231,688	11.8%
Home-based or Prolonged Physician Services	4,039	9.8%	155,706	7.9%
Counseling, Therapy, & Treatment Services (ongoing treatment)	3,134	7.6%	391,033	19.8%
General Medicine with Mental Health Criterion	2,728	6.6%	131,495	6.7%
Mental Health Hospice/Respite Services	2,542	6.2%	99,356	5%
All other categories (n=13) of services	7,412	17.5%	245,885	12.5%
Total	40,969	100%	1,970,282	100%

The next table illustrates the claims for physical health issues by APS and non-APS Medicare enrollees. Among the most frequent categories for both groups were lab tests, nursing home care, inpatient evaluations, and case management services.

Table 23. Medicare Physical Health Claims for APS and Non-APS Subjects

Service Type	APS			Non APS		
	PH Only	BH/PH	Total	PH Only	BH/PH	Total
Pathology/Lab Testing/Assays	36042	63838	99880	29184132	4782217	26766349
Nursing Facility/Custodial Care, Home or prolonged care evaluation & management services	20096	30441	50537	2199116	1342682	3541798
Diagnostic Radiology	16253	32055	48308	7417865	2045030	9462895
Hospital Observation/Inpatient Evaluation and Management Services	14332	31903	46235	2848039	1564870	4412909
Case Management or Care Plan Evaluation and Management Services	20096	30441	50537	2723458	1071457	3794915
Transportation Services	13401	23592	36993	2030285	1141161	3171446
Tests/Medical Procedures	12920	22363	35283	8305799	1849313	10155112
Physical/Rehabilitation/Nutrition/Osteopathic/Chiropractic Medicine	10441	22861	33302	4761121	1788097	6549218
Office or Other Outpatient Evaluation and Management Services	11990	13583	25573	12798018	2028477	14826495
Pharmacy Procedures	7715	13595	21310	3756113	893638	4649751
Surgery	6791	10463	17254	5459663	981220	6440883
All Other Categories	29818	41130	70948	8079811	3410818	62874580
Total	199895	336265	536160	89563420	22898980	112462400

3.3.3 Conclusions

As hypothesized, it appears that both Medicaid and Medicare enrollees who are also being served by the adult protective services systems utilize behavioral and physical health services more than do enrollees not being investigated for possible signs of mistreatment (Non-APS enrollees) as indicated by the discrepancies in the penetration rates. For Medicaid enrollees, with respect to behavioral health service users, penetration rates for APS clients were more than twice the rates and costs were 1.3 times greater than those for Non-APS enrollees. Those Medicaid enrollees utilizing only physical health

services also demonstrated greater penetration rates and more than twice the costs. With respect to Medicare, those APS clients using behavioral health services had more than six times the penetration rate and 1.7 times the costs than Non-APS clients. For physical health services only, the Non-APS clients had a higher penetration rate. However, cost per user still favored the APS clients (2.9 times the amount of Non-APS).

4.0 DISCUSSION

4.1 Policy Implications

- Florida Medicaid needs to be aware of access and cultural barriers for minority enrollees and do what it can to reduce them.
- Medicare picks up a much greater portion of costs for care with dual enrollees across cohorts (it is the primary payer), however Medicaid does assume a substantial amount of costs for the more seriously mentally ill group – possibly reflecting the relative lack of parity in mental health benefits in the Medicare program. Florida Medicaid may wish to encourage more mental health parity in the Medicare program as well as more aggressive use of Medicare benefits by dual enrollees.
- In 1999, three-quarters (74%) of psychotropic medication costs for dual enrollees receiving MH services are for those with serious mental illness, and almost 60% of those costs are for atypical antipsychotics. It is likely a higher proportion of atypicals now in 2003. The high proportional use of atypicals suggests that expenditures to create effective disease management protocols may increase cost effective treatment of serious mental illness.
- Analyses of basic functional outcomes indicators suggests that individuals who are only enrolled in Medicaid are showing more group gains over the year than those in only Medicare and dually enrolled individuals. Although it may just reflect a situation where the Medicaid group is younger and more unstable with lower base scores (and thus more able to change and thus improvements are greater), more inquiry is warranted to seek out why this is the case.
- Persons with comorbid physical-mental health problems clearly have higher per person costs for physical health services. On a per person level, Medicaid is most fiscally impacted by comorbid persons experiencing hip fracture and stroke. On an

absolute cost level, Medicaid is most impacted by comorbid persons with a stroke (over \$70 million/year), followed by comorbid persons with diabetes (over \$60 million/year). Persons with these conditions should be considered for special programs/health policies, such as disease management programs to not only ensure good care, but also aimed at reducing overall health care costs to the state.

- Some have suggested that depression screening should be considered the “6th vital sign” and implemented on an ongoing basis in all medical care facilities and offices. The results of these analyses suggest that such screening would improve care, but also potentially reduce costs in the long view.
- Individuals experiencing serious mental health problems receive substantially less physical health services than those with less severe mental health problems. This finding is confirmed by other research and is not unique to Florida. Some suggest that this is caused by improper training and referral by primary care physicians and/or specialty mental health professionals, and that targeted training would not only improve care, but also decrease costs by decreasing the need for crisis care. This is a direction that Florida Medicaid might wish to pursue.
- Both Medicare and Medicaid enrollees who are served by the adult protective service (APS) system utilize both behavioral and physical health services at a significantly higher rate than those who are not in the APS system. Costs are also significantly higher for those in APS. Florida Medicaid may wish to target care management for these individuals to ensure effective, coordinated care is provided in a cost efficient manner.

4.2 Study Limitations

Administrative data sets, and indeed all secondary databases, pose unique problems when they are utilized in research projects (a purpose they are typically not designed for). Researchers and evaluators are constrained by the scope of the data, the variables collected, the formats used to store the data, and the methods available for data extractions. For example, event or service history data sets typically allow only retrospective analyses without the benefit of an experimental control group.

Understanding the data is a critical first step in using secondary or administrative data in research. Thus, in the PSRDC, the Medicaid and Medicare data sets were subjected to rigorous fidelity checks (the validity of data submitted for administrative purposes often requires verification through the convergence of multiple data sources, and each specific variable must be evaluated for analytic usefulness) and recompiled to assure structural compatibility prior to integration with other databases. We also sought to understand the context under which the data was collected (benefit plans, clerical procedures, etc.) as well as the quality of data elements.

We confirmed several idiosyncrasies in the Medicare data received from CMS that affected analyses and interpretation. Approximately 2% of the beneficiaries identified in the claims files did not have eligibility information included in the Denominator file. Possible explanations for this exclusion may be that the beneficiary emigrated from the state of Florida, changed their Health Insurance Claim (HIC) number or died between the date of their last claim in 1999 and the creation of the 1999 Denominator file, which occurred on March 31, 2000. As a result, penetration rates were probably slightly overestimated, because fewer people existed in the Denominator file than were actually in the true, but unknown, denominator statistic.

Additionally, approximately 27% of Medicare enrollees have selected HMOs as their carriers. Unfortunately, because the HMO shadow claims that were received from CMS appear very incomplete, it is not possible to create a clear picture of the Medicare supported services provided to these enrollees. Because we do not have complete data, the per user rates indicated in this report do not include these HMO enrollees.

Finally, service amounts reported in the text were amounts charged rather than amounts paid per service. Claim payment amounts were the actual amounts paid for all services provided on a claim (mental and physical health services). Charge amounts of institutional services were the total amount charged by provider. However, charge amounts of medical (Part B) services were “allowable charges”, which meant the amounts Medicare allowed providers to charge for services rather than the total amount they actually charged. It was estimated that on average, only about 40-45% of the amount charged to Medicare was actually paid by Medicare to the provider.

These limitations noted, important research and policy issues for the State of Florida were examined with the Medicare administrative data sets and will continue to be pursued in the future.

5.0 FUTURE DIRECTIONS/NEXT STEPS

We now have a much better understanding of the “3rd leg” of public mental health administrative data -- the examination of public physical health, mental health, and substance abuse questions and issues using the Medicare administrative data, combined with Medicaid and state mental health authority data (the other 2 “legs”), is continuing. Future directions should include:

- Now that our application to obtain and use 3 additional years of Medicare data has been approved by CMS, we need to compile and integrate this data into our data system so that longitudinal analyses can be conducted. Much of our activities next year will involve integrating the additional voluminous data into our current structure and running preliminary analyses with it.
- Continue to pursue access to DOEA CIRTS data so that we might examine service use by minorities and other more vulnerable populations by types of DOEA services concurrently received (and by housing type).
- Prepare for previously proposed longitudinal analyses in the areas of:
 - Dual eligibility
 - Comorbidity
 - Utilization by vulnerable populations
 - Use of services by persons in ALFs

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Appendix A.

PSRDC CATCAID DOCUMENTATION

PSRDC CATCAID DOCUMENTATION

Background

The PSRDC catcaids were originally developed in an attempt to identify and categorize mental health services provided by the Florida Agency for Health Care Administration (AHCA) through Medicaid. Prior to 2002, catcaids were named catcodes. The decision to change the name came in response to the acquisition of Medicare claims data, and the subsequent need to identify and categorize Medicare mental health services. It was decided to rename the Medicaid catcodes, “catcaids” and to name the new Medicare catcodes, “catcares”.

In evaluating the Medicaid claims service utilization data, the PSRDC recognized the need to create logical groupings of services in order to describe broad service delivery patterns to AHCA. The development of mental health catcaids has been an ongoing process that began in 1996. Other catcaids were also created to categorize services in the Managed Care Encounter data, which were not applicable to services in the Medicaid claims data.

The existence of thousands of procedure codes used in claims billing necessitated the aggregation of procedure codes into large groups of services. Because procedure codes did not exist on every claim, other variables had to be employed in developing the categorization scheme. The variables that were used in the Medicaid catcaid scheme included the following: procedure code, diagnosis code, record type, claim form, appropriations code, treatment provider type, treatment provider specialty, pay to provider type and age.

The mental health catcaids began as several large, inclusive groups that were defined as integer codes and later were split into more detailed categories that were defined as integer + decimal codes. A list of the mental health catcaids, the label, a description of the category and the source variables used to construct the category (current as of 01/09/2002) is included in Table 1. Many services were separated into distinct categories based on where they were received, i.e. as an inpatient in a hospital, as an outpatient at a hospital, in an office/clinic or in a Community Mental Health Center. Then they were further divided into procedures performed at the different locations.

In 1999, the need to develop physical health catcaids in addition to the existing mental health catcaids became apparent. The physical health catcaids were developed as broad categories of services based on the groupings of procedure codes in the American Medical Association’s (AMA) Common Procedural Terminology (CPT) manual. The medical record type claims (which record data collected on the HCFA 1500 form) used the three levels of codes in the Health Care Financing Administration Common Procedure Coding System (HCPCS). Level I included CPT codes, level II included other national HCPCS codes, and Level III included codes reserved for assignment by the local authority. The institutional record type claims (which record data collected on the HCFA

1450 form, a.k.a. UB92 form) used ICD-9-CM procedure code, but this variable was not recorded on approximately 80% of the claims. Because of the incompleteness of the procedure code variable, the institutional claims were broadly categorized based on the claim form variable. A list of the physical health catcaids, the label, a description of the category and the source variables used to construct the category (current as of 01/09/2002) is included in Table 2.

Steps in Mental Health Catcaid Assignment

Step 1 (All Mental Health Catcaids 01.00 – 20.50)

Understanding the hierarchical algorithm used to assign the catcaids is very important for interpreting the results of categorical analyses using the catcaids. The first step in catcaid assignment is to select claims that are either medical or institutional record type, non-capitation claims. For the analyses performed on Medicaid claims data by the PSRDC, only these record types are examined. The pharmacy and capitation claims are not currently included in PSRDC analyses using catcaids.

Step 2 (All Mental Health Catcaids 01.00 – 20.50)

The next step is to select and “bookmark” all of the mental health claims. A claim is selected as a mental health claim if *any one* of the following variables suggests it is a mental health service: procedure code, primary or secondary diagnosis code, appropriations code, treatment provider type, treatment provider specialty, pay to provider type and claim form. If a claim is selected as a mental health service based on any of the above variables, then it continues through the hierarchical algorithm (using if-then-else statements) to assign its mental health catcaid.

Step 3 (Catcaids 01.00 – 03.50)

Next, the mental health claims (institutional and medical) are broadly categorized into substance abuse claims (X=03.), child (age < 21 years) claims (X=02.) and adult claims (X=01.), in that order. For instance, the substance abuse claims are selected, including both children and adults, and then the remaining claims are separated by age. Then, if certain coding conditions are met, the broadly categorized claims are assigned into inpatient hospital bed days (X.00), ancillary inpatient hospital services (X.05) and hospice/respite services (X.20). By this step, all inpatient and some medical record type claims have been assigned to catcaids 01.00 through 03.50, if the claim was not yet assigned a catcaid, it continues through the remaining catcaid assignment algorithm.

Step 4 (Catcaids 04.00 – 18.00)

The remaining mental health catcaid assignment only applies to the medical record type claims. Catcaids 04.00 through 18.00 are well-defined categories assigned to the mental health claims if specific criteria regarding their source variables are met. For a list of source variables used to assign these catcaids, refer to Table 1.

Step 5 (Catcaids 20.00 – 20.50)

The final step involves collecting the remaining mental health claims into the “catch-all” categories 20.00 through 20.50. Catcaid 20.00 is assigned to claims with general mental procedures that are not categorized above. Catcaids 20.10 through 20.50 are categories that describe the claims that were selected as mental health claims by meeting some criterion other than a known, mental health procedure code. These claims most likely have a mental health diagnosis; however, they may have been selected based on any of the following variables: primary or secondary diagnosis code, appropriations code, treatment provider type, treatment provider specialty or pay to provider type.

Steps in Physical Health Catcaid Assignment

Step 1 (All Physical Health Catcaids 51.00 – 99.99)

All non-capitation, institutional and medical record type claims, which were not selected as mental health claims and subsequently assigned a mental health catcaid, are then run through an algorithm for assigning a physical health catcaid. The physical health catcaids are based on claim forms and groupings of procedure codes within the AMA’s CPT manual.

Step 2 (Catcaids 63.00 – 66.00)

First, all physical health inpatient claims, institutional care claims, outpatient claims, and hospice claims are assigned a catcaid based on claim form.

Step 3 (Catcaids 51.00 – 62.00)

Next, the medical record type claims with known procedure codes are run through the remaining physical health catcaid algorithm.

Step 4 (Catcaids 98.00 – 99.00)

Next, the claims with national codes temporarily defined to a service while awaiting reassignment in the CPT manual are categorized into catcaid 98.00. And finally, all other physical health services with unknown or missing procedure codes will be coded as 99.99. Claims that end up in this catcaid should be examined every new project year to search for new codes that should be included in the algorithm.

Table 1.

CATCAID	LABEL	DESCRIPTION OF CATEGORY	SOURCE VARIABLE(S)
01.00	Adult Inpatient Care	Bed days and ICD-9-CM procedures in a hospital for an adult, non-substance abuse, institutional claims only	Record type, age, claim form
01.10*	Adult Residential	Managed care services received in a residential facility for an adult, non-substance abuse, PMHP/HMO	
01.20	Adult Hospice/Respite	Hospice/Respite services received for an adult, non-substance abuse, institutional and medical claims	Record type, age, claim form, procedure code
01.50	Adult ancillary inpatient services	Ancillary services received while admitted in a hospital for an adult, non-substance abuse, medical claims only	Record type, age, procedure code
02.00	Child Inpatient Care	Bed days and ICD-9-CM procedures in a hospital for a child, non-substance abuse, institutional claims only	Record type, age, claim form
02.10*	Child Residential	Managed care services received in a residential facility for a child, non-substance abuse, PMHP/HMO	
02.20	Child Hospice/Respite	Hospice/Respite services received for a child, non-substance abuse, institutional and medical claims	Record type, age, claim form, procedure code
02.50	Child ancillary inpatient services	Ancillary services received while admitted in a hospital for a child, non-substance abuse, medical claims only	Record type, age, procedure code
03.00	Substance Abuse Inpatient Care	Bed days and ICD-9-CM procedures in a hospital for substance abuse, institutional claims only	Record type, diagnosis code, claim form
03.10*	Substance Abuse Residential	Managed care services received in a residential facility for substance abuse, PMHP/HMO	

03.20	Substance Abuse Hospice/Respite	Hospice/Respite services received for substance abuse, institutional and medical claims	Record type, diagnosis code, claim form, procedure code
03.50	Substance Abuse ancillary inpatient services	Ancillary services received while admitted in a hospital for substance abuse, medical claims only	Record type, diagnosis code, procedure code
04.00	Emergency MH Treatment	Acute MH care received in the emergency room	Record type, procedure code and treatment provider specialty
04.50	Hospital Outpatient MH Services	Outpatient mental health services provided in a hospital setting	Record type, claim form, appropriations code
05.00	Physician Services – clinic or outpatient	Periodic office visits, treatment/management of mental health problem received in a clinic or as an outpatient in a physician’s office	Record type, procedure code
05.25	Home-based or prolonged physician’s services	Home-based or prolonged physician’s services, not defined by location of service, formerly 14.00	Record type, procedure code
05.50	CMH: Physician Services	Periodic office visits, treatment/management of mental health problem as defined by the Florida CMH manual	Record type, procedure code
06.00	CMH: Treatment Planning & Review	Treatment Planning & Review of care as defined by the Florida CMH manual (treatment plan developed jointly between patient and treatment team)	Record type, procedure code
07.00	Evaluation and Testing Services	Evaluation and Testing services	Record type, procedure code, appropriations code
07.50	CMH: Evaluation and Testing Services	Evaluation and Testing services as defined by the Florida CMH manual	Record type, procedure code
08.00	Counseling, Therapy, & Treatment Services	Ongoing Counseling, Therapy, & Treatment services	Record type, procedure code
09.00**	Counseling, Therapy, & Treatment Services by Behavioral Health Specialist	Ongoing Counseling, Therapy, & Treatment services provided by a Behavioral Health Specialist (has been incorporated into 08.00)	

10.00	Rehabilitative Services	Living skills training, as defined by the Florida CMH manual	Record type, procedure code
11.00	CMH: Children's Behavioral Health	Children's behavioral health services as defined by the Florida CMH manual	Record type, procedure code
11.50	CMH: Behavioral Health Overlay for Department of Juvenile Justice Residential Facilities	Specific program provided in for behavioral health in residential facilities as defined by the Florida CMH manual	Record type, procedure code
12.00	CMH: Day Treatment Services	Intense services (Partial Hospitalization) as defined by the Florida CMH manual	Record type, procedure code
13.00	Targeted Case Management	General (traditional) and Intensive (surrogate family member) management as defined by the Florida Targeted Case Management manual, section 1-2	Record type, procedure code
14.00**	Physician's services not listed above	Home-based or prolonged physician's services, not defined by location of service, incorporated into 05.25	Record type, procedure code
14.10*	HMO/FHP Employment Services	F-codes, services provided under managed care that are not provided by Medicaid	
14.20*	HMO/FHP Drop-In Centers	F-codes, services provided under managed care that are not provided by Medicaid	
14.30*	HMO/FHP Housing Services	F-codes, services provided under managed care that are not provided by Medicaid	
14.50*	Clinical On-site services	F-codes, services provided under managed care that are not provided by Medicaid	
14.90*	HMO/FHP Other Special Services	F-codes, services provided under managed care that are not provided by Medicaid	
15.00**	Other Assessment	Incorporated into 07.00	
16.00	Therapeutic Foster Care I & II	Foster care services	Record type, procedure code
17.00**	EPSDT Screening	Incorporated into 20.00	
18.00	MH Drug Injection	Drug injection to treat mental health problem	Record type, procedure code

18.10*	Pharmacy-related revenue codes	Managed Care revenue codes	
20.00	Other MH – does not fit into above categories	General mental health procedure codes, Electric Shock Therapy or other claims with mental health criterion other than procedure code met	Record type, procedure code
20.10	Lab/Pathology with MH diagnosis	Lab/Pathology service with mental health criterion other than procedure code met	Record type, procedure code
20.20	Speech/Language Therapy with MH diagnosis	Speech/Language Therapy service with mental health criterion other than procedure code met	Record type, procedure code, treatment provider specialty
20.30	Occupational Therapy with MH diagnosis	Occupational Therapy service with mental health criterion other than procedure code met	Record type, procedure code, treatment provider specialty
20.40	Physical Therapy with MH diagnosis	Physical Therapy service with mental health criterion other than procedure code met	Record type, procedure code, treatment provider specialty
20.50	MH Ambulance Services	Ambulance services with mental health criterion other than procedure code met	Record type, treatment provider type

*Code is specific to the Managed Care Encounter (PMHP/HMO) data and not used in the Statewide Medicaid Claims data

**Code is obsolete

Table 2.

CATCAID	LABEL	DESCRIPTION OF CATEGORY	SOURCE VARIABLE(S)
51.01	Office or Other Outpatient Evaluation and Management Services	Office visits, evaluation and management services	Record type, claim form, procedure code
51.02	Hospital Observation/Inpatient Evaluation and Management Services	Hospital visits, inpatient evaluation and management services	Record type, claim form, procedure code
51.03	Consultation Evaluation and Management	Consultation with other providers for evaluation and management of care	Record type, claim form, procedure code
51.04	Emergency/Critical/Intensive Care Evaluation and Management Services	Acute care evaluation and management services	Record type, claim form, procedure code
51.05	Nursing Facility, Custodial Care, Home, or Prolonged Care Evaluation and Management Services	Long-term care evaluation and management services	Record type, claim form, procedure code
51.06	Case Management or Care Plan Evaluation and Management	Case management, care plan oversight or supervisory evaluation and management	Record type, claim form, procedure code
51.07	Preventive Medicine Evaluation and Management Services	Preventive evaluation and management services (i.e. history and physical)	Record type, claim form, procedure code
51.08	Newborn Care Evaluation and Management Services	Evaluation and management services for newborn care	Record type, claim form, procedure code
51.09	Family Planning Evaluation and Management Services	Evaluation and management services for family planning services	Record type, claim form, procedure code
51.99	Special/Other Evaluation and Management Services	Disability, other screening evaluation and management services	Record type, claim form, procedure code
52.00	Anesthesia	All anesthesia services	Record type, claim form, procedure code
53.00	Surgery	All surgical services	Record type, claim form, procedure code
54.01	Diagnostic Radiology	Diagnostic radiology, imaging, ultrasound	Record type, claim form, procedure code

		services	
54.02	Radiology Oncology	Radiology treatment of cancers/diseases	Record type, claim form, procedure code
55.01	Pathology/Laboratory Testing/Assays	Laboratory and Pathology panels, drug tests and assays	Record type, claim form, procedure code
55.02	Pathology	Microbiology, clinical pathology	Record type, claim form, procedure code
55.03	Pathology/Laboratory Transfusion Medicine	Services related to blood/serum transfusion	Record type, claim form, procedure code
55.99	Other Pathology/Laboratory Procedures	Other pathology/laboratory procedures	Record type, claim form, procedure code
56.01	Immunizations and Therapeutic/Diagnostic Infusions/Injections	Immunizations and Therapeutic/Diagnostic Infusions/Injections	Record type, claim form, procedure code
56.02	Tests/Medical Procedures	Tests/Medical Procedures	Record type, claim form, procedure code
56.03	Physical/Rehabilitation/Nutrition/Osteopathic/Chiropractic Medicine	Physical/Rehabilitation/Nutrition/Osteopathic/Chiropractic Medicine	Record type, claim form, procedure code
56.04	Medical Supplies/Devices	Medical Supplies/Devices	Record type, claim form, procedure code
56.05	Vision Procedures	Vision Procedures	Record type, claim form, procedure code
56.06	Hearing Procedures	Hearing Procedures	Record type, claim form, procedure code
56.99	Other Medical Services	Other medical procedures	Record type, claim form, procedure code
57.01	Early Intervention/Antepartum Care	Early intervention, support services for pregnant women	Record type, claim form, procedure code
57.02	Developmental Disability Waiver	Services provided under the Medicaid Developmental Disability Waiver	Record type, claim form, procedure code
57.03	Assisted Living/Community/Home Support Services	Activities of daily living, community and home support services	Record type, claim form, procedure code
57.04	Aged/Disabled Waiver Services	Physical health services provided under the Medicaid aged/disabled Waiver	Record type, claim form, procedure code
57.05	Care for Medically Complex or Chronically Mentally Ill Child	Living assistance and other services for chronically ill/complex cases	Record type, claim form, procedure code
58.00	Dental Procedures	Dental procedures	Record type, claim form, procedure code

59.00	Pharmacy Procedures	Physical health pharmacy procedures	Record type, claim form, procedure code
60.00	Physical/Occupational/Speech Therapy	PT, OT, and Speech therapy for physical health claims	Record type, claim form, procedure code
61.00	Transportation Services	All transportation services for physical health claims	Record type, claim form, procedure code
62.00	AIDS Waiver Services	Services provided under Medicaid AIDS Waiver	Record type, claim form, procedure code
63.00	Inpatient Claims	Inpatient physical health claims	Record type, claim form
64.00	Institutional Care Claims	Home Health or SNF physical health claims	Record type, claim form
65.00	Outpatient Claims	Outpatient physical health claims	Record type, claim form
66.00	Hospice Care Claims	Hospice physical health claims	Record type, claim form
98.00	Temporary National Codes Awaiting Reassignment in CPT	Several G-codes, all Q-codes, and all S-codes awaiting CPT code assignment by AMA	Record type, claim form, procedure code
99.99	Other/Unknown Services	“Catch-all” for the rest of the physical health claims	Record type, claim form

Appendix B.

PSRDC CATCARE DOCUMENTATION

PSRDC CATCARE DOCUMENTATION

Steps in Mental Health Catcare Assignment

The catcares were designed to be analogous to the catcaids. The actual categories are labeled and described the same, but the catcare codes are distinguishable from the catcaids by a '1' preceding the catcaid code. For example, catcaid '01.00' is analogous to catcare '101.00'. The intent was to use source variables that, although not identical, were very similar and analogous to the source variables used in the catcaid assignment algorithm. (For a history and explanation of the catcaid assignment, refer to the PSRDC Catcaid Documentation.)

Step 1 (All Mental Health Catcares 101.00 – 120.60)

The first step is to select and “bookmark” all of the mental health claims.

Part B Claims:

A Part B claim is selected as a mental health claim if *any one* of the following variables suggests it is a mental health service: record identification code, diagnosis code, HCPCS procedure code, type of service, place of service, and treatment provider specialty code. The claims with mental health diagnoses are then categorized as serious mental illness (SMI), substance abuse (SA), or other mental health (OMH).

Institutional Claims:

An Institutional claim is selected as a mental health claim if *any one* of the following variables suggests it is a mental health service: record identification code, revenue center code, HCPCS procedure code, ICD-9-CM procedure code, facility type, type of service, and Medicare provider code. The claims with mental health diagnoses are then categorized as serious mental illness (SMI), substance abuse (SA), or other mental health (OMH).

Step 2 (All Catcares 101.00 – 163.00)

Once the claims have been tagged as mental health or not, the Part B catcare algorithm is run on the Part B data, and the Institutional catcare algorithm is run on the Institutional data. The code, label, description and source variables that are used to assign each mental health catcare are listed in Table 1. The different source variables are listed for the Part B and Institutional catcare algorithms.

Step 3 (Catcares 198.00 – 199.99)

Next, the claims with national codes temporarily defined to a service while awaiting reassignment in the CPT manual are categorized into catcare 198.00. And finally, all other physical health services with unknown or missing procedure codes will be coded as 199.99. Claims that end up in this catcare should be examined every new project year to search for new codes that should be included in the algorithm.

Table 1.

CATCARE	LABEL	DESCRIPTION OF CATEGORY	SOURCE VARIABLE(S)
101.00	Inpatient Care	Bed days and ICD-9-CM procedures in a hospital for an adult, non-substance abuse, institutional claims only	Institutional: Diagnosis, revenue center code Part B: None
101.20	Hospice/Respite	Hospice/Respite services received for an adult, non-substance abuse, institutional and medical claims	Institutional: HCPCS procedure code, revenue center code, diagnosis Part B: HCPCS procedure code, diagnosis
101.50	Ancillary inpatient services	Ancillary services received while admitted in a hospital for an adult, non-substance abuse, medical claims only	Institutional: Diagnosis, ICD-9-CM procedure code, HCPCS procedure code, revenue center code Part B: HCPCS procedure code
103.00	Substance Abuse Inpatient Care	Bed days and ICD-9-CM procedures in a hospital for substance abuse, institutional claims only	Institutional: Diagnosis, revenue center code Part B: None
103.20	Substance Abuse Hospice/Respite	Hospice/Respite services received for substance abuse, institutional and medical claims	Institutional: HCPCS procedure code, revenue center code, diagnosis Part B: HCPCS procedure code, diagnosis
103.50	Substance Abuse ancillary inpatient services	Ancillary services received while admitted in a hospital for substance abuse, medical claims only	Institutional: Diagnosis, ICD-9-CM procedure code, HCPCS procedure code, revenue center code Part B: HCPCS procedure code

104.00	Emergency MH Treatment	Acute MH care received in the emergency room	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code, place of service, provider specialty code
105.00	Physician Services – clinic or outpatient	Periodic office visits, treatment/management of mental health problem received in a clinic or as an outpatient in a physician’s office	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
105.25	Home-based or prolonged physician’s services	Home-based or prolonged physician’s services, not defined by location of service	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
107.00	Evaluation and Testing Services	Evaluation and Testing services	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
108.00	Counseling, Therapy, & Treatment Services	Ongoing Counseling, Therapy, & Treatment services	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
110.00	Rehabilitative Services	Living skills training, as defined by the Florida CMH manual	Institutional: Revenue center code Part B: None
112.00	CMH: Day Treatment Services	Intense services (Partial Hospitalization) as defined by the Florida CMH manual	Institutional: Revenue center code Part B: None

118.00	MH Drug Injection	Drug injection to treat mental health problem	Institutional: Diagnosis, ICD-9-CM procedure code, HCPCS procedure code, revenue center code Part B: HCPCS procedure code
119.00	Alcohol and Drug Abuse Treatment Services	HCPCS codes that indicate specific alcohol and drug abuse treatment services	Institutional: HCPCS procedure code Part B: HCPCS procedure code
120.00	Other MH – does not fit into above categories	General mental health procedure codes, Electric Shock Therapy or other claims with mental health criterion other than procedure code met	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
120.10	Lab/Pathology with MH diagnosis	Lab/Pathology service with mental health criterion other than procedure code met	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
120.20	Speech/Language Therapy with MH diagnosis	Speech/Language Therapy service with mental health criterion other than procedure code met	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
120.30	Occupational Therapy with MH diagnosis	Occupational Therapy service with mental health criterion other than procedure code met	Institutional: Revenue center code Part B: Type of service, provider specialty code
120.40	Physical Therapy with MH diagnosis	Physical Therapy service with mental health criterion other than procedure code met	Institutional: Revenue center code Part B: Type of service, provider specialty code

120.50	MH Ambulance Services	Ambulance services with mental health criterion other than procedure code met	Institutional: Revenue center code Part B: Type of service, provider specialty code
120.60	General Medicine with MH criterion	Any general PH revenue center code with a MH criterion (diagnosis, HCPCS, ICD-9-CM, facility type, type of service, provider code)	Institutional: Revenue center code, HCPCS procedure code, ICD-9-CM procedure code, facility type, type of service, and Medicare provider code Part B: HCPCS procedure code, provider specialty code

Table 2.

CATCARE	LABEL	DESCRIPTION OF CATEGORY	SOURCE VARIABLE(S)
151.01	Office or Other Outpatient Evaluation and Management Services	Office visits, evaluation and management services	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
151.02	Hospital Observation/Inpatient Evaluation and Management Services	Hospital visits, inpatient evaluation and management services	Institutional: HCPCS procedure code Part B: HCPCS procedure code
151.03	Consultation Evaluation and Management	Consultation with other providers for evaluation and management of care	Institutional: HCPCS procedure code Part B: HCPCS procedure code
151.04	Emergency/Critical/Intensive Care Evaluation and Management Services	Acute care evaluation and management services	Institutional: HCPCS procedure code Part B: HCPCS procedure code
151.05	Nursing Facility, Custodial Care, Home, or Prolonged Care Evaluation and Management Services	Long-term care evaluation and management services	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
151.06	Case Management or Care Plan Evaluation and Management	Case management, care plan oversight or supervisory evaluation and management	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
151.07	Preventive Medicine Evaluation and Management Services	Preventive evaluation and management services (i.e. history and physical)	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code

151.08	Newborn Care Evaluation and Management Services	Evaluation and management services for newborn care	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
151.99	Special/Other Evaluation and Management Services	Disability, other screening evaluation and management services	Institutional: HCPCS procedure code Part B: HCPCS procedure code
152.00	Anesthesia	All anesthesia services	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
153.00	Surgery	All surgical services	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
154.01	Diagnostic Radiology	Diagnostic radiology, imaging, ultrasound services	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
154.02	Radiology Oncology	Radiology treatment of cancers/diseases	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
155.01	Pathology/Laboratory Testing/Assays	Laboratory and Pathology panels, drug tests and assays	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code

155.02	Pathology	Microbiology, clinical pathology	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
155.03	Pathology/Laboratory Transfusion Medicine	Services related to blood/serum transfusion	Institutional: HCPCS procedure code Part B: HCPCS procedure code
155.99	Other Pathology/Laboratory Procedures	Other pathology/laboratory procedures	Institutional: HCPCS procedure code Part B: HCPCS procedure code
156.01	Immunizations and Therapeutic/Diagnostic Infusions/Injections	Immunizations and Therapeutic/Diagnostic Infusions/Injections	Institutional: HCPCS procedure code Part B: HCPCS procedure code
156.02	Tests/Medical Procedures	Tests/Medical Procedures	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
156.03	Physical/Rehabilitation/Nutrition/ Osteopathic/Chiropractic Medicine	Physical/Rehabilitation/Nutrition/ Osteopathic/Chiropractic Medicine	Institutional: HCPCS procedure code Part B: HCPCS procedure code
156.04	Medical Supplies/Devices	Medical Supplies/Devices	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code

156.05	Vision Procedures	Vision Procedures	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
156.06	Hearing Procedures	Hearing Procedures	Institutional: HCPCS procedure code Part B: HCPCS procedure code
156.99	Other Medical Services	Other medical procedures	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
158.00	Dental Procedures	Dental procedures	Institutional: HCPCS procedure code Part B: HCPCS procedure code
159.00	Pharmacy Procedures	Physical health pharmacy procedures	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code
160.00	Physical/Occupational/Speech Therapy	PT, OT, and Speech therapy for physical health claims	Institutional: Revenue center code Part B: None
161.00	Transportation Services	All transportation services for physical health claims	Institutional: HCPCS procedure code, revenue center code Part B: HCPCS procedure code

163.00	Inpatient Claims	Inpatient physical health claims	Institutional: Revenue center code Part B: None
198.00	Temporary National Codes Awaiting Reassignment in CPT	Several G-codes, all Q-codes, and all S-codes awaiting CPT code assignment by AMA	Institutional: HCPCS procedure code Part B: HCPCS procedure code
199.99	Other/Unknown Services	“Catch-all” for the rest of the physical health claims	Institutional: Else if... Part B: Else if...

Appendix C.

Cohort Service Patterns

	Medicaid Cohort Service Patterns					
	Dual Enrollees w/MH			Dual Enrollees w/SMI		
	Total cost	Total persons	PUPY	Total cost	Total persons	PUPY
01.00-Adult Inpatient Care	\$1,212,663	208	\$5,830	\$955,092	149	\$6,410
01.20-Adult Hospice/Respite	\$73,281	3,683	\$20	\$22,812	1,280	\$18
01.50-Adult Ancillary Inpatient Services	\$125,256	2,287	\$55	\$95,226	1,741	\$55
02.00-Child Inpatient Care*						
02.20-Child Hospice/Respite*						7
02.50-Child Ancillary Inpatient Services*						
03.00-Substance Abuse Inpatient Care	\$586,111	146	\$4,014	\$298,004	63	\$4,730
03.20-Substance Abuse Hospice/Respite	\$937	45	\$21	\$133	16	\$8
03.50-Substance Abuse Ancillary Inpatient Services	\$6,159	106	\$58	\$3,927	76	\$52
04.00-Emergency MH Treatment	\$129,781	520	\$250	\$116,571	355	\$328
04.50-Hospital Outpatient MH Services	\$108,990	571	\$191	\$46,570	260	\$179
05.00-Physician Services – Clinic or Outpatient	\$89,073	3,729	\$24	\$41,326	1,643	\$25
05.25-Home-based or Prolonged Physician Services	\$1,764	86	\$21	\$1,467	65	\$23
05.50-CMH: Physician Services	\$860,071	15,568	\$55	\$568,418	11,239	\$51
06.00-CMH: Treatment Planning & Review	\$1,171,792	9,535	\$123	\$931,361	7,434	\$125
07.00-Evaluation and Testing Services	\$35,080	151	\$232	\$11,975	57	\$210
07.50-CMH: Evaluation and Testing Services	\$328,356	4,768	\$69	\$243,528	3,474	\$70
08.00-Counseling, Therapy, & Treatment Services	\$1,528,061	13,449	\$114	\$1,009,164	10,458	\$96
10.00-Rehabilitative Services	\$1,729,937	3,534	\$490	\$1,523,845	3,114	\$489
11.00-CMH: Children's Behavioral Health*						
12.00-CMH: Day Treatment Services	\$11,987,748	4,110	\$2,917	\$10,919,555	3,664	\$2,980
13.00-Targeted Case Management	\$9,803,760	7,995	\$1,226	\$8,994,246	7,132	\$1,261
18.00-MH Drug Injection	\$655	38	\$17	\$645	36	\$18
20.00-Other MH- does not fit into above categories	\$801,552	1,417	\$566	\$206,467	514	\$402
20.10-Lab/Pathology with MH diagnosis	\$17,449	452	\$39	\$9,816	268	\$37
20.20-Speech/Language Therapy with MH diagnosis	\$2,465	20	\$123	N/A	N/A	\$0
20.30-Occupational Therapy with MH diagnosis*						
20.40-Physical Therapy with MH diagnosis*						
20.50-MH Ambulance Services	\$216,446	3,899	\$56	\$102,483	1,758	\$58

* Because some cells had fewer than 11 individuals, data for these categories were removed per CMS policy.

	Medicare					
	Dual Enrollees w/MH			Dual Enrollees w/SMI		
	Total cost	persons	PUPY	Total cost	persons	PUPY
101.00 = Mental Health Inpatient Care	\$165,873,350	10,146	\$16,349	\$154,961,393	8,681	\$17,851
101.20 = Mental Health Hospice/Respite Services	\$6,252,026	12,713	\$492	\$1,084,939	4,051	\$268
101.50 = Mental Health Ancillary Inpatient Services	\$35,016,404	24,275	\$1,442	\$28,249,978	15,801	\$1,788
103.00 = Substance Abuse Inpatient Care	\$6,815,450	972	\$7,012	\$4,704,263	617	\$7,624
103.20 = Substance Abuse Hospice/Respite Services	\$22,377	135	\$166	\$5,141	45	\$114
103.50 = Substance Abuse Ancillary Inpatient Services	\$1,971,968	1,592	\$1,239	\$1,331,185	1,058	\$1,258
104.00 = Emergency Mental Health Treatment	\$4,207,852	8,606	\$489	\$3,456,123	5,795	\$596
105.00 = Physician Services - clinic or outpatient (periodic treatment)	\$12,365,706	38,883	\$318	\$9,811,684	24,573	\$399
105.25 = Home-based or Prolonged Physician Services	\$4,671,366	1,784	\$2,618	\$3,939,212	1,372	\$2,871
107.00 = Evaluation and Testing Services	\$3,053,042	15,051	\$203	\$2,278,323	10,239	\$223
108.00 = Counseling, Therapy, & Treatment Services (ongoing treatment)	\$85,402,535	22,107	\$3,863	\$82,511,762	17,927	\$4,603
110.00 = Rehabilitative Services (living skills training)	\$164,506	240	\$685	\$53,798	124	\$434
112.00 = Day Treatment Services (Partial Hosp)*						
118.00 = Mental Health Pharmacy	\$24,511,096	11,135	\$2,201	\$22,736,631	9,034	\$2,517
119.00 = Alcohol & Drug Abuse Treatment Servs*						
120.00 = Other Mental Health Services	\$1,884,570	2,792	\$675	\$1,450,389	2,060	\$704
120.10 = Lab/Pathology with Mental Health Criterion	\$18,711,875	22,831	\$820	\$16,120,483	14,395	\$1,120
120.20 = Speech/Language Therapy with Mental Health Criterion	\$670,095	790	\$848	\$257,875	258	\$1,000
120.30 = Occupational Therapy with Mental Health Criterion	\$2,436,471	2,102	\$1,159	\$1,691,111	1,390	\$1,217
120.40 = Physical Therapy with Mental Health Criterion	\$2,451,330	2,214	\$1,107	\$1,298,231	1,239	\$1,048
120.50 = Ambulance Service with Mental Health Criterion	\$1,048,916	3,333	\$315	\$558,282	1,628	\$343
120.60 = General Medicine with Mental Health Criterion	\$25,688,114	17,159	\$1,497	\$21,942,820	10,890	\$2,015

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