The Hilltop Institute

analysis to advance the health of vulnerable populations

Have existing "coordination/integration" efforts yielded Medicaid expenditure savings?

Performance and Evaluation Committee Meeting
Baltimore Substance Abuse Systems, Inc.

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General Questions

- What evidence is there in Maryland Medicaid administrative data that coordination/integration of care strategies for persons with substance use disorders (SUDs) yield aggregate medical expenditure savings?
  - What is the apparent magnitude of those savings?
  - What are apparent pathways to those savings?

Why are these questions important and timely?

- Affordable Care Act
  (U.S. Public Laws 111-148 and 111-152)
- General interest in addressing fragmentation of care across behavioral and somatic health care treatment domains
- Parity efforts that do not typically emphasize SUDs in isolation

Essential Health Benefits

(A) Ambulatory patient services

(B) Emergency services

(C) Hospitalization

(D) Maternity and newborn care

(E) Mental health and substance abuse services, including behavioral health treatment

(F) Prescription drugs

(G) Rehabilitative and habilitative services and devices

(H) Laboratory services

(I) Preventive and wellness services and chronic disease management

(J) Pediatric services, including oral and vision

(ACA § 1302(b)(1)(E) – p. 59)

A health home provider is…

"a physician, clinical practice or clinical group practice, rural clinic, community health center, community mental health center, home health agency, or any other entity or provider (including pediatricians, gynecologists, and obstetricians) that is judged by the State and approved by the Secretary to be qualified to be a health home for eligible individuals with chronic conditions on the basis of documentation showing that the physician, practice, or clinic – (A) has the systems and infrastructure in place to provide health home services; and (B) satisfied the qualification standards established by the Secretary"

(ACA § 2703(a)(h)(5)(A and B) – p. 232)

CMS Expectation

…we expect that use of the health home service delivery model will result in lower rates of emergency room use, reduction in hospital admissions and re-admissions, reduction in health care costs, less reliance on long-term care facilities, and improved experience of care and quality of care outcomes for the individual.

Mann C. "Re: Health Homes for Enrollees with Chronic Conditions," 2010 Nov 16.

Statistical Framing

Total Medicaid Expenditures =

f(Coordination/Integration Variable, Covariates)

Coordination/integration variable we created was: the coordination reputation of a person's most frequent provider (MFP)

Recipe for isolating MFPs and flagging them as "coordinated"

1. Isolated persons with Medicaid records revealing the presence of SUD morbidity or treatment in CY 2010

2. Isolated person-level, non-ER, outpatient professional (e.g., physician or nurse practitioner) Medicaid events

3. Rank-ordered each person's provider IDs by visit frequency, and retained the top two

4. Isolated those MFPs who served ≥50 persons with SUD (59% of total SUD population; 192 out of >5,000 MFPs)

MFP coordination recipe
continued

5. Cross-tabulated the MFP list to case-mix information derived from latent class analysis (Abrams et al., 2012)

6. Distributed the MFP/case-mix list to stakeholders at bSAS, MHA, ADAA, and others.

7. Asked those stakeholders to “flag” MFPs that, as of CY 2010, had made noticeable progress in coordinating/integrating care across at least two of the following three domains: mental health, SUD treatment, and somatic health

Who/What are the MFPs?

Most Frequent Provider Type*	Count (percent**)
Opioid Treatment Program (e.g., methadone clinic)	11,842 (21)
Other addiction treatment programs	2,678 (4.7)
Mental health provider	6,978 (12)
Family or general practitioner	3.048 (5.3)
Federally qualified health center (FQHC) or local health department	4,706 (8.2)
Office visit, otherwise not specified	13,557 (24)
Not specified	13,314 (23)
No most frequent provider evident in the Medicaid record	1,230 (2.1)

* Based on review of four Medicaid administrative data fields: catserv, provtype, spec(ialty), and place.

** Totals do not add to 100 percent because of rounding.

Information in Medicaid records used to derive latent case mix

1. Age
2. Gender
3. Race (Black, White, Other)
4. Region (Baltimore City, Suburbs, East., West., South.)
5. Enrollment Category (HealthChoice, PAC, Dual)
6. Aged/Blind/Disabled Category
7. Pregnancy
8. Service Use: Inpatient, ED, LTC, ORT (Opioid Replacement Therapy)
9. Diagnostic Markers (23 SUDs, 23 MEDCs, 10 EDCs)
10. Expenditures

Derived latent case-mix, labeled as 10 subgroups…

Class	Low Morbid. ORT	Women-Pregnant	Women-High ER Use	Disabled, ORT	Adult-PAC/Dual	Adult-Dual	Adult-High Somatic Morbid.	Adult-High Psych. Morbid.	Urban ORT- PAC	Teenagers/ Young Adults
N	4,652	3,265	5,138	4,680	6,196	5,158	3,732	3,258	5,250	5,014
Mean Age (Stdev)	32(9)	26(6)	31(10)	48(8)	43(11)	49(10)	46(11)	38(12)	43(7)	18(5)
Female	51%	100%	78%	57%	34%	43%	57%	41%	41%	26%
Pregnant	1%	86%	6%	0%	0%	0%	3%	3%	0%	0%
Duals	2%	1%	5%	10%	16%	31%	20%	19%	5%	0%
PAC	40%	0%	11%	17%	37%	5%	2%	7%	58%	2%
Inpatient	2%	74%	22%	26%	10%	68%	96%	86%	1%	18%
ER	36%	79%	92%	78%	63%	92%	100%	99%	31%	57%
ORT	83%	23%	35%	80%	2%	1%	23%	31%	69%	1%
Depression	26%	32%	47%	47%	32%	32%	3%	85%	32%	19%
Cardio-vascular	11%	22%	40%	74%	46%	88%	97%	61%	38%	7%

What did the review list look like?

Most Frequent Provider	Low Morbid ORT	Women-Preg.	Women-High ER Use	Disabled ORT	Adult-PAC/ Dual	Adult Dual	Adult-High Som.	Adult-High Psych.	Urban ORT-PAC	Teens/ Young Adults	Total
Provider Name 1	--	80	40	125	157	210	165	60	42	116	998
Provider Name 2	15	31	17	126	65	69	24	29	362	22	760
Provider Name 3	37	--	14	117	57	16	54	202	191	--	698
Provider Name 4	149	24	53	151	--	--	32	23	182	--	614
Provider Name 5	101	24	26	243	--	--	42	20	138	--	594
Provider Name 6	38	--	--	238	--	--	38	16	233	--	573
... Provider Name 192	--	--	--	--	--	--	--	--	36	--	50

-- <11 patients

Statistical Model

Total Medicaid Expenditures =

f(Coord$_{MFP}$; Age, Sex, Race, Urban/Suburban, Enrollment Months, Coverage Category, Disability Status, Pregnancy, Disease Burden, Opioid Agonist/Antagonist Therapy, Drug Dependence, SMI)

Results, *unadjusted*

Variable	$Coord_{MFP}$= Yes (n= 7,930)		$Coord_{MFP}$= No (n=25,713)	
	Mean or Percent	Standard Deviation	Mean or Percent	Standard Deviation
Total Medicaid Expenditures ($)	16,249	27,620	18,933	37,875
Age (years)	37	13	39	13
Females (percent)	54	-	47	-
White race (percent)	59	-	38	-
Urban/suburban residence (percent)	66	-	87	-
PAC enrollment (percent)	21	-	29	-
Disease burden (count)	6.2	3.9	5.8	3.8

Regression Results

Variable	Main Model	Increased $Coord_{MFP}$ Sensitivity
$Coord_{MFP}$ %	24	29
Adjusted r-square	.55	.55
Regression coefficients (selected, not all)		
$Coord_{MFP}$	-.079***	-.055***
Urban/Suburban	.19***	.19***
Disabled	.30***	.30***
Disease burden	.19***	.19***
ORT	.42***	.42***
Drug dependence	.30***	.30***
Schizophrenia or affective psychosis	.58***	.58***

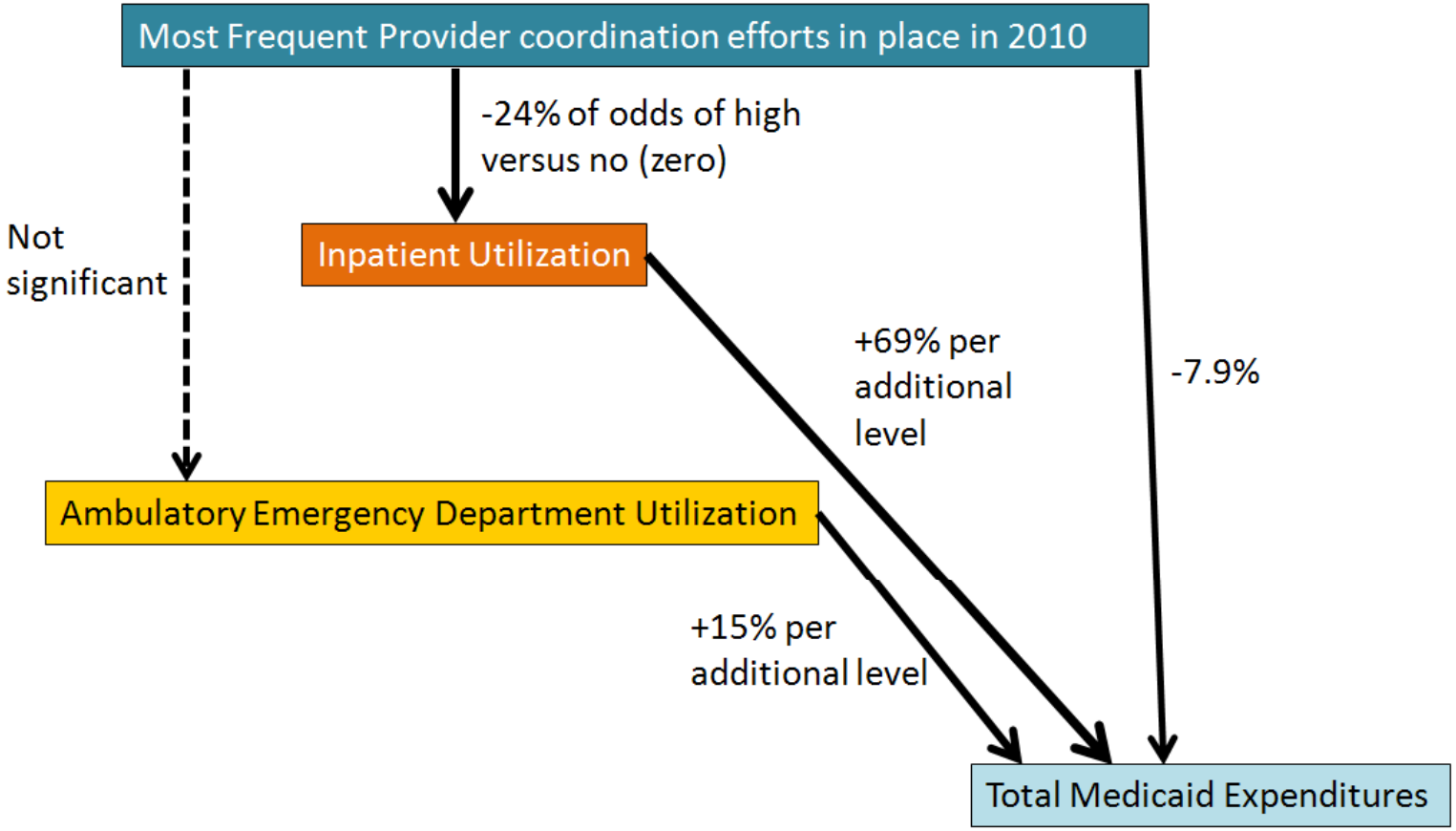
-.055 * $18,301 = -$1,007 (a conservative estimate of savings correlated with exposure to a $Coord_{MFP}$)

Pathways

		Inpatient		ED (Ambulatory)	
Independent Variable	Dependent Variable	aOR	95% CI	aOR	95% CI
Utilization outcome (ref: none)[c]					
$Coord_{MFP}$	Low	.97	.88, 1.08	1.03	.95, 1.11
	Moderate	.91	.82, 1.00	1.05	.96, 1.14
	High	.76	.68, .85	1.08	.97, 1.20

[a] Overall model fit statistics- n=24,528, R^2=.42, χ^2=11,340, df=51, p<.0001
[b] Overall model fit statistics- n=33,643, R^2=.53, χ^2=83,041, df=54, p<.0001
[c] For Inpatient, Low = 1-3 days, Moderate = 4-7 days, High = 7 days; for ED, Low = 1 visit, Moderate = 2-4 visits, High > 4 visits.
aOR = adjusted odds ratio (adjustments made using the following covariates: age, sex, race, urban/suburban residence, Medicaid coverage category, Opioid Maintenance Therapy, pregnancy, disease burden, and schizophrenia or affective psychosis diagnosis).

Summary of Results



Conclusions/Limitations

- Coordination efforts save $ in a Medicaid SUD population
  - Bodes well for current state efforts to expand chronic health homes within methadone clinics
  - Inpatient reductions seems key, ED not necessarily so

- Administrative data, not clinical or epidemiological
- $Coord_{MFP}$ variable is simple and rough
- Observational, cross-sectional data

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About The Hilltop Institute

The Hilltop Institute at UMBC is a non-partisan health research organization—with an expertise in Medicaid and in improving publicly financed health care systems—dedicated to advancing the health and wellbeing of vulnerable populations. Hilltop conducts research, analysis, and evaluations on behalf of government agencies, foundations, and nonprofit organizations at the national, state, and local levels. Hilltop is committed to addressing complex issues through informed, objective, and innovative research and analysis.

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