Direct Treatment Costs of Child Psychiatric Crisis Stabilization Services

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Overviews of SASS and CSPI

- Publicly-Funded Mental Health Services for Children: "**S**creening, **A**ssessment, and **S**upport **S**ervices" (**SASS**).
  - Illinois' SASS program, a partnership between the Department of Children and Family Services (DCFS), the Department of Human Services (DHS) and the Department of HealthCare and Family Services (DHFS), provides access to psychiatric hospitalization services and community-based treatment for kids with a mental health crisis.
  - SASS has been covered by Medicaid from July 2005 and their reimbursement claims are available in Medicaid claims.
- **C**hildhood **S**everity of **P**sychiatric **I**llness (**CSPI**)
  - CSPI is a decision tool used to evaluate mental health crisis severity and aid in treatment referral.
  - CSPI completed by clinicians (typically a social worker).

Background and Significance

- Mental health services use and its spending of treatments disproportionally increased in 1990s (Becker, 2006; Costello, 2007; Druss, 2006; Zuvekas, 2001), compared to the steady increase of prevalence of mental health disorders in the US (Kessler, 2005; Statistics, 2006).
- Increased utilization of mental health service has prompted interests in estimating cost (Chan et al., 2002; Foster & Conner, 2005; Harman et al. 2007; Takayama et al., 1994).
  - Unadjusted average cost of health care for children with ADHD totaled $1151 in 1996 (Chan et al. 2008). Unadjusted average estimate of mental health cost delivered by system of care was $5,796(Foster, 2005).
  - Little is known about cost associated with psychiatric crisis stabilization services.
- Two common treatments for children with a mental health crisis are:
  - Psychiatric hospitalization (restrictive and intensive treatment)
  - Community-based treatment (less restrictive and less expensive alternative).
  - Demonstrate the effectiveness of both psychiatric hospitalization and community-based services (Foster, 2000;Geller, 1991; Glied et al, 1998;Kiesler, 1982)
- Cost analysis itself helped cost reduction and effective planning (Blumberg, 2002;Ruffin, et al. 1993).

Objective

- Estimate direct cost of mental health crisis stabilization services
- Compare service use patterns of wards of the state with those of youth not in state custody

Data

- Retrospective Cohort Study.
- Used both clinical and administrative data
  - Data source 1 – clinical information
    - SASS Administrative data for fiscal year 2006
    - Identified cohort of youth who received crisis stabilization services.
  - Data source 2 - expenditure information
    - Medicaid claims data
    - Estimated direct costs of services received

Method

- Components of total direct cost of treatments
  1. Inpatient services (Hospitalizations)
  2. Outpatient services (Community services)
  3. Medications
- Bivarate analysis : service use and cost
  - T- test and χ^2 test
- Multivariate analysis
  - linear regression- grand total cost

Youth in SASS

- Identified total 2,571 SASS episodes
  - Average length of episode is 89.3 days (max. 142 days).
- Youth in state custody (n=464, 18%)
- Average 13.7 yrs (3-20 yrs), male 49.8%, White 53.9 %, African American 32.3%
  - Significantly more likely African American youth (45.5%) in state custody.
- Cook (39.0%), Central (27.0%), Nothern(23.3%), Southern(10.1%).
- No significant differences in actionable scores of CSPI between DCFS youth and non-DCFS youth except caregivers needs.
  - Risk behaviors. Behavioral/emotional symptoms, functional problems, juvenile justice risk, child protection
  - DCFS kids were significantly less likely to have actionable scores in caregiver needs (p<.01).

Services Use

		DCFS (n=464)	Non-DCFS (n=2,107)	Total (n=2,571)	p value
Inpatient Services	Hospitalization Rate, %	92.3	59.4	51.7	.01
	Number of hospitalizations, Mean	0.7	0.6	0.6	.02
	Days in Hospital, Mean	9.8	5.8	6.6	<.01
Outpatient Services	Outpatient Services Rate¶, %	10.6	12.3	12.0	<.01
Medications	Medication Possession Ratio (MPR),⁺ %	24.3	16.5	17.9	<0.01

Services Use Costs

Cost Items	DCFS (n=464)		Non-DCFS (n=2,107)		Total (n=2,571)		p value	
	Mean(S.D.)	Sum(%)	Mean(S.D.)	Sum(%)	Mean(S.D.)	Sum(%)	T-test	χ^2 test
Inpatient Services	$11,853 ($25,406)	$5,499,925 (90.4)	$4,677 ($9,793)	$9,853,518 (79.1)	$5,972 ($14,230)	$15,353,443 (82.8)	<.01	<.01
Outpatient Services	$1,152 ($1,081)	$534,423 (8.8)	$1,173 ($815)	$2,471,916 (19.9)	$1,169 ($869)	$3,006,339 (16.2)	.69	<.01
Medications	$499 ($479)	$48,448 (0.8)	$398 ($417)	$25,825 (1.0)	$422 ($434)	$174,273 (0.9)	.04	.83
Total	$13,763	$6,082,795	$5,909	$12,451,259	$7,209	$18,534,055	<.01	<.01

Outpatient Services Use & Cost

Outpatient Service Type	DCFS (n=464)		Non-DCFS (n=2,107)		p value	
	Service Use, %	Average Cost	Service Use, %	Average Cost	χ^2 test	T-test
Case Management	60.6	$163	69.6	$184	<.01	.12
Therapy/Counseling	39.2	$137	52.1	$207	<.01	<.01
Psychological Evaluation	65.7	$113	71.3	$152	.02	<.01
Crisis Intervention	84.7	$223	75.8	$172	<.01	<.01
Crisis Intervention: Pre-hospitalization	92.0	$417	90.0	$367	.19	<.01
Other	39.0	$98	50.4	$88	<.01	.81

Multivariate Analysis

- Linear regression of grand total cost
  - Logged transformation : skewed data distribution
- Significant Predictors
  - Age group: 6-9 yrs (coefficient =0.13) 13-16 yrs (coefficient =0.08)
  - State custody (coefficient =0.15)
  - Region – Cook
    - Central (coefficient= -0.43)
    - Northern (coefficient =-0.25)
    - Southern (coefficient =-0.11)
  - Risk behaviors (coefficient =0.09)
  - Higher Services Use
    - Number of hospitalizations (coefficient =0.76)
    - Outpatient service rate (coefficient =3.37)
    - Medication possession ratio (MPR) (coefficient =0.21)
    - Days in hospital (coefficient =0.06)

Limitations

- Lack of control group
- Validity of administrative data

Conclusion

- Youth in state custody were significantly more likely to use hospitalization services and take medications than youth not in state custody.
- Youth in state custody are significantly more likely to use higher cost services
- As a result, wards of the state incur higher direct costs

Further Research & Implications

- Add comparison group.
- Longitudinal cost analysis for youth who used frequent services and higher cost.
- Provide more efficient and effective resource allocation plan.

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