How Do Medication Use, Prescribing Providers, and Treatment Patterns Affect Clinical Outcomes among Children with Mental Health Challenges in System of Care Communities?
Children's Mental Health Research and Policy Conference
University of South Florida
March 8, 2010
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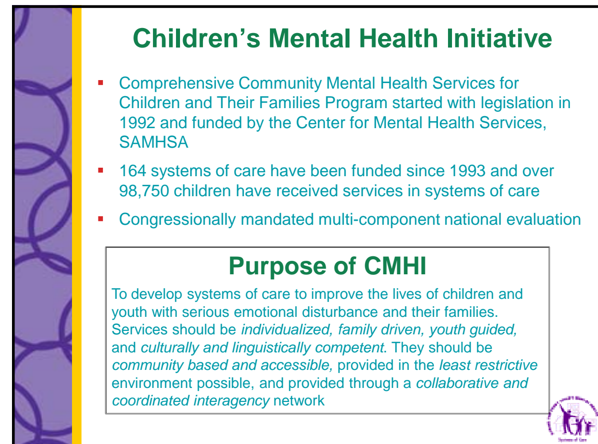
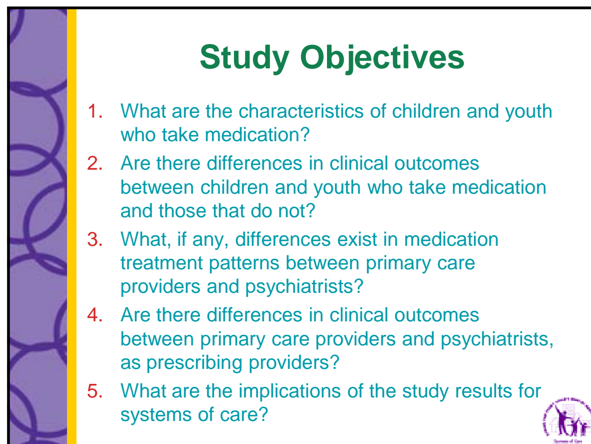
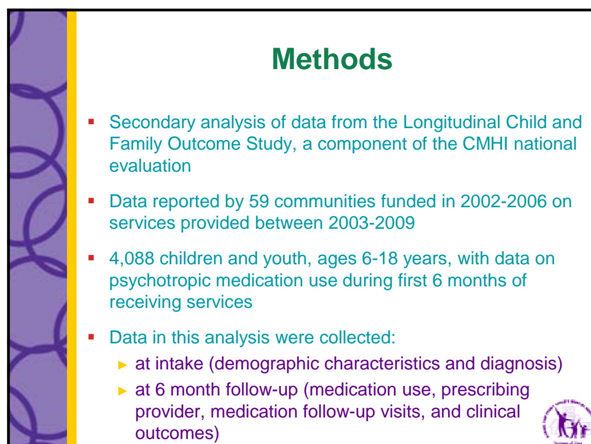
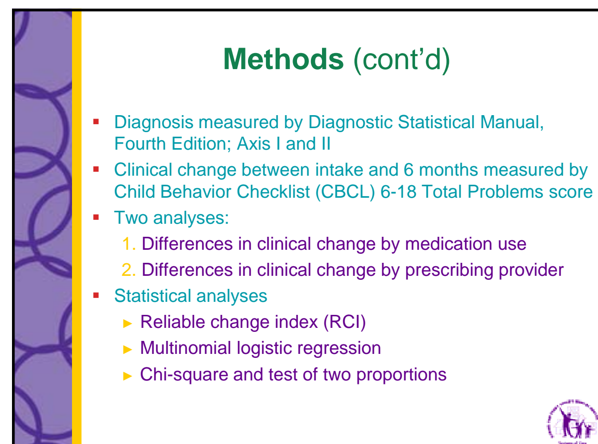

Children's Mental Health Initiative
Comprehensive Community Mental Health Services for Children and Their Families Program started with legislation in 1992 and funded by the Center for Mental Health Services, SAMHSA
164 systems of care have been funded since 1993 and over 98,750 children have received services in systems of care
Congressionally mandated multi-component national evaluation
Purpose of CMHI
To develop systems of care to improve the lives of children and youth with serious emotional disturbance and their families. Services should be individualized, family driven, youth guided, and culturally and linguistically competent. They should be community based and accessible, provided in the least restrictive environment possible, and provided through a collaborative and coordinated interagency network


Study Objectives
1. What are the characteristics of children and youth who take medication?
2. Are there differences in clinical outcomes between children and youth who take medication and those that do not?
3. What, if any, differences exist in medication treatment patterns between primary care providers and psychiatrists?
4. Are there differences in clinical outcomes between primary care providers and psychiatrists, as prescribing providers?
5. What are the implications of the study results for systems of care?

METHODS


Methods
Secondary analysis of data from the Longitudinal Child and Family Outcome Study, a component of the CMHI national evaluation
Data reported by 59 communities funded in 2002-2006 on services provided between 2003-2009
4,088 children and youth, ages 6-18 years, with data on psychotropic medication use during first 6 months of receiving services
Data in this analysis were collected:
at intake (demographic characteristics and diagnosis)
at 6 month follow-up (medication use, prescribing provider, medication follow-up visits, and clinical outcomes)


Methods (cont'd)
Diagnosis measured by Diagnostic Statistical Manual, Fourth Edition; Axis I and II
Clinical change between intake and 6 months measured by Child Behavior Checklist (CBCL) 6-18 Total Problems score
Two analyses:
1. Differences in clinical change by medication use
2. Differences in clinical change by prescribing provider
Statistical analyses
Reliable change index (RCI)
Multinomial logistic regression
Chi-square and test of two proportions

FINDINGS

Psychotropic Medication Use
by Demographic Characteristics

• 59.4% of children and youth, ages 6-18 years, took psychotropic medications at some point during their first six months of system of care services

	n	No Medication Use	Medication Use
Total	4,088	40.6%	59.4%
Gender **			
Male	2,686	37.8%	62.2%
Female	1,402	45.9%	54.1%
Age Group **			
6 to 9 Years	948	35.7%	64.3%
10 to 14 Years	2,034	38.3%	61.7%
15 to 18 Years	1,106	48.9%	51.1%

** Significant at p < .001

Psychotropic Medication Use
by Demographic Characteristics (cont.)

Race/Ethnicity **	*n*	No Medication Use	Medication Use
American Indian or Alaska Native	131	66.4 %	33.6 %
Asian	37	62.2 %	37.8 %
Black or African American	1,219	50.0 %	50.0 %
Native Hawaiian or Other Pacific Islander	101	59.4 %	40.6 %
White	1,568	25.8 %	74.2 %
Hispanic/Latino	781	50.4 %	49.6 %
Multi-Racial	215	33.5 %	66.5 %
Poverty Level **			
Below Poverty	2,106	44.1 %	55.9 %
At/Near Poverty	639	37.7 %	62.3 %
Above Poverty	984	32.6 %	67.4 %

** Significant at p < .001

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Medication Use Among the Most Common DSM-IV[a] Axis I and II Diagnostic Categories at Intake

Most Common Diagnostic Categories

DSM-IV[a]	*n*	No Medication Use	Medication Use
Attention Deficit/Hyperactivity Disorder (ADHD)	1,538	19.6 %	80.4 %
Mood Disorders	1,479	28.5 %	71.5 %
Oppositional Defiant Disorder (ODD)	1,083	37.6 %	62.4 %
Adjustment Disorders	395	70.9 %	29.1 %
Post-Traumatic Stress Disorders (PTSD)	336	29.8 %	70.2 %
Anxiety Disorders	306	29.1 %	70.9 %
Conduct Disorders	228	45.2 %	54.8 %
Disruptive Behavior Disorders	201	52.7 %	47.3 %
Substance Use Disorders	188	51.6 %	48.4 %
Learning, Motor Skills, Communication Disorders	167	36.5 %	63.5 %

a Diagnostic Statistical Manual of Mental Disorders, 4th Edition

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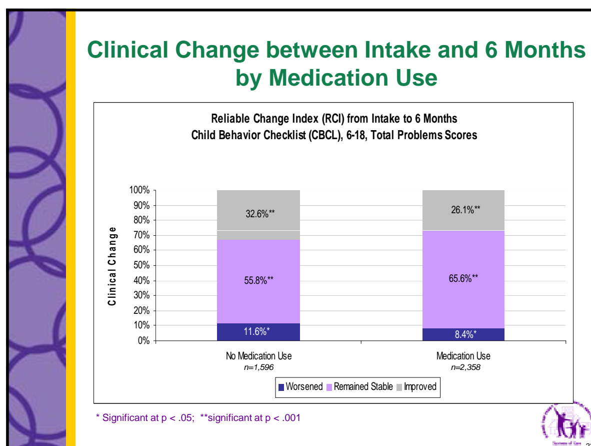
Clinical Change between Intake and 6 Months by Medication Use



* Significant at p < .05; **significant at p < .001

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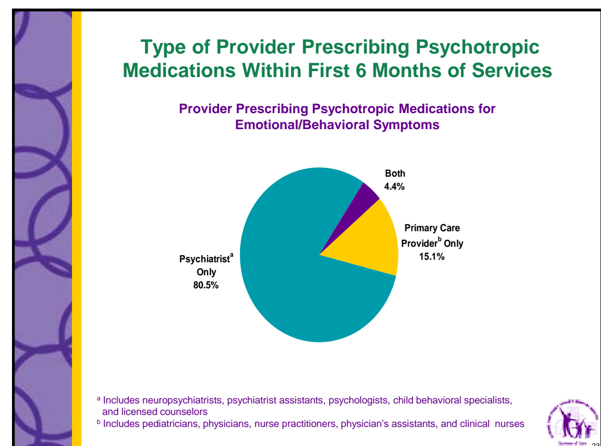
Type of Provider Prescribing Psychotropic Medications Within First 6 Months of Services



[a] Includes neuropsychiatrists, psychiatrist assistants, psychologists, child behavioral specialists, and licensed counselors
[b] Includes pediatricians, physicians, nurse practitioners, physician's assistants, and clinical nurses

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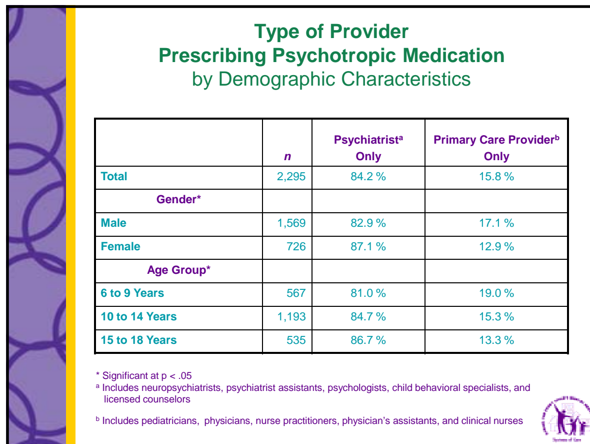


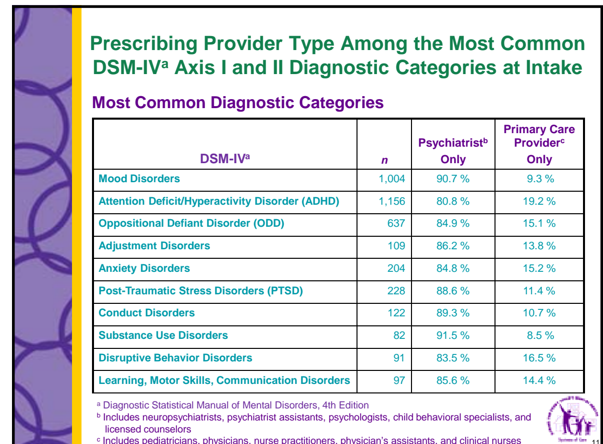
Type of Provider Prescribing Psychotropic Medication by Demographic Characteristics

	n	Psychiatrist[a] Only	Primary Care Provider[b] Only
Total	2,295	84.2 %	15.8 %
Gender*			
Male	1,569	82.9 %	17.1 %
Female	726	87.1 %	12.9 %
Age Group*			
6 to 9 Years	567	81.0 %	19.0 %
10 to 14 Years	1,193	84.7 %	15.3 %
15 to 18 Years	535	86.7 %	13.3 %

* Significant at $p < .05$

[a] Includes neuropsychiatrists, psychiatrist assistants, psychologists, child behavioral specialists, and licensed counselors

[b] Includes pediatricians, physicians, nurse practitioners, physician's assistants, and clinical nurses



Prescribing Provider Type Among the Most Common DSM-IV[a] Axis I and II Diagnostic Categories at Intake

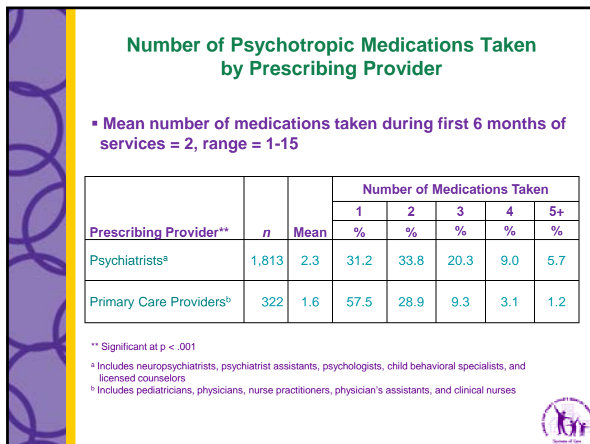
Most Common Diagnostic Categories

DSM-IV[a]	n	Psychiatrist[b] Only	Primary Care Provider[c] Only
Mood Disorders	1,004	90.7 %	9.3 %
Attention Deficit/Hyperactivity Disorder (ADHD)	1,156	80.8 %	19.2 %
Oppositional Defiant Disorder (ODD)	637	84.9 %	15.1 %
Adjustment Disorders	109	86.2 %	13.8 %
Anxiety Disorders	204	84.8 %	15.2 %
Post-Traumatic Stress Disorders (PTSD)	228	88.6 %	11.4 %
Conduct Disorders	122	89.3 %	10.7 %
Substance Use Disorders	82	91.5 %	8.5 %
Disruptive Behavior Disorders	91	83.5 %	16.5 %
Learning, Motor Skills, Communication Disorders	97	85.6 %	14.4 %

[a] Diagnostic Statistical Manual of Mental Disorders, 4th Edition

[b] Includes neuropsychiatrists, psychiatrist assistants, psychologists, child behavioral specialists, and licensed counselors

[c] Includes pediatricians, physicians, nurse practitioners, physician's assistants, and clinical nurses



Number of Psychotropic Medications Taken by Prescribing Provider

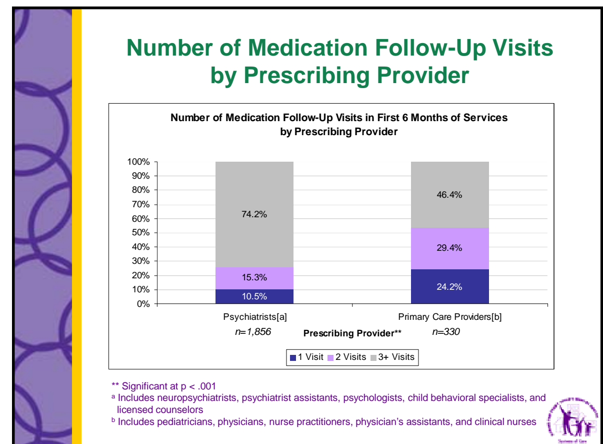
- Mean number of medications taken during first 6 months of services = 2, range = 1-15

Prescribing Provider**	n	Mean	Number of Medications Taken 1 %	2 %	3 %	4 %	5+ %
Psychiatrists[a]	1,813	2.3	31.2	33.8	20.3	9.0	5.7
Primary Care Providers[b]	322	1.6	57.5	28.9	9.3	3.1	1.2

** Significant at $p < .001$

[a] Includes neuropsychiatrists, psychiatrist assistants, psychologists, child behavioral specialists, and licensed counselors

[b] Includes pediatricians, physicians, nurse practitioners, physician's assistants, and clinical nurses

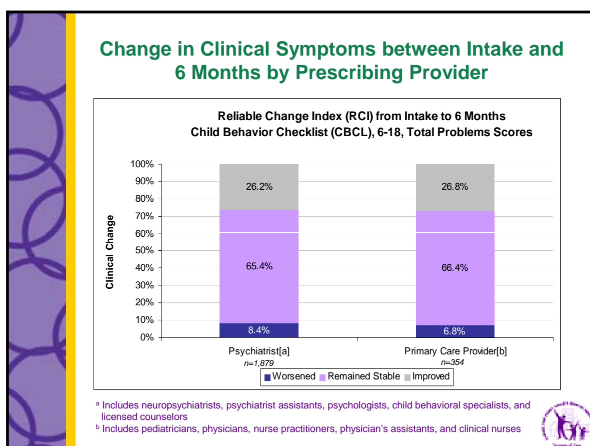


Number of Medication Follow-Up Visits by Prescribing Provider

** Significant at $p < .001$

[a] Includes neuropsychiatrists, psychiatrist assistants, psychologists, child behavioral specialists, and licensed counselors

[b] Includes pediatricians, physicians, nurse practitioners, physician's assistants, and clinical nurses



Change in Clinical Symptoms between Intake and 6 Months by Prescribing Provider

[a] Includes neuropsychiatrists, psychiatrist assistants, psychologists, child behavioral specialists, and licensed counselors

[b] Includes pediatricians, physicians, nurse practitioners, physician's assistants, and clinical nurses

CONCLUSIONS

Limitations and Considerations

- Findings represent associations, not causal relationships
- Some data based on medical records review, others based on caregiver report
- Data on medication use do not identify when medication was actually started, time taken, dose, or how taken
- Data on medication use represent medication actually taken, not medication prescribed
- Data on number of medication follow-up visits during first 6 months of services may reflect variations in length of time medication was taken

Conclusions

Medication Use

- Those children and youth more likely to take medication included males, younger children, and whites
- Children and youth diagnosed with ADHD were the most likely to take psychotropic medication; those diagnosed with adjustment disorders were the least likely to take psychotropic medication
- Emotional and behavioral symptoms among those who took medication were *less likely to worsen* and *more likely to remain stable* than those who did not take medication, but also *less likely to improve* than those not taking medication

Conclusions (cont.)

Prescribing Provider Type

- Psychotropic medications taken by children and youth in system of care were much more likely to be prescribed by psychiatrists than primary care providers
- Those taking medications prescribed by psychiatrists were more likely to take multiple medications
- Children and youth had fewer medication follow-up visits with primary care providers than with psychiatrists
- No differences in clinical outcomes were found between prescribing providers

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Discussion