

## Quality of Care for Children: Assessment Through Statewide Agency-Academic Partnership

Bonnie Zima, M.D., M.P.H.  
UCLA Health Services  
Research Center

Penny Knapp, M.D.  
Medical Director  
California Dept Mental Health

## Quality of Care for Children: Assessment Through Statewide Agency-Academic Partnership

- Lessons Learned
- Major Findings

Bonnie Zima, M.D., M.P.H.  
UCLA Health Services  
Research Center

Penny Knapp, M.D.  
Medical Director  
California Dept Mental Health

## Financial Disclosure

Source	Consultant	Advisory Board	Stock Equity > \$10,000	Speaker's Bureau	Research Contract
CA Dept of Mental Health	NA	NA	NA	NA	NA
NIMH (P30 MH068639)	NA	NA	NA	NA	NA
APA Minority Research Fellowship (Chung)	NA	NA	NA	NA	NA
Klingenstein Foundation (Chung)	NA	NA	NA	NA	NA

## Acknowledgements

Stephen Mayberg, Ph.D.  
Director  
State of California Department of Mental Health

California Mental Health Directors Association

California Mental Health Planning Council

## Publications

Zima BT, Hurlburt M, Knapp P, Ladd H, Tang L, Duan N, Wallace P, Rosenblatt A, Landsverk J, Wells K. Quality of publicly-funded outpatient specialty mental health care for common childhood psychiatric disorders in California. *J Am Acad Child and Adolescent Psychiatry*. 2005; 44:130-144.

Knapp PK, Hurlburt M, Kostello EC, Ladd H, Tang L, Zima BT. Child sociodemographic and common childhood psychiatric diagnoses in Medicaid encounter data: are they valid? *J Behavioral Health Services Research*. 2006;33:444-52. Available at [www.springerlink.com](http://www.springerlink.com)

Chung B, Zima BT, Knapp P, Liu G, Zhang L, Belin T. Treatment patterns for common childhood psychiatric disorders in California's publicly-funded outpatient mental health clinics (under review).

## What Were We Asked to Do?

Examine quality of care for children served by DMH in California

- 2 years (2000-2002)
- \$1.5 million
- Partner with DMH and 4 NIMH-funded health services research centers
- Two annual reports due June 30th

## Agency-Academic Partnership

- Proposal submitted in 1 month
- State DMH contracts with UCLA
- UCLA subcontracts to other universities in academic consortium
- DMH facilitates introduction to county directors organization and Planning Council



## Agency-Academic Partnership

- Technical Advisory Committee
  - Multi-stakeholders
    - SOC child coordinators, Quality Improvement Committee, parent/family reps, county directors, Planning Council
  - Monthly conference call
  - Minutes circulated by email
  - Study team available by email/phone
- PI meetings with CMHDA and Planning Council
  - About quarterly
- Monthly research meetings
  - Rotated at DMH and each university
  - DMH Medical Director on research team
- Study Task Work Groups
  - Integration of agency experts
  - Assignment of researcher based on expertise not site

## Questions Addressed

1. If DMH relied solely on Medicaid encounter data to report clients served, how well does information on age, gender, race/ethnicity and diagnosis match with the client record?

## Questions Addressed

1. If DMH relied solely on Medicaid encounter data to report clients served, how well does information on age, gender, race/ethnicity and diagnosis match with the client record?
2. How often are indicators of quality of care for common child mental health problems documented in the client record?
  - rural vs. urban?
  - county wealth?
  - contracted out clinics vs. directly operated?

## Questions Addressed

1. If DMH relied solely on Medicaid encounter data to report clients served, how well does information on age, gender, race/ethnicity and diagnosis match with the client record?
2. How often are indicators of quality of care for common child mental health problems documented in the client record?
  - rural vs. urban?
  - county wealth?
  - contracted out clinics vs. directly operated?
3. What proportion of children receive psychosocial treatments, medication, or both?
  - type of disorder?
  - clinical severity?

## Agency-Academic Partnership

### Early impressions/concerns

- **audit of individual counties**
  - comparison to be used to shift funding
- **effectiveness study of system of care for children**
  - first step that leads to cut in major source of funding
- **highly detailed process of care study**
  - high clinician and staff burden with no return on information provided
- **establishing standards of care**
  - research will lead to making programs legally liable

## Agency-Academic Partnership

- **Sampling**
  - Test differences in quality of care across **shared** county and program characteristics
  - Children selected not representative of program or county
  - Weight sample back to statewide distribution of children served
    - Snapshot
    - ↑Efficiency
- **Medical record data**

## Sample

### Quasi-experimental Design

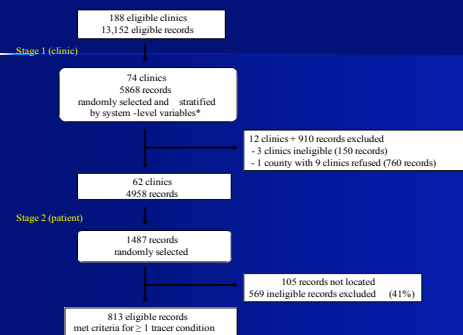
Clinic: directly operated vs. contracted out  
County: median population density ( $\geq$  vs.  $<$  399 people/mile<sup>2</sup>)  
County: median annual income ( $\geq$  vs.  $<$  \$35,725)

### Multi-stage Probability Sampling

### Longitudinal Cohort

Children	813 (weighted N=7560)
6.0-16.9 years	
$\geq$ 3 months outpatient care	
August 1, 1998 - May 31, 1999	
Mental health clinics	62
Counties	21

## Multi-stage Probability Sampling



## Sample



## Agency-Academic Partnership

### Recruitment

- Research is part of DMH Quality Assurance Activities
- County program recruitment letters on DMH letterhead
- PI follow-up telephone appointments with county directors or designee
  - describe project
  - clarify county research approval protocol
  - identify contact person for programs selected
- Records remain in clinic

### Record Abstraction

- Manualized abstraction guidelines
- 4-month period
- 12 quality assurance nurses
- Inter-rater reliability (5% charts)
  - M=.87 (.15)
  - r=.78 (.39) - .96 (.15)
- Most or all of key elements could be read (96%, n=1296 records)

### Protection of Human Subjects (n=33)

- California Committee for the Protection of Human Subjects
- 5 Universities
  - UCLA, UC Davis, UC San Francisco, UC Berkeley, Children's Hospital San Diego
- 22 Counties
  - IRB +/-or County Mental Health Director approval
- 5 Hospitals or clinics

### Agency-Academic Partnership

- Agency Partner co-presenter to State IRB
- Obtain approval from university IRB first
- IRB approvals from State, university or agency are independent
  - Policy implications: need for developing coordinated IRB approval across partners

### Did Agency and Medical Record Data Match?

	Medicaid Encounter Data (%)							
	Caucasian (n=291)		Af-Am (n=116)		Hispanic (n=166)		Other (n=46)	
	n	% <sup>a</sup> (SE)	n	% <sup>a</sup> (SE)	n	% <sup>a</sup> (SE)	%	% <sup>a</sup> (SE)
<b>Medical Record</b>								
Caucasian (n=216)	205	71.8 (5.6)	1	2.0 (2.0)	5	3.8 (2.8)	5	8.7 (4.0)
African-American (n=141)	28	6.4 (2.1)	102	90.5 (3.4)	2	0.4 (0.3)	9	19.5 (6.3)
Hispanic (n=192)	27	6.9 (2.5)	3	1.3 (1.0)	148	89.7 (5.3)	14	23.8 (7.5)
Other (n=22)	9	7.0 (4.9)	0	0	1	0.1 (0.03)	12	30.8 (8.1)
Bi-/Multi-racial (n=48)	22	7.9 (3.1)	10	6.2 (2.4)	10	5.9 (3.2)	6	17.2 (10.4)

<sup>a</sup>weighted %

### Did Sociodemographic Data Match?

- Almost all data sets matched on gender.
- If excluded bi-/multiracial children (10.8%)  
90% match on race/ethnicity
- Caucasian misidentified in agency data as Af-Am or Hispanic than minority peers (p=.05)

## Did Clinical Diagnosis Match?

	Medicaid Encounter Data (%)					
	ADHD (n=238)		Conduct Disorder (n=181)		Major Depression (n=254)	
	n	% <sup>a</sup> (SE)	n	% <sup>a</sup> (SE)	n	% <sup>a</sup> (SE)
<b>Medical Record</b>						
Clinical diagnosis	223	98.1 (0.7)	167	89.0 (3.3)	238	92.0 (1.5)
Supportive documentation						
≥ 3 DSM-IV symptoms + impairment	194	85.4 (3.6)	162	88.3 (2.8)	111	45.1 (3.4)
First-line medication RX						
Any stimulant	141	55.8 (5.4)	-	-	-	-
<sup>a</sup> weighted %						
Any antidepressant	-	-	-	-	163	62.9

## Conclusions

Validity of Medicaid encounter data is high

Misclassification of race/ethnicity in agency data can underestimate service delivery to children from African-American and Hispanic backgrounds if DMH relies solely on encounter data

## Policy Recommendations

### Investment in improving admin data infrastructure

- Standardize data entry procedures
- Expand race/ethnicity to include bi-/multiracial
- Integrate capacity to validate clinical characteristics
- Informational technology
  - dx criteria
  - impairment
  - psychosocial complexity

## What were characteristics of the children?

## Sociodemographic Characteristics

	Actual (n=813)		Weighted (n=7560)		M	(SE)
	n	%	%	(SE)		
Age (yrs) <sup>a</sup>					10.6	(.20)
6-11	358	44.7	58.6	(2.51)		
12-17	443	55.3	41.4	(2.51)		
Male	547	67.3	70.9	(3.43)		

<sup>a</sup>12 cases missing; <sup>b</sup>15 cases missing

## Sociodemographic Characteristics

	Actual (n=813)		Weighted (n=7560)	
	n	%	%	(SE)
Ethnicity <sup>b</sup>				
Caucasian	274	34.3	36.7	(4.48)
African-American	189	23.7	25.7	(2.50)
Latino	242	30.3	25.2	(3.42)
Asian-American	18	2.3	2.1	(0.81)
Native-American	4	0.5	0.5	(0.31)
Bi- or Multi-racial	58	7.2	6.8	(1.67)
Other	13	1.6	3.1	(2.26)

<sup>a</sup>12 cases missing; <sup>b</sup>15 cases missing

### Tracer Conditions

	Actual (n=813)		Weighted (n=7560)	
	n	%	%	(SE)
ADHD	397	48.8	75.5	(1.61)
Conduct Disorder	361	44.4	31.5	(2.89)
Major Depression	308	37.9	21.4	(1.71)

\*ADHD ≥6, CD ≥4, MD ≥3; <sup>b</sup>≥3 functional impairments or CAFAS≥70; <sub>n=498</sub>

### Clinical Severity

	Actual (n=813)		Weighted (n=7560)	
	n	%	%	(SE)
High DSM-IV symptoms (≥75 <sup>th</sup> ) <sup>a</sup>	445	54.7	51.3	(3.51)

\*ADHD ≥6, CD ≥4, MD ≥3

### Clinical Severity

	Actual (n=813)		Weighted (n=7560)		M	(SE)
	n	%	%	(SE)		
High fxn impairment (≥75 <sup>th</sup> ) <sup>b</sup>	458	56.3	51.3	(3.42)		
CAFAS ≥70 (marked-severe) <sup>c</sup>	183	36.7	28.3	(2.52)	50.5	(1.56)
≥ DSM-V impairment					2.5	(0.11)
Academic	657	80.8	82.8	(2.82)		
Social	552	67.9	62.8	(3.78)		
Home/occupational	81	10.0	12.2	(2.52)		

\*ADHD ≥6, CD ≥4, MD ≥3; <sup>b</sup>≥3 functional impairments or CAFAS≥70; <sub>n=498</sub>

### Psychosocial Complexity

	Actual (n=813)		Weighted (n=7560)	
	n	%	%	(SE)
Out-of-home placement	139	17.1	15.9	(2.03)
Hx physical/sexual abuse	313	38.5	29.1	(2.54)

### Psychosocial Complexity

	Actual (n=813)		Weighted (n=7560)	
	n	%	%	(SE)
Serious parental problem				
Maternal serious MI/lifetime <sup>a</sup>	97	11.9	9.7	(2.06)
Parental substance abuse/life	378	46.5	49.8	(2.32)
Parental incarceration/lifetime	183	22.5	22.5	(2.07)
≥ 2 psychosocial problems	351	43.2	41.2	(2.40)

<sup>a</sup>clinical diagnosis of Major Depression, Bipolar Disorder, Schizophrenia, or Psychotic Disorder Not Otherwise Specified

## What was the Quality of Care?

### Main Findings

Relatively high quality (78-95%) of care for basic clinical assessment

Moderate-low documented adherence to quality indicators related to

- Service linkage (39-63%)
- Basic treatment principles (25-75%)
- Patient protection (46-74%)
- Informed medication decision (33-75%)
- Medication safety monitoring (70-78%)
- Medication-specific monitoring (28-33%)

### Main Findings

26% of records of children prescribed psychotropic medication had documented probable acceptable monitoring of

- ≥ 1 target symptom or
- ≥ 1 side effect or
- ≥ 1 clinically indicated VS or lab

Average 48.5% (SE=19.8) records documented probable acceptable care across all eligible domains

Documented adherence to QI varied little by child sociodemographic or clinic factors

### Implications for Improving Quality

Improve documentation of:

- Service linkage and parental involvement
  - information technologies
  - caseworker outreach
- Patient protection and informed consent
  - child abuse screening
  - suspect child abuse reporting
  - referral to restrictive treatment settings for high risk children
  - informed parental consent for medication
- Medication-specific monitoring
  - technical medical support
  - information technologies

### Policy Recommendations

Efforts to improve care should be directly broadly across patient groups and clinics

Documentation of safe practices is highest priority

- Children receiving psychotropic medication

### What types of treatment were provided?

### Related to clinical indications?

### Treatment Patterns

	ADHD only (n=189)	CD only (n=178)	ADHD + CD (n=117)	MD only (n=154)	Total (n=638)	χ <sup>2</sup>	P
	%	%	%	%	%		
Any treatment							
Psychosocial	83.8	85.5	78.5	89.3	83.5	2.1	0.551
Individual	75.6	73.2	70.1	85.9	75.3	8.5	0.048
Behavior	8.4	4.7	9.0	3.5	7.6	3.4	0.343
Family	49.0	31.8	44.2	46.9	45.8	10.3	0.024
Group	21.3	35.1	25.5	20.3	23.6	4.9	0.194
Medication	75.3	37.0	78.9	60.5	70.1	24.5	0.000
Case Management	44.3	48.4	48.8	41.6	45.4	1.6	0.655

\*weighted %

### Treatment Patterns

	ADHD only (n=189)	CD only (n=178)	ADHD + CD (n=117)	MD only (n=154)	Total (n=638)	X <sup>2</sup>	P
Treatment patterns	%	%	%	%	%		
<b>Psychosocial only</b>	22.9	54.2	16.7	34.9	26.4	17.7	0.002
Individual only	4.0	20.9	5.6	15.8	7.6	12.0	0.012
Family only	1.2	3.2	0.3	0.6	1.2	5.23	0.171
Group only	0.7	4.1	0	1.9	1.0	8.1	0.056
Case Management only	0.7	3.9	0.1	2.2	1.1	15.0	0.004
Psychosocial only + case management	9.2	23.5	9.3	9.0	10.8	8.4	0.050
<b>Medication only</b>	14.4	5.7	17.1	6.1	13.1	5.9	0.130
Psychosocial only + case management	1.7	2.5	3.5	3.1	2.3	2.1	0.554

\*weighted %

### Treatment Patterns

	ADHD only (n=189)	CD only (n=178)	ADHD + CD (n=117)	MD only (n=154)	Total (n=638)	X <sup>2</sup>	P
Combined treatment	%	%	%	%	%		
<b>Psychosocial + meds</b>	60.9	31.3	61.8	54.4	57.0	18.2	0.001
Individual + meds	24.7	7.9	22.0	14.6	21.1	5.2	0.170
Behavior + meds	0	0	0.1	0	0		
Family + meds	2.5	1.8	3.4	0.2	2.3	5.5	0.151
Group + meds	0.3	0	0	0.5	0.2	2.6	0.462
Any Combined + case management	32.7	18.5	35.9	27.4	31.2	9.1	0.038

\*weighted %

### Medication Treatment

	ADHD only (n=189)	CD only (n=178)	ADHD + CD (n=117)	MD only (n=154)	Total (n=638)	X <sup>2</sup>	P
	%	%	%	%	%		
<b>Any stimulants</b>	52.5	7.6	43.5	3.5	39.8	49.9	<0.000
Pemoline	2.5	1.2	6.6	0	3.0	10.5	0.022
Methylphenidate	39.5	4.6	36.5	0.2	30.4	23.5	0.000
Dextroamphetamine	14.7	3.2	6.5	3.3	10.3	10.7	0.021
Methamphetamine	0	0	0.2	0	0		
Any Alpha-agonist	6.8	3.4	10.1	0.4	6.4	11.4	0.016

\*weighted %

### Medication Treatment

	ADHD only (n=189)	CD only (n=178)	ADHD + CD (n=117)	MD only (n=154)	Total (n=638)	X <sup>2</sup>	P
	%	%	%	%	%		
<b>Any antidepressants</b>	13.3	17.0	42.6	45.8	23.8	24.2	0.000
Any SSRI	8.5	8.7	13.3	36.3	12.7	38.7	<0.000
Citalopram	0	0	0	1.5	0.2		
Fluoxetine	3.1	4.2	11.7	18.1	6.8	22.5	0.000
Fluvoxamine	0	1.2	0.3	3.3	0.6	5.4	0.161
Paroxetine	2.1	1.7	1.1	11.9	2.9	4.9	0.192
Sertraline	1.6	1.6	10.3	7.9	4.2	24.9	0.000
Venlafaxine	2.3	0	0.3	3.4	1.7	5.7	0.141
Any tricyclic	6.1	3.5	14.1	5.1	7.4	4.9	0.195
Antidepressant-unspec	3.7	7.6	18.1	19.7	9.1	18.7	0.001

\*weighted %

### Medication Treatment

	ADHD only (n=189)	CD only (n=178)	ADHD + CD (n=117)	MD only (n=154)	Total (n=638)	X <sup>2</sup>	P
	%	%	%	%	%		
Any benzodiazepines	0	0	0.3	2.9	0.4	4.7	0.210
Any anticonvulsant	1.2	8.2	10.4	8.5	4.8	21.0	0.001
<b>Any antipsychotic</b>	4.0	5.4	18.5	12.0	8.2	13.8	0.006
Any typical	1.8	0.6	12.5	0.7	3.9	3.9	0.288
Any atypical	2.2	5.0	6.2	11.4	4.5	10.7	0.021
Lithium	0.2	1.8	0	0.2	0.4	5.9	0.132

\*weighted %

### Predictors of Documented Care

Predictor	Odds Ratio (95% CI)	P value
Any Psychosocial Treatment		
ADHD + CD	6 – 11 years old	25 (2.85, 219.54)
MD only	African- American	7.63 (1.85, 31.5)
Any Medication		
CD only	High income in county	4.36 (1.75, 10.86)
ADHD + CD	African American	9.79 (1.92, 49.77)
	High DSM-IV symptoms	8.99 (2.36, 34.27)
MD only	12-17 years old	4.59 (2.05, 10.27)
	African American	12.64 (2.5, 63.98)
	High income in county	4.28 (1.71, 10.70)



## Predictors of Documented Care

	Predictor	Odds Ratio (95% CI)	P value
Any Case Management	African American	8.3 (2.18, 31.58)	0.003
	6 – 11 years old	10.69 (2.13, 53.71)	0.005
	Low population in county	9.82 (2.79, 34.49)	0.001
CD only			
ADHD + CD			

## Conclusions

Documented provision of any psychosocial tx was not related to disorder, clinical severity or psychosocial complexity

Documentation of family or behavior tx was moderate to poor

Documented provision of case management was not related to psychosocial complexity

Medication treatment not overused

## Policy Recommendation

Quality improvement interventions to support clinician documentation that links delivery of evidence-based practices to clinical indications for children are merited.

## Agency-Academic Partnership

Feasible approach for examining quality of care for children in publicly-funded mental health programs.

Future: Together, we strive to apply clinical practice evidence research methodologies for improving the quality of care for children in partnership.

## Quality Indicators

### Initial Clinical Assessment (1<sup>st</sup> 3 months)

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
≥ 1 child strength (n=813) <sup>a</sup>	711	87.5	90.6	(1.83)
≥ target symptom by primary caregiver (n=813)	770	94.7	94.7	(1.53)
≥ parent report of classroom behavior, parent conference feedback or teacher reported symptom (n=813)	697	85.7	86.7	(1.95)

<sup>a</sup>actual number of cases eligible for the indicator, <sup>b</sup>restricted to youth > 12 years of age

### Initial Clinical Assessment (1<sup>st</sup> 3 months)

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
Presence/absence ≥ 1 indicator of academic functioning (n=813)	757	93.1	92.8	(1.81)
Presence/absence ≥ psychosocial stressor (n=813)	780	95.9	94.1	(1.61)
Presence/absence ≥ mental health problem in family (n=813)	633	77.9	77.5	(2.98)

\*actual number of cases eligible for the indicator, <sup>a</sup>restricted to youth > 12 years of age

### Initial Clinical Assessment (1<sup>st</sup> 3 months)

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
Presence/absence ≥ 1 suicide risk factor (n=813)	697	85.7	82.4	(2.08)
Presence/absence ≥ 1 aggressive behavior symptom (n=813)	680	83.6	84.4	(2.26)
Presence/absence of alcohol or illicit drug use (n=448) <sup>b</sup>	371	82.8	76.4	(5.76)
Presence/absence ≥ 1 medical problem (n=813)	684	84.1	85.3	(2.25)

\*actual number of cases eligible for the indicator, <sup>b</sup>restricted to youth > 12 years of age

### Service Linkage

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
If ADHD, ≥1 parent or teacher reported behavior or symptom ratings are obtained (n=397)	212	53.4	56.3	(8.18)
If poor academic functioning or classroom behavior problems, ≥ 1 contact with school or school records requested/ obtained (n=677)	390	57.6	63.4	(3.05)
Physical exam in past year or referral, or done in the 3-month assessment period (n=813)	255	31.4	39.5	(3.51)

### Basic Treatment Principles

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
Parent or primary caregiver informed of child's diagnosis and given information about child's mental health problem (n=674)	142	21.1	25.5	(5.40)
Mental health visits at least monthly (n=616)	306	49.7	46.9	(3.42)

### Basic Treatment Principles

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
If clinical information released, informed consent obtained prior to sending information to outside provider or agency (n=469)	326	69.5	74.7	(3.11)
≥1 family intervention (family, conjoint or parent therapy) or parent referral made (n=760)	386	50.8	49.9	(4.85)

### Psychosocial Treatment

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
≥1 psychosocial treatment recommended in first 90 days unless child receiving psychotherapy at another program (n=668)	629	94.2	92.7	(1.78)
If ADHD or CD, ≥1 behavior therapy session (n=610)	45	7.4	8.0	(2.26)
If MD, ≥1 psychosocial treatment monthly for 6-9 months (n=249)	127	51.0	54.0	(4.84)

### Medication Referral

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
If ADHD or MD, referral for medication evaluation or rationale for why not medication referral is not indicated (n=655)	515	78.6	83.0	(1.95)

### Safety: Patient Protection

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
Screen for history of physical or sexual abuse in first 3 months (n=813)	491	60.4	51.5	(3.66)
If current abuse suspected, report filed (n=53)	40	75.5	63.9	(12.01)

### Safety: Patient Protection

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
If current suicidal ideation in past 4 weeks, ≥ 1 follow-up assessment of suicide risk in the first 3-months (n=115)	81	70.4	74.1	(6.41)
If imminent risk of harm to self or others, more restrictive treatment setting recommended (n=157)	88	56.1	46.3	(5.79)

### Safety: Informed Medication Decision

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
Written consent from primary caregiver obtained prior to starting medication (n=332) <sup>a</sup>	252	75.9	75.4	(4.48)
Primary caregiver informed of mandated medication information (n=332)	139	41.9	32.7	(6.31)

<sup>a</sup>excludes children in foster care

### Safety: Medication Monitoring

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
≥ monthly monitoring during first 3 treatment months (n=303)	187	61.7	69.7	(5.22)
Monitoring conducted by provider licensed to prescribe (n=377)	294	78.0	77.8	(5.58)

### Safety: Medication-Specific Monitoring

	PASSED			
	Actual		Weighted	
	n	%	%	(SE)
Status of ≥ 1 target symptom noted each medication visit (n=377)	123	32.6	28.1	(4.08)
Status of ≥ 1 side effect noted each medication visit (n=377)	129	34.2	32.5	(5.28)
≥ 1 vital sign monitored or laboratory study ordered or result noted, as clinically indicated for particular medications (n=402)	102	25.4	28.3	(5.67)