

The Changing Patterns of Pediatric Antipsychotic Use in Florida's Medicaid Program: 7/2002 to 12/2005

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Conducted by the FMHI at USF
Under a Contract with the AHCA



Media Coverage of Pediatric Antipsychotic Use

- “Use of Antipsychotics By the Young Rose Fivefold” – New York Times, June 6, 2006
- “Antipsychotic Drug Use Soars”
– Associated Press, May 3, 2006
- “The Atypical Dilemma”
– St. Petersburg Times, July 29, 2007
- “New Antipsychotic Drugs Carry Risks For Children” – USA Today, May 2, 2006

Pharmacy Management Program Contract Language

Key Provisions in Contract between the State Medicaid Program and USF for the Conduct of the Pharmacy Management Program:

- Rates of antipsychotic prescribing by age group
- Who is prescribing antipsychotic medications to children (Specialists vs. Non-specialists)?
- Rates of growth in prescribing (Specialists vs. Non-specialists)
- Appropriateness of antipsychotic prescribing

Purpose of the Presentation

- Updated view of trends in pediatric antipsychotic utilization
- View of the changing mix of SGA's prescribed to children and adolescents
- View of the changing diagnostic patterns of youth prescribed antipsychotic medications

Purpose of the Presentation (cont'd)

- View of the prescribers of antipsychotic medications and changes over time
- Changes in rates of antipsychotic prescribing for specialists vs. non-specialists

Trends in Antipsychotic Utilization

Previous Research

- “The proportion of TennCare children who were new users of antipsychotics, adjusted for demographic characteristics, nearly doubled from 23/10,000 in 1996 to 45/10,000 in 2001.”
 - Cooper, et al., New Users of Antipsychotic Medications Among Children Enrolled in TennCare. Archives Pediatric Medicine, August, 2004.

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Previous Research (cont'd - 1)

- “The overall frequency of antipsychotic prescribing increased from 8.6 per 1,000 US Children in 1995-96 to 39.4 per 1,000 US Children in 2001-2002.”
 - Cooper, et al., Trends in Prescribing of Antipsychotic Medications for US Children.

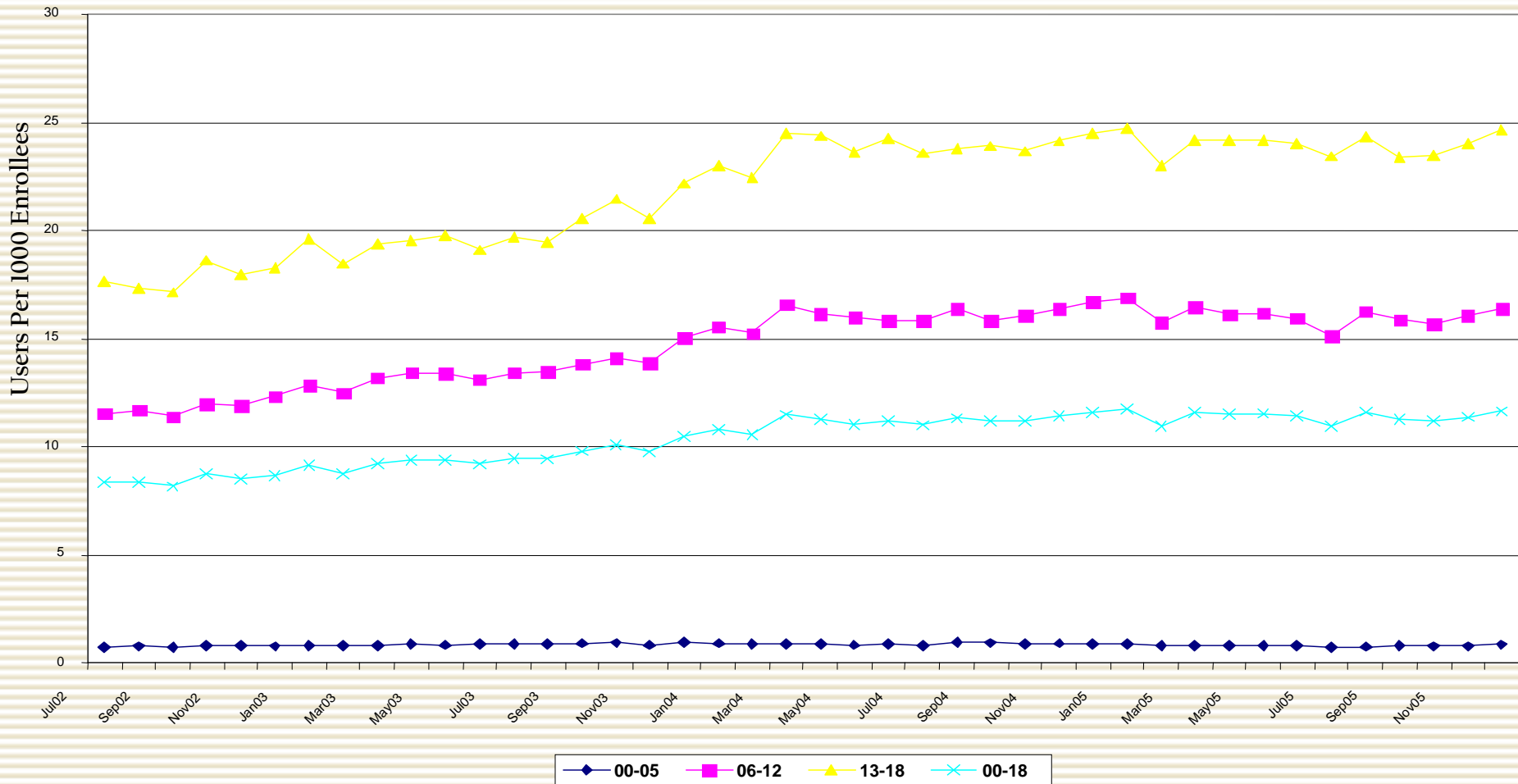
Previous Research (cont'd - 2)

- “The number of office visits in the US by individuals aged 0 to 20 years that included prescription for an antipsychotic medication increased from 201,000 in 1993-95 to 1,224,000 in 2002. The annual number of such visits per 100,000 population younger than 21 years increased from 274.7 in 1993 to 1995 to 1438.4 in 2002.”
 - Olfson, et al., National Trends in the Outpatient Treatment of Children and Adolescents with Antipsychotic Drugs. June, 2006.

Previous Research (cont'd - 3)

- “Over the 5 year period, an additional 12.25 children and adolescents per 1,000 enrollees (+160%) were prescribed antipsychotic medications.”
 - Patel, et al., Trends in Antipsychotic Use in a Texas Medicaid Population of Children and Adolescents: 1996-2000. November, 2002.

Florida Medicaid Antipsychotic Users Per 1,000 Enrollees: 7/2002 to 12/2005



Piece-wise Linear Regression: Users Per 1,000 Enrollees by Time

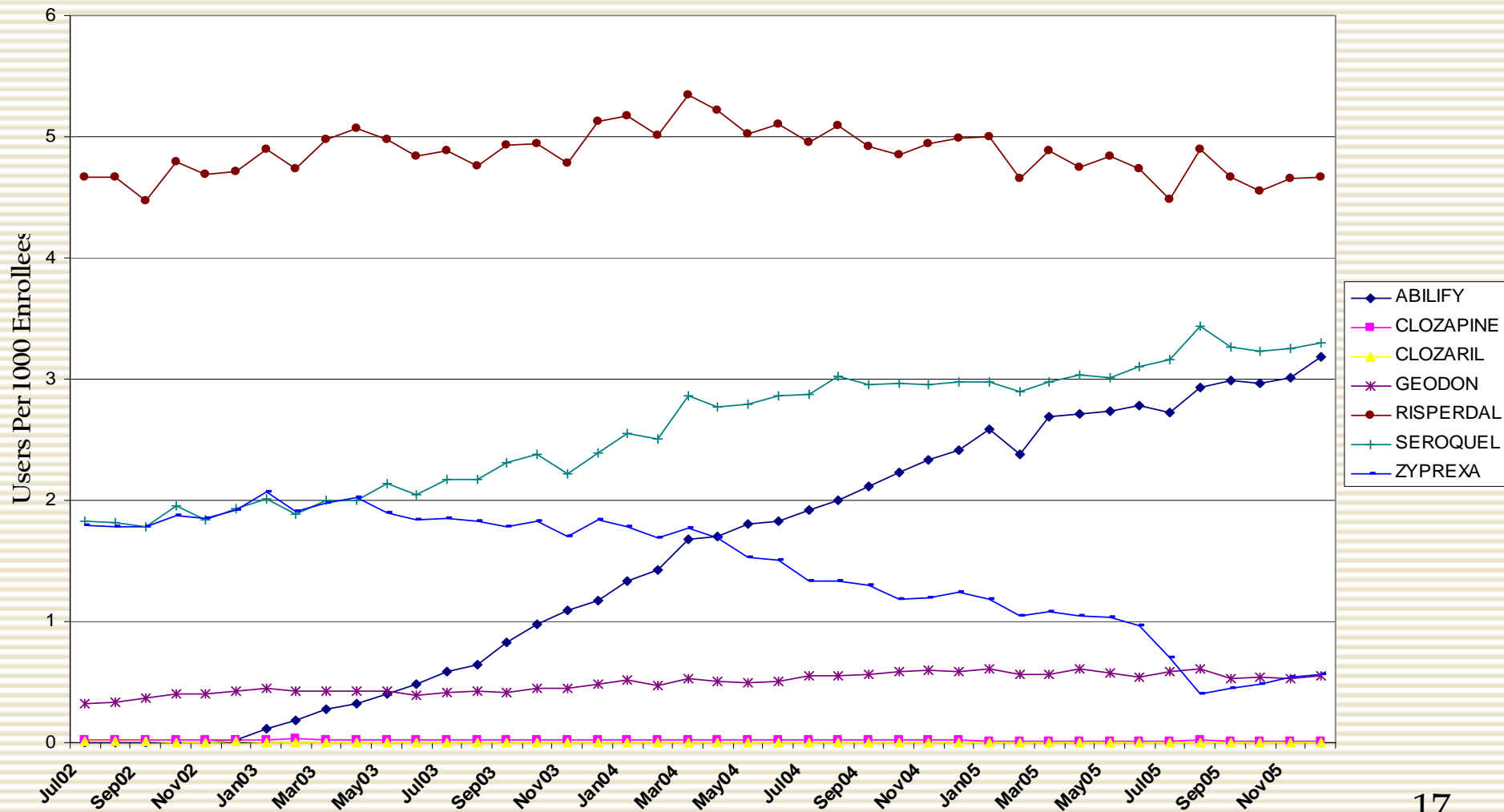
Age Group	Period	Slope	P(slope pre=slope post)	SE (model)	R ² (model)
0-5	pre	.0008	<.0001	.44	.57
	post	-.0008			
6-12	pre	.23	<.0001	.43	.93
	post	.01			
13-18	pre	.33	<.0001	.68	.93
	post	.04			
0-18	pre	.15	<.0001	.27	.95
	post	.03			

*pre period= 7/02-4/04, post period= 5/04-12/05

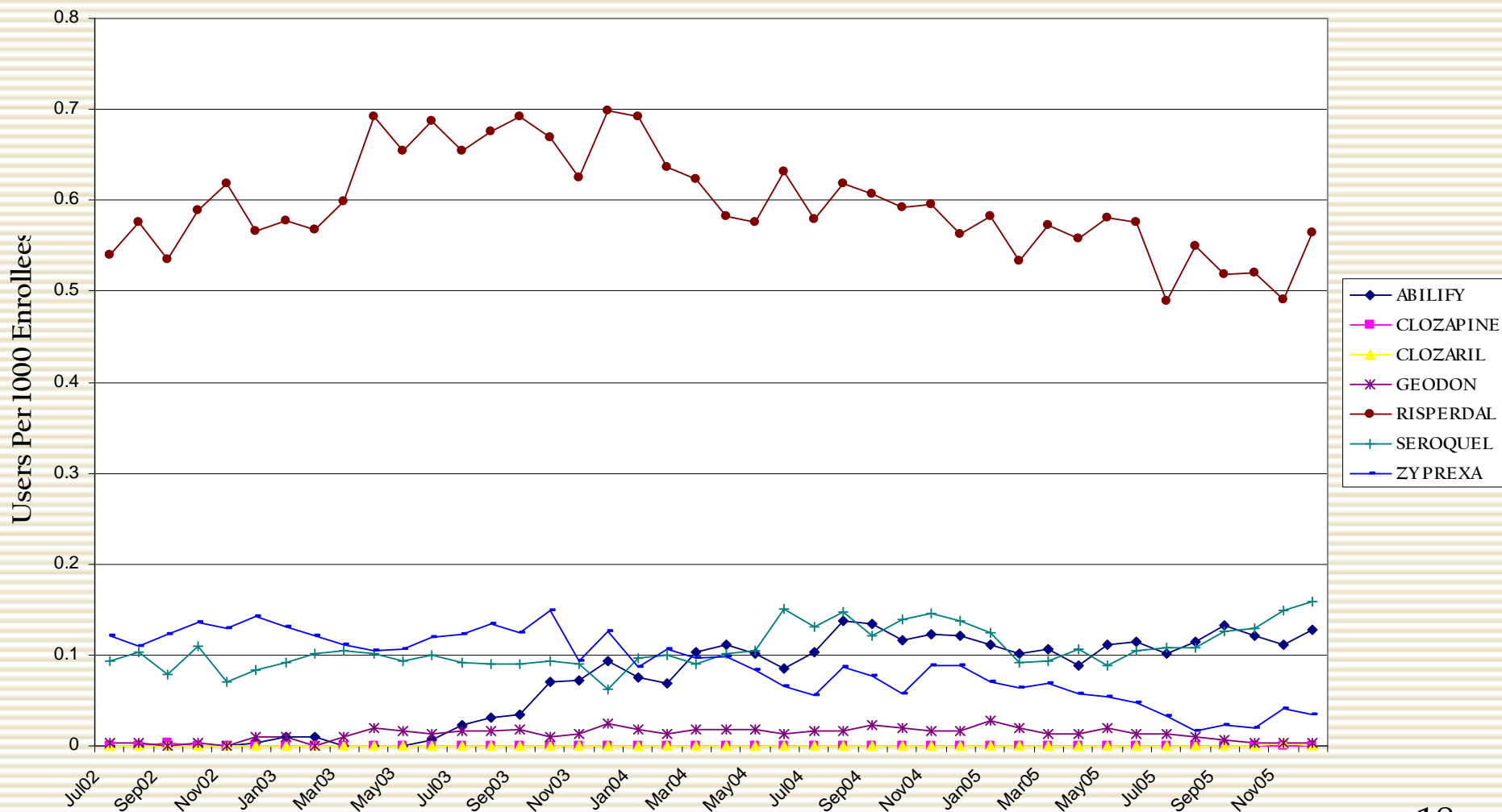
Clinical Commentary

Changing Patterns of SGA Use by Age Group

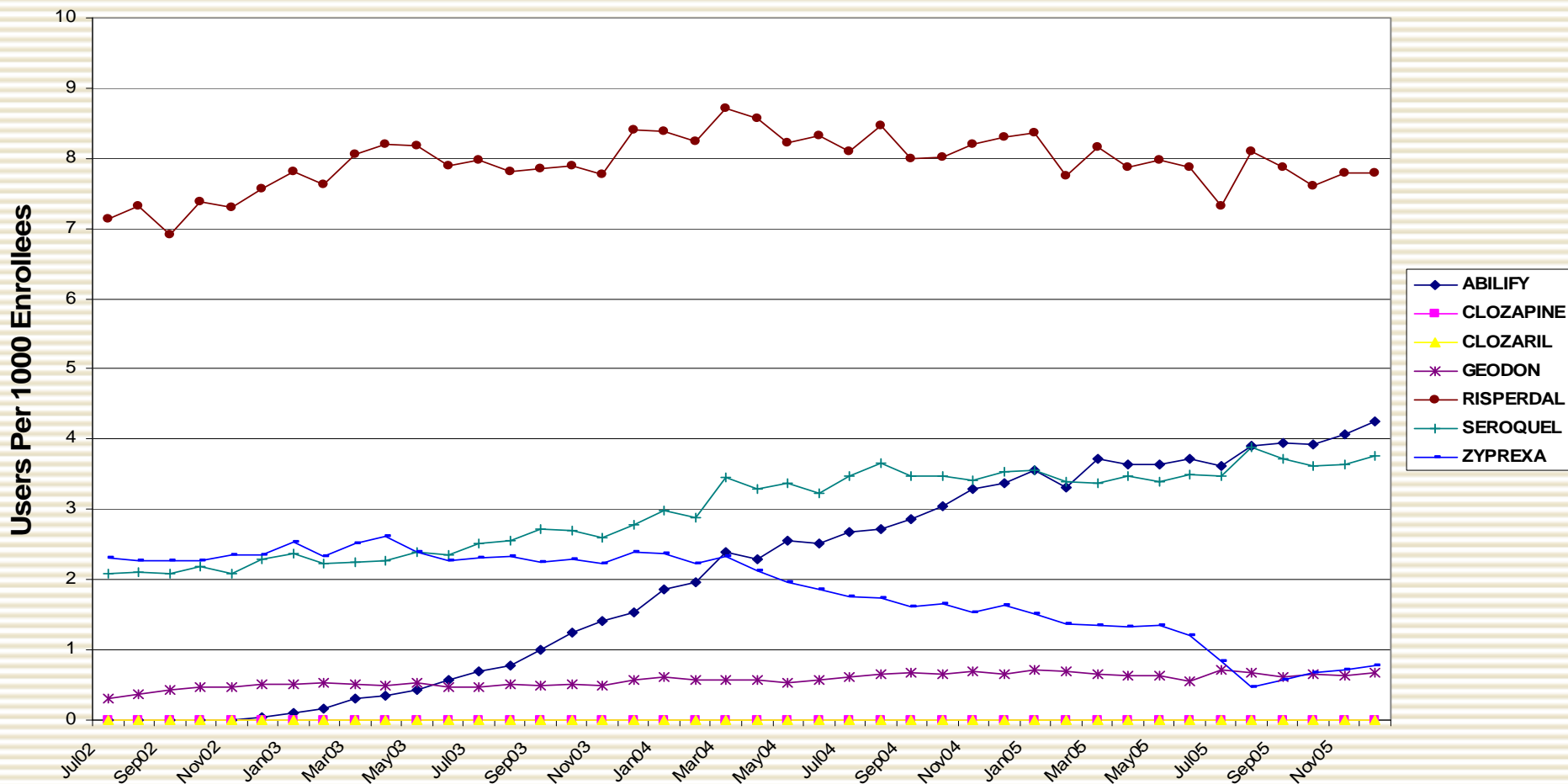
Atypical Antipsychotic Pharmacy Use in Florida Medicaid Children (Ages 0-18)



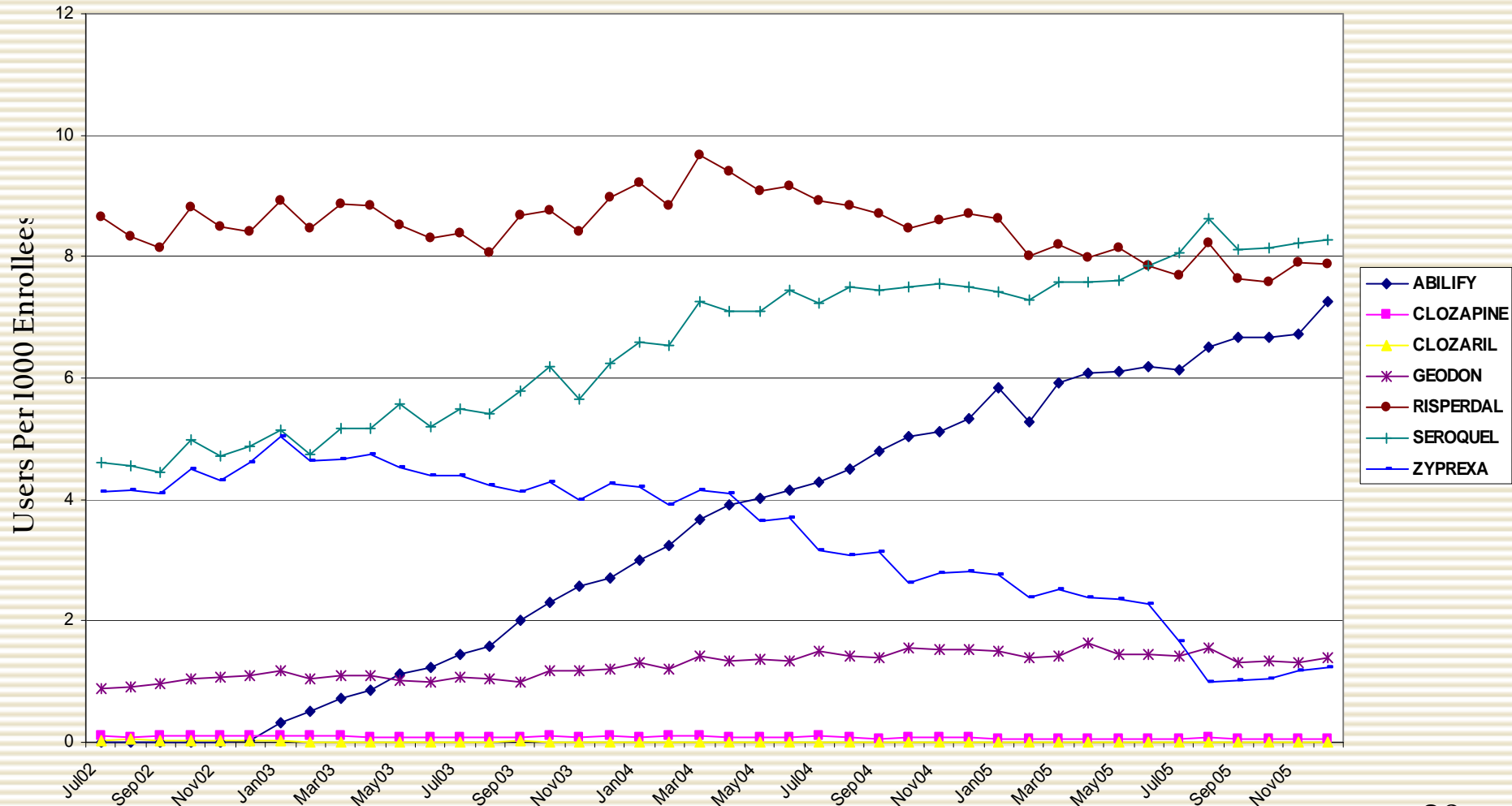
Atypical Antipsychotic Pharmacy Use in Florida Medicaid Children (Ages 0-5)



Atypical Antipsychotic Pharmacy Use in Florida Medicaid Children (Ages 6-12)



Atypical Antipsychotic Pharmacy Use in Florida Medicaid Children (Ages 6-18)



Trends in SGA Use in 6-12 and 13-18 Age Groups: Piece-Wise Comparisons

Drug	Period	Slope	P (slope pre = slope post)	SE (model)	(model)
AP					
6-12	pre	.13	.05	.24	.98
	post	.11			
13-18	pre	.21	.03	.27	.99
	post	.18			
Risperidone					
6-12	pre	.06	<.0001	.23	.67
	post	-.04			
13-18	pre	.04	<.0001	.28	.67
	post	-.07			
Quetiapine					
6-12	pre	.06	<.0001	.16	.93
	post	.03			
13-18	pre	.13	.0002	.26	.96
	post	.07			
Olanzapine					
6-12	pre	-.009	<.0001	.14	.95
	post	-.08			
13-18	pre	-.02	<.0001	.28	.95
	post	-.15			
Ziprasidone					
6-12	pre	.009	.01	.05	.78
	post	.004			
13-18	pre	.02	.002	.09	.78
	post	.005			

Clinical Commentary

Diagnoses of Children Receiving Atypical Antipsychotic Medications

Hierarchy of Diagnoses

- 295.7 Schizoaffective Disorder = 01
- 295.(other): Other Schizophrenia = 02
- 296.2 - 296.39 : Major Depression = 03
- **296.(other): Affective Disorder = 04**
- 297 - 299.99 (exc. 299.0): Paranoia, Psychoses = 05
- 291 - 293.99: Delirium, Alcohol, Drug Psychoses = 06

Hierarchy of Diagnoses (cont'd)

- **299 - 299.09: Autism = 07**
- **307.2 - 307.39: Tourettes Disorder = 08**
- **314: ADHD = 09**
- **312, 313: Conduct Disorder = 10**
- **311: Depressive Disorder = 11**
- **300: Anxiety Disorder = 12**
- **309: Adjustment Disorder = 13**
- **Other not specified (290 - 316.99) = 14**

Diagnoses of Children 0-5: FY 2002-03 to FY 2005-06

Rank	Diagnosis Group	age_group	FY 0203	percent 0203	FY 0304	percent 0304	FY 0405	percent 0405	Jul05-Dec05	percent Jul05-Dec05
01	295.7: Schizoaffective Disorder	00-05	0	0.0%	1	0.1%	1	0.1%	1	0.2%
02	295.(other): Other Schizophrenia	00-05	2	0.3%	1	0.1%	1	0.1%	1	0.2%
03	296.2 - 296.39: Major Depression	00-05	8	1.2%	12	1.5%	11	1.5%	3	0.7%
04	296.(other): Affective Disorder	00-05	46	7.2%	66	8.5%	91	12.2%	54	12.5%
05	297 - 299.99 (exc 299.0): Paranoia, Psychoses	00-05	33	5.1%	45	5.8%	51	6.8%	28	6.5%
06	291 - 293.99: Delirium, Alcohol, Drug Psychoses	00-05	1	0.2%	1	0.1%	1	0.1%	1	0.2%
07	299 - 299.09: Autism	00-05	56	8.7%	70	9.0%	90	12.0%	45	10.4%
08	307.2 - 307.39: Tourettes Disorder	00-05	3	0.5%	2	0.3%	5	0.7%	2	0.5%
09	314: ADHD	00-05	371	57.9%	444	56.9%	378	50.6%	207	48.0%
10	312, 313: Conduct Disorder	00-05	61	9.5%	67	8.6%	43	5.8%	35	8.1%
11	311: Depressive Disorder	00-05	5	0.8%	2	0.3%	4	0.5%	0	0.0%
12	300: Anxiety Disorder	00-05	5	0.8%	8	1.0%	3	0.4%	1	0.2%
13	309: Adjustment Disorder	00-05	11	1.7%	16	2.0%	17	2.3%	6	1.4%
14	Other not specified (290 - 316.99)	00-05	39	6.1%	46	5.9%	51	6.8%	47	10.9%
	Total	00-05	641	100.0%	781	100.0%	747	100.0%	431	100.0%

Diagnoses of Children 6-12: FY 2002-03 to FY 2005-06

Rank	Diagnosis Group	age_group	FY 0203	percent0 203	FY 0304	percent0 304	FY 0405	percent0 405	Jul05_Dec05	percent_Jul05_ Dec05
01	295.7: Schizoaffective Disorder	06-12	80	1.4%	60	0.8%	58	0.8%	20	0.4%
02	295.(other): Other Schizophrenia	06-12	59	1.0%	63	0.9%	64	0.9%	28	0.5%
03	296.2 - 296.39 : Major Depression	06-12	507	8.6%	546	7.7%	454	6.1%	201	3.6%
04	296.(other): Affective Disorder	06-12	831	14.1%	1115	15.7%	1288	17.3%	802	14.5%
05	297 - 299.99 (exc 299.0): Paranoia, Psychoses	06-12	287	4.9%	321	4.5%	316	4.3%	205	3.7%
06	291 - 293.99: Delirium, Alcohol, Drug Psychoses	06-12	15	0.3%	20	0.3%	18	0.2%	9	0.2%
07	299 - 299.09: Autism	06-12	309	5.2%	355	5.0%	378	5.1%	342	6.2%
08	307.2 - 307.39: Tourettes Disorder	06-12	54	0.9%	69	1.0%	63	0.8%	37	0.7%
09	314: ADHD	06-12	2854	48.3%	3612	50.9%	3873	52.1%	2968	53.6%
10	312, 313: Conduct Disorder	06-12	361	6.1%	396	5.6%	370	5.0%	359	6.5%
11	311: Depressive Disorder	06-12	71	1.2%	93	1.3%	88	1.2%	68	1.2%
12	300: Anxiety Disorder	06-12	86	1.5%	90	1.3%	102	1.4%	75	1.4%
13	309: Adjustment Disorder	06-12	198	3.4%	179	2.5%	181	2.4%	189	3.4%
14	Other not specified (290 - 316.99)	06-12	193	3.3%	182	2.6%	179	2.4%	237	4.3%
	Total	06-12	5905	100.0%	7101	100.0%	7432	100.0%	5540	100.0%

Diagnoses of Children 13-18: FY 2002-03 to FY 2005-06

Rank	Diagnosis Group	age_group	FY 0203	percent0 203	FY 0304	percent0 304	FY 0405	percent0 405	Jul05_Dec05	percent_Jul05_ Dec05
01	295.7: Schizoaffective Disorder	13-18	412	6.7%	362	4.9%	354	4.4%	217	3.6%
02	295.(other): Other Schizophrenia	13-18	236	3.8%	255	3.5%	256	3.2%	145	2.4%
03	296.2 - 296.39 : Major Depression	13-18	1156	18.8%	1306	17.7%	1339	16.7%	707	11.6%
04	296.(other): Affective Disorder	13-18	1104	18.0%	1510	20.5%	1829	22.9%	1402	23.1%
05	297 - 299.99 (exc 299.0): Paranoia, Psychoses	13-18	282	4.6%	307	4.2%	352	4.4%	239	3.9%
06	291 - 293.99: Delirium, Alcohol, Drug Psychoses	13-18	25	0.4%	25	0.3%	24	0.3%	16	0.3%
07	299 - 299.09: Autism	13-18	146	2.4%	176	2.4%	187	2.3%	157	2.6%
08	307.2 - 307.39: Tourettes Disorder	13-18	43	0.7%	41	0.6%	36	0.5%	26	0.4%
09	314: ADHD	13-18	1309	21.3%	1750	23.8%	1998	25.0%	1686	27.8%
10	312, 313: Conduct Disorder	13-18	770	12.5%	855	11.6%	851	10.6%	753	12.4%
11	311: Depressive Disorder	13-18	156	2.5%	190	2.6%	212	2.7%	183	3.0%
12	300: Anxiety Disorder	13-18	154	2.5%	170	2.3%	183	2.3%	150	2.5%
13	309: Adjustment Disorder	13-18	171	2.8%	183	2.5%	177	2.2%	171	2.8%
14	Other not specified (290 - 316.99)	13-18	177	2.9%	230	3.1%	201	2.5%	220	3.6%
	Total	13-18	6141	100.0%	7360	100.0%	7999	100.0%	6072	100.0%

Generalized Estimating Equations Analysis: Diagnoses by Time

Diagnoses of Children 0-5: FY 2004-05 vs. FY 2002-03

Diagnosis	Estimate	SE	Z	P
Affective Disorders	1.8	.19	3.08	.002
Autism	1.4	.18	1.80	.07
ADHD	.76	.10	-2.65	.008
Conduct Disorder	.57	.20	-2.82	.005
Adjustment Disorder	1.3	.39	.74	.46

Diagnoses of Children 6-12: FY 2004-05 vs. FY 2002-03

Diagnosis	Estimate	SE	Z	P
Affective Disorders	1.34	.05	6.35	<.0001
Major Depression	.72	.06	-5.34	<.0001
ADHD	1.08	.03	2.69	.007
Conduct Disorder	.80	.07	-3.16	.002
Adjustment Disorder	.72	.09	-3.44	.0006

Diagnoses of Children 13-18: FY 2004-05 vs. FY 2002-03

Diagnosis	Estimate	SE	Z	P
Schizoaffective, Schizo. (other)	.86	.06	-2.51	.01
Affective Disorders	1.38	.04	8.14	<.0001
ADHD	1.13	.04	3.29	.001
Conduct Disorder	.84	.05	-3.57	.0004
Adjustment Disorder	.79	.10	-2.23	.02

Co-Occurring Diagnoses Under Age 19

dx_grpl	Description	fy0203	fy0304	fy0405	jul05_dec05
296.(other): Affective Disorder	Count Total	1981	2691	3208	2258
296.(other): Affective Disorder	Co-occurring ADHD	882 (45%)	1312 (49%)	1599 (50%)	841 (37%)
296.(other): Affective Disorder	Co-occurring Conduct Disorder	668 (34%)	891 (33%)	1026 (32%)	542 (24%)
296.2 - 296.39 : Major Depression	Count Total	1671	1864	1804	911
296.2 - 296.39 : Major Depression	Co-occurring ADHD	522 (31%)	637 (34%)	614 (34%)	233 (26%)
296.2 - 296.39 : Major Depression	Co-occurring Conduct Disorder	523 (31%)	560 (30%)	575 (32%)	209 (23%)
296.2 - 296.39 : Major Depression	Co-occurring Affective Disorder	545 (33%)	614 (33%)	663 (37%)	310 (34%)
314: ADHD	Count Total	4534	5806	6249	4861
314: ADHD	Co-occurring Conduct Disorder	1067 (24%)	1394 (24%)	1539 (25%)	794 (16%)
314: ADHD	Co-occurring Adjustment Disorder	573 (13%)	749 (13%)	776 (12%)	406 (8%)

Clinical Commentary

Prescribers of Antipsychotic Medications: Specialists vs. Non-Specialists

Scripts Written by Medical Specialty by Age

MD Category	0 to 5	% of Scripts	6 to 12	% of Scripts	13 to 18	% of Scripts
Child Psychiatrist	1195	33.6%	23348	46.8%	28506	47.5%
Adult Psychiatrist	845	23.7%	14009	28.1%	19984	33.3%
Clinical Nurse Spec Psych MH		0.0%	2	0.0%	1	0.0%
Primary Care (Child)	1033	29.0%	7653	15.4%	5130	8.6%
Primary Care (Adult)	241	6.8%	2909	5.8%	4586	7.6%
Neurologist	218	6.1%	1266	2.5%	893	1.5%
Other Physician Prescriber	27	0.8%	663	1.3%	873	1.5%
Total	3559	100.00%	49850	100%	59973	100%

Percentages of Scripts of Antipsychotics by Fiscal Year (Ages 0-5)

Diagnosis	FY 02-03	% of Scripts	FY 03-04	% of Scripts	FY 04-05	% of Scripts
Child Psychiatrist	1299	39.7%	1370	35.6%	1195	33.6%
Adult Psychiatrist	677	20.7%	791	20.6%	845	23.7%
Clinical Nurse Spec Psych MH	2	0.1%	3	0.1%		0.0%
Primary Care (Child)	860	26.3%	1115	29.0%	1033	29.0%
Primary Care (Adult)	273	8.3%	274	7.1%	241	6.8%
Neurologist	81	2.5%	236	6.1%	218	6.1%
Other Physician Prescriber	82	2.5%	56	1.5%	27	0.8%
Total	3274	100.00%	3845	100.00%	3559	100.00%

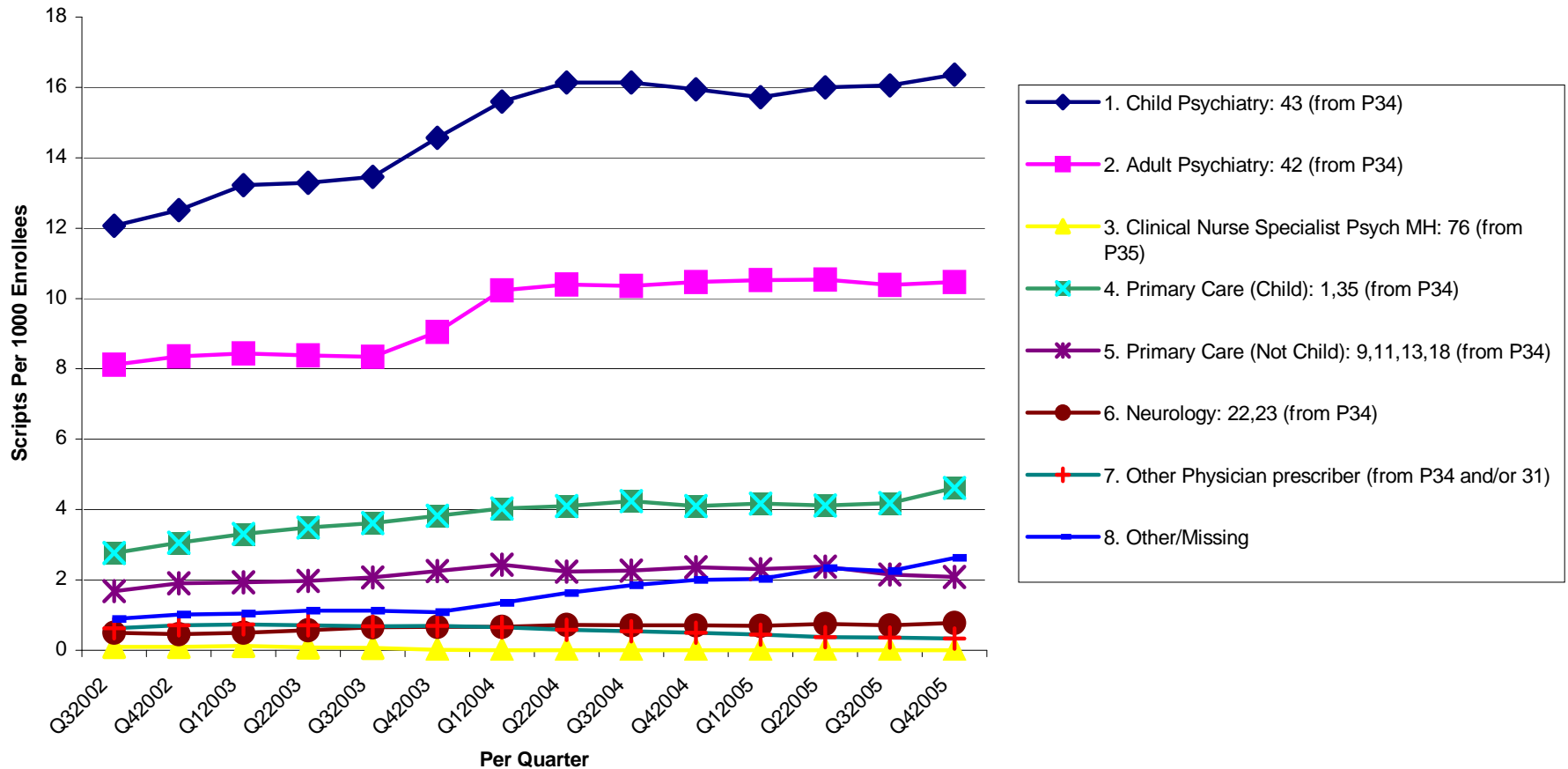
Clinical Commentary

WHAT SHOULD WE DO?

- Nothing
- Tell the physicians exactly what to do
- Appear to do something, but don't do anything "Real"
- Convene another panel
- A slap on the bottom and a kiss on the cheek or the other way around

Rates of Antipsychotic Prescribing: Specialists vs. Non-Specialists

Antipsychotic Prescriptions Per 1,000 Enrollees (Ages 0-18)



Slopes of Scripts Per 1,000 Enrollees by Time by MD Specialty

	Estimate	SE	P-value
Slope Adult Psych	0.2232	0.02255	<.0001
Slope Child Primary	0.1152	0.02255	<.0001
Slope Child Psych	0.3398	0.02255	<.0001
Slope Neurology	0.02187	0.02255	0.3354
Slope Not Child Primary	0.03405	0.02255	0.1354

Unusual Prescribing: Specialists vs. Non-Specialists

Recommendations

- Regular pediatricians in strategies to enhance knowledge of and use of guidelines
- Engage pediatricians in strategies to enhance knowledge of and use of guidelines
- Maximum access to guidelines at the point of care

Recommendations (cont'd)

- Develop local consultation networks to assist primary care
- Statewide conference on the use of medications with children under 6 years
- Monitor children on antipsychotic medications under 6 years
- Follow up with physicians whose practices generate safety concerns especially with very young children