Supplement

Additional Information about the Rating Strategy

Two expert raters reviewed participants' treatment records for treatment adequacy. Prior to reviewing records, the two raters (one child psychiatrist, one child psychologist) worked together in consultation with an expert health services researcher (masked) to clarify the questions, rating categories, and what guidelines and strategies we would use assign treatment ratings. Raters independently reviewed each participants' treatment and diagnostic record and recorded independent ratings and comments about why each rating was chosen. In consensus meetings convened to review discordant ratings, raters then both shared their ratings and justification for them; each rater had the opportunity to ask the other questions, provided additional information and shared any further thoughts about how to rate the participants' treatment. Using this strategy, the raters were able to achieve consensus for every participant who had sufficient data to provide a rating. Further information about the guidelines the raters consulted can be in Supplemental Table 1; additional examples of treatment ratings by diagnosis can be found in Supplemental Table 2.

Supplemental Table 1. Examples of treatment guidelines consulted for psychopharmacotherapy adequacy ratings

Diagnosis	Treatment Guidelines Consulted
Attention deficit hyperactivity disorder	• Wolraich ML, Hagan JF, Allan C, et al. AAP Subcommittee on children and adolescents with attention-deficit/hyperactive disorder. Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. Pediatrics. 2019;144(4):e20192528 • Pliszka S. Practice Parameter for the Assessment and Treatment of Children and Adolescents with Attention-Deficit/Hyperactivity Disorder. *J Am Acad Child Adolesc Psychiatry*. 2007;46(7):894-921. doi:10.1097/chi.0b013e318054e724
Anxiety disorders	• Walter HJ, Bukstein OG, Abright AR, et al. Clinical Practice Guideline for the Assessment and Treatment of Children and Adolescents with Anxiety Disorders. *J Am Acad Child Adolesc Psychiatry*. Oct 2020;59(10):1107-1124. doi:10.1016/j.jaac.2020.05.005 • Cohen JA. Practice Parameter for the Assessment and Treatment of Children and Adolescents with Posttraumatic Stress Disorder. *J Am Acad Child Adolesc Psychiatry*. 2010;49(4):414-430. doi:10.1016/j.jaac.2009.12.020 • Geller DA, March J. Practice Parameter for the Assessment and Treatment of Children and Adolescents with Obsessive-Compulsive Disorder. *J Am Acad Child Adolesc Psychiatry*. 2012;51(1):98-113. doi:10.1016/j.jaac.2011.09.019

Bipolar disorders	• McClellan J, Kowatch R, Findling RL, Work Group on Quality I. Practice parameter for the assessment and treatment of children and adolescents with bipolar disorder. *J Am Acad Child Adolesc Psychiatry*. Jan 2007;46(1):107-125. doi:10.1097/01.chi.0000242240.69678.c4 • Nivoli AM, Colom F, Murru A, et al. New treatment guidelines for acute bipolar depression: a systematic review. *J Affect Disord*. Mar 2011;129(1-3):14-26. doi:10.1016/j.jad.2010.05.018 • Kowatch RA, Fristad M, Birmaher B, Wagner KD, Findling RL, Hellander M; Child Psychiatric Workgroup on Bipolar Disorder. Treatment guidelines for children and adolescents with bipolar disorder. J Am Acad Child Adolesc Psychiatry. 2005 Mar;44(3):213-35. doi: 10.1097/00004583-200503000-00006. • Grunze H, Vieta E, Goodwin GM, et al. The World Federation of Societies of Biological Psychiatry (WFSBP) Guidelines for the Biological Treatment of Bipolar Disorders: Update 2012 on the long-term treatment of bipolar disorder. *The World Journal of Biological Psychiatry*. 2013;14(3):154-219. doi:10.3109/15622975.2013.770551 • National Collaborating Centre for Mental Health (UK). *Bipolar Disorder: The NICE Guideline on the Assessment and Management of Bipolar Disorder in Adults, Children and Young People in Primary and Secondary Care*. London: The British Psychological Society and The Royal College of Psychiatrists; September 2014.
Depressive disorders	• Birmaher B, Brent D, AACAP Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with depressive disorders. *J Am Acad Child Adolesc Psychiatry*. Nov 2007;46(11):1503-26. doi:10.1097/chi.0b013e318145ae1c • Cheung AH, Zuckerbrot RA, Jensen PS, Laraque D, Stein REK, Glad-Pc Steering Group. Guidelines for Adolescent Depression in Primary Care (GLAD-PC): Part II. Treatment and Ongoing Management. Pediatrics. Mar 2018;141(3)doi:10.1542/peds.2017-4082 • Zuckerbrot RA, Cheung A, Jensen PS, Stein REK, Laraque D, Glad-Pc Steering Group. Guidelines for Adolescent Depression in Primary Care (GLAD-PC): Part I. Practice Preparation, Identification, Assessment, and Initial Management. Pediatrics. Mar 2018;141(3)doi:10.1542/peds.2017-4081

Disruptive behavior disorders	• National Collaborating Centre for Mental Health (UK). *Antisocial behaviour and conduct disorders in children and young people: recognition and management*. London: The British Psychological Society and The Royal College of Psychiatrists; March 2013. https://www.nice.org.uk/guidance/cg158 • Gorman DA, Gardner DM, Murphy AL, et al. Canadian guidelines on pharmacotherapy for disruptive and aggressive behaviour in children and adolescents with attention-deficit hyperactivity disorder, oppositional defiant disorder, or conduct disorder. *Can J Psychiatry*. Feb 2015;60(2):62-76. doi:10.1177/070674371506000204 • Steiner H, Remsing L, Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with oppositional defiant disorder. *J Am Acad Child Adolesc Psychiatry*. Jan 2007;46(1):126-141. doi:10.1097/01.chi.0000246060.62706.af
Elimination disorders	• Graham KM, Levy JB. Enuresis. *Pediatrics In Review*. 2009;30(5):165-173. doi:10.1542/pir.30-5-165 • Har AF, Croffie JM. Encopresis. *Pediatrics In Review*. 2010;31(9):368-374. doi:10.1542/pir.31-9-368 • Vande Walle J, Rittig S, Bauer S, Eggert P, Marschall-Kehrel D, Tekgul S. Practical consensus guidelines for the management of enuresis. *European Journal of Pediatrics*. 2012;171(6):971-983. doi:10.1007/s00431-012-1687-7
Pervasive developmental disorders	• Myers SM, Johnson CP, American Academy of Pediatrics Council on Children With Disabilities. Management of children with autism spectrum disorders. *Pediatrics*. Nov 2007;120(5):1162-82. doi:10.1542/peds.2007-2362 • Volkmar F, Siegel M, Woodbury-Smith M, et al. Practice parameter for the assessment and treatment of children and adolescents with autism spectrum disorder. *J Am Acad Child Adolesc Psychiatry*. Feb 2014;53(2):237-57. doi:10.1016/j.jaac.2013.10.013
Psychotic disorders	• McClellan J, Stock S, American Academy of Child and Adolescent Psychiatry Committee on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with schizophrenia. *J Am Acad Child Adolesc Psychiatry*. Sep 2013;52(9):976-90. doi:10.1016/j.jaac.2013.02.008 • Abidi S, Mian I, Garcia-Ortega I, et al. Canadian Guidelines for the Pharmacological Treatment of Schizophrenia Spectrum and Other Psychotic Disorders in Children and Youth.

Can J Psychiatry. Sep 2017;62(9):635-647. doi:10.1177/0706743717720197

- National Institute for Health and Care Excellence. *Psychosis and schizophrenia in children and young people: recognition and management*. Clinical guideline number 155. 2013. http://guidance.nice.org.-uk/CG155.

Supplemental Table 2. Approach for psychopharmacology adequacy ratings for the five most common diagnoses

Disorder (% of participants diagnosed)	Standard of Care	Adequate	Inadequate	Inappropriate
Attention deficit hyperactivity disorder (76%)	Stimulant medication and/or alpha 2 agonist plus ≥adequate pharmacologic treatment of any secondary comorbidities	Psychotherapy monotherapy with an NOS presentation No medication but has a severe co-occurring problem (e.g., major depression, bipolar disorder, recent inpatient hospitalization discharge, suicidality) and that is being treated adequately	No medication for presentations other than NOS	Medication not indicated for any of the patient's diagnoses or contraindicated polypharmacy
Disruptive behavior disorders (53%)	Psychotherapy plus ≥adequate pharmacologic treatment of any secondary comorbidities	Prescribed an atypical antipsychotic with evidence of significant aggression/disruptive behavior	Comorbidities that are not adequately treated	Medication not indicated for any of the patient's diagnoses or contraindicated polypharmacy
Anxiety disorders (32%)	Psychotherapy with or without an antidepressant plus ≥adequate pharmacologic treatment of any secondary comorbidities	An antidepressant with or without psychotherapy with comorbidities only partially treated (e.g., a child with comorbid ADHD treated with an antidepressant and therapy without a medication indicated for ADHD, but has only had 2 medication management appointments)	Comorbidities that are not adequately treated	Medication not indicated for any of the patient's diagnoses or contraindicated polypharmacy
Bipolar disorders (25%)	A mood stabilizer plus ≥adequate pharmacologic treatment of any	No medication with an NOS presentation A mood stabilizer and psychotherapy with	Psychotherapy monotherapy (psychotherapy as monotherapy was	Stimulants or antidepressants taken with no mood stabilizer

	secondary comorbidities	comorbidities only partially treated (e.g., a child with comorbid ADHD treated with a mood stabilizer and therapy without a medication indicated for ADHD, but has only had 2 medication management appointments)	adequate for NOS presentation) Treatment for comorbid conditions (other than stimulants and antidepressants) without an intervention indicated for bipolar disorder	Medication not indicated for any of the patient's diagnoses or contraindicated polypharmacy
Depressive disorders (18%)	An SSRI plus ≥adequate pharmacologic treatment of any secondary comorbidities Psychotherapy monotherapy for mild presentations plus ≥adequate pharmacologic treatment of any secondary comorbidities	An SSRI and/or psychotherapy with comorbidities only partially treated	Monotherapy in cases of severe presentations Treatment for comorbid conditions without an intervention indicated for depression	Medication not indicated for any of the patient's diagnoses or contraindicated polypharmacy

Note. The strategy for determining "Treatment pending" ratings was the same regardless of diagnosis: No indicated treatment but evidence that treatment may be forthcoming (e.g., an evaluation, an intake appointment only, or 1-2 medication management sessions). Cases with no diagnosis receiving no treatment were rated as standard of care, while those taking medications that were not indicated were rated as inappropriate.

Rater Background and Agreement

Both professionals who reviewed and rated records for treatment adequacy have been involved with the LAMS study previously and have either been a study interviewer or and consensus expert at the original data collection for the study. The current manuscript is a secondary data analysis, but the data and approach to diagnosis are quite familiar to both raters. The raters did rely on the previously determined diagnoses, which were arrived upon via consensus review, which is considered a gold-standard diagnostic approach. One rater was a child psychiatrist with expertise in psychopharmacology. The other rater was a child psychologist health services researcher with expertise in psychotherapy. Ultimately, the analyses focused on adequacy of psychopharmacology. Notably, the child psychologist rater has spent her career in psychiatry departments within schools of medicine/academic medical centers, and, thus, has attended and continues to regularly attend seminars and lectures with a psychopharmacology focus. Further, as

a licensed psychologist, she has regularly collaborated with medication management providers in her patients' care and has familiarity with psychopharmacology treatment guidelines for childhood mental illness.

Even with previously described differences in clinical practice/expertise, only 25% of participants required a consensus discussion due to discordant psychopharmacology adequacy ratings across the five rating categories (standard of care, acceptable, inadequate, inappropriate, and treatment pending). Cases were discussed if there was any disagreement at all across those ratings. When considering the two collapsed rating groups used for the analysis (standard of care/acceptable vs. inadequate/inappropriate/treatment pending), percent disagreement across raters decreased to 13% (kappa = .73, SE=.03) suggesting substantial interrater agreement. Supplemental Table 3 shows the proportion of cases in which the independent ratings of each rater agreed with the final consensus rating. Supplemental Table 4 shows the proportion of cases in which the independent raters agreed with each other before the consensus discussions. Raters demonstrated substantial agreement with each other and had similar rates of overlap with the final consensus ratings.

Supplemental Table 3. Crosstabs of Rater 1's (Clinical Child Psychologist) and Rater 2's (Child Psychiatrist) independent ratings with the final consensus rating

	Final Consensus Rating					
	Standard of care/ Adequate		Inadequate/Inappropriate/ Treatment Pending		Total	
Child Psychologist's Ratings	n	%	n	%	N	%
Standard of care/ Adequate	291	94	41	14	332	55
Inadequate/Inappropriate/Treatment Pending	18	6	251	86	269	45
Child Psychiatrist's Ratings	n	%	n	%	N	%
Standard of care/ Adequate	293	95	8	3	301	50
Inadequate/Inappropriate/Treatment Pending	16	5	284	97	300	50
Total (n and row %)	309	51	292	49	601	100

Supplemental Table 4. Crosstabs of the Clinical Child Psychologist's and Child Psychiatrist's independent ratings.

	Child Psychiatrist's Ratings					
	Standard of care/ Adequate		Inadequate/Inappropriate/ Treatment Pending		Total	
Child Psychologist's Ratings	n	%	n	%	N	%
Standard of care/ Adequate	276	92	56	19	332	55
Inadequate/Inappropriate/Treatment Pending	25	8	244	81	269	45