Treatment of Maladaptive Aggression in Youth: CERT Guidelines I. Engagement, Assessment, and Management

abstract

OBJECTIVE: To develop guidelines for management and treatment of maladaptive aggression in the areas of family engagement, assessment, and diagnosis, and initial management, appropriate for use by primary care clinicians and mental health providers. Maladaptive aggression in youth is increasingly treated with psychotropic medications, particularly second-generation antipsychotic agents. Multiple treatment modalities are available, but guidance for clinicians’ assessment and treatment strategies has been inadequately developed. To address this need, the Center for Education and Research on Mental Health Therapeutics and the REACH Institute convened a steering group of national experts to develop evidence-based treatment recommendations for maladaptive aggression in youth.

METHODS: Evidence was assembled and evaluated in a multistep process that included a systematic review of published literature; a survey of experts on recommended treatment practices; a consensus conference that brought together clinical experts along with researchers, policy makers, and family advocates; and subsequent review and discussion by the steering committee of successive drafts of the recommendations. The Center for Education and Research on Mental Health Therapeutics Treatment of Maladaptive Aggression in Youth (T-MAY) guidelines reflect a synthesis of the available evidence, based on this multistep process.

RESULTS: The current article describes 9 recommendations for family engagement, assessment, and diagnosis as key prerequisites for treatment selection and initiation.

CONCLUSIONS: Recognizing the family and social context in which aggressive symptoms arise, and understanding the underlying psychiatric conditions that may be associated with aggression, are essential to treatment planning. Pediatrics 2012;129:e1562–e1576

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KEY WORDS: aggression, guidelines, behavior disorders/problems, diagnostic procedures, family interventions

ABBREVIATIONS:
CD—conduct disorder
ODD—oppositional defiant disorder
RCT—randomized controlled trial
T-MAY—treatment of maladaptive aggression in youth

Views expressed in this article are those of the authors and do not necessarily reflect positions of the Agency for Healthcare Research and Quality or the other funding agencies. These guidelines were developed with the involvement of members from the American Academy of Pediatrics, but were not formally endorsed by the American Academy of Pediatrics.

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COMPANION PAPER: A companion to this article can be found on page e1577, online at www.pediatrics.org/cgi/doi/10.1542/peds.2010-1361.
A 14-year-old boy presents with persisting pain and swelling at the base of his thumb after a schoolyard fight the previous day. The family recently moved to the area and this is a new patient. Examination is consistent with a Bennett’s fracture of the first metacarpal. In addition to referring for orthopedic treatment, the evaluating physician obtains further history. The youngster has been treated for attention-deficit/hyperactivity disorder with psychostimulant medication with improvement in his academic performance, although it has continued to be difficult for him to sustain friendships. His new junior high school is “much rougher,” and almost immediately he began to be taunted. His mother reports that he has been brooding and irritable recently, and has had trouble sleeping. He reports that he “just snapped” and punched another boy who was “driving me crazy.” He was suspended from the school, which has a zero-tolerance policy for fighting. He blurs out that he wishes he could have “really bruised that dude” before the fight was broken up. Does this boy have maladaptive clinical aggression? What evaluation is necessary and what treatment might help?

**MALADAPTIVE AGGRESSION**

Maladaptive aggression in youth may have multiple causes, and may lead to disrupted peer and family relationships, expulsion from school, or involvement with juvenile justice. Maladaptive aggression is here classified as (1) “impulsive aggression,” usually unplanned, unprofitable, and poorly controlled, or (2) “predatory aggression,” or “planned, profitable, and self-controlled aggressive behavior.” Both forms of aggression may include verbal aggression in which a child makes clear threats of violence toward self or others. Maladaptive aggression, particularly its impulsive subtype, may be a symptom of several common child psychiatric disorders.

Although symptoms of many disorders may overlap, psychosocial treatment and psychopharmacological strategies to control the symptom of aggression should be distinct, and based on the underlying condition and context. Treatment planning requires arriving at both a diagnosis and at an understanding (preferably shared) with the youngster and family of any contextual factors that precipitate or perpetuate aggression.

The Treatment of Maladaptive Aggression in Youth (T-MAY) guideline development process targeted the impulsive form of maladaptive aggression (ie, a pattern of unplanned and poorly controlled aggression), as opposed to “predatory” aggression. This is because the treatment approach to predatory aggression is primarily behavioral. The treatment recommendations integrate evidence from clinical trials, expert input, and clinical practice through a systematic framework to optimize treatment efficacy and safety. The guidelines are intended for both primary care and specialty mental health prescribers.

**ROLE OF PHARMACOLOGICAL AND NONPHARMACOLOGICAL THERAPIES**

Psychotropic agents, particularly second-generation antipsychotics and mood stabilizers, are increasingly prescribed to children and adolescents to treat maladaptive aggression. Antipsychotic prescriptions for outpatient youth increased sixfold from 1995 to 2002, with most prescriptions for the treatment of aggressive, nonpsychotic youth despite limited controlled data supporting their use for aggression. Increase in off-label prescription of psychotropic agents has raised concerns over treatment decision-making, safety, appropriate alternative therapies, long-term management, use of multiple drug regimens, and appropriate parent engagement and education. Although meta-analyses and treatment/research recommendations have begun to explore evidence-based practices for managing pediatric impulsive aggression in inpatient specialty mental health settings, limited information exists to guide the outpatient care of youth with impulsive aggression, either in primary care or mental health settings. Although medication can serve as a key component of a comprehensive treatment plan that is based on a thorough assessment and includes psychosocial intervention, particularly if aggressive behavior constitutes an imminent danger, the treatment recommendations emphasize that medication should not preempt a comprehensive strategy and its incorporation should reflect a careful, individualized assessment that balances potential benefits and risks. These issues are addressed in greater detail in the accompanying article.

**THE NEED FOR GUIDANCE**

To address the need for guidance in this complex area, the Center for Education and Research on Mental Health Therapeutics spearheaded an initiative to develop consensus and educate providers. The Center for Education and Research on Mental Health Therapeutics, funded by Agency for Healthcare Research and Quality, is conducted at Rutgers University in collaboration with Columbia University/New York State Psychiatric Institute, the Resource for Advancing Children’s Health (REACH) Institute, the American Psychiatric Association, and others, building on experts’ experiences with guideline development, particularly the Treatment Recommendations for the use of Antipsychotics for Aggressive Youth and the Texas Children’s Medication Algorithm Project. It brought together leading national experts, high-level state policymakers from the New York, Texas, and California Offices of Mental Health, and parent advocates, and sponsored a steering...
committee of representatives from these stakeholder groups to develop the T-MAY guidelines.

The T-MAY steering committee developed guidelines through (1) extensive literature reviews, (2) an expert consensus survey, and (3) a 2-day consensus conference. Systematic literature reviews identified the research evidence supporting specific recommendations and the extent to which additional research was needed. Review areas focusing on aggression included (1) standards for assessment and diagnostic procedures, (2) the role of family engagement and therapeutic alliance in working with children and families, (3) evidence for efficacious psychotherapeutic interventions, (4) efficacious pharmacotherapeutic procedures, and (5) optimal approaches for identifying and managing medication side effects.

Based on the literature searched, a 28-item expert consensus survey was distributed to T-MAY participants, to identify optimal treatment preferences for specific common clinical challenges and to guide the T-MAY steering committee and consensus conference in generating recommendations. Final T-MAY recommendations were developed by core writers, under the guidance of the larger steering committee, and with the ultimate input of all consensus conference attendees via distribution of manuscript drafts.

Each recommendation was graded on the basis of the Oxford Centre for Evidence-Based Medicine grade of evidence (A–D) system (see www.cebm.net/levels_of_evidence.asp). In addition, the strength of each recommendation, in terms of the extent to which experts agreed that the recommendation is highly appropriate and a “first-line” practice, was reached for each recommendation. Recommendation strength was rated in 4 categories: very strong (>90% agreement), strong (>70% agreement), fair (>50% agreement), and weak (<50% agreement). The recommendations in the guidelines were developed only in areas of management that had at least “strong agreement” among experts.

In this first article, literature reviews and resulting recommendations for T-MAY’s first 2 major areas of investigation are presented: (1) assessment and diagnosis, and (2) initial management and treatment planning. The companion article presents the literature reviews and results for the other 3 areas (psychotherapeutic and psychopharmacologic interventions, and side effects management). The method section describes both the literature review and consensus conference, and the results section includes the T-MAY steering committee’s treatment recommendations, as well as the research evidence that supports them.

**METHOD**

**Literature Review**

Relevant studies, limited to literature on youth 0 to 18 with overt aggressive behavior, were identified via Medline, PsychINFO, and CINAHL searches of the literature from 1980 to August 2007, as well as examining bibliographies of other published reviews for appropriate studies. This review was limited to studies that met the following 4 requirements: (1) explicitly addressed overt aggression, specifically physical or verbal confrontation with others, associated defiant behavior, explosive outbursts or irritability, and the destruction of property; (2) reported baseline and end point means and SDs on a valid rating scale of overt aggression, conduct disorder (CD), or oppositional defiant disorder (ODD), or reported significance testing and probability values; (3) were published in English in a peer-reviewed journal; and (4) studied outpatient children and adolescents <19 years. Although we primarily sought trials with randomized, controlled design, open label and chart review studies were included when research was limited in a particular area.

Articles related to assessment and diagnosis involved terms in 4 subcategories: (1) engagement, alliance, patient-doctor relationship, support, and empathy; (2) parent and family; (3) evaluation, assessment, measure, diagnosis, screen, and scale; and (4) referral. Key terms were constructed to include different formulations of a specific concept (ie, “empower” encompassed empowerment, empowering, and so on), and were crossed with terms for aggression (eg, aggression, anger, conduct problems, conduct disorder), limited to age 0 to 18 years. Articles were pooled by using RefWorks software.

**Consensus Conference**

A 2-day consensus conference composed of 90 leaders in child, adolescent, and family mental health issues, identified by the T-MAY group for their publications and community activities, met in February 2007 to (1) develop consensus treatment recommendations for outpatient medication management of clinical aggression; (2) integrate new evidence on treatment efficacy, side effects, and parent education/engagement; (3) develop clinical tools to improve clinical decision-making; and (4) identify knowledge gaps, research priorities, and needed new clinical and educational initiatives. During the first day, experts presented information on (1) prescribing trends and epidemiologic data, (2) assessment and diagnosis challenges in outpatient settings, (3) evidence for the management of aggression in youth, (4) safety and side-effect management, (5) parent education and engagement, and (6) results of the expert consensus survey. Panel discussions investigated the risks and benefits of treatment from the perspectives of parents, policy makers, and providers.
Four workgroups addressed (1) assessment and diagnosis guidelines; (2) psychopharmacology guidelines; (3) side-effect assessment and management guidelines; and (4) parent education, engagement, and psychosocial interventions. Based on its synthesis of the current evidence, survey data, and issues related to clinical safety and feasibility, each workgroup drafted potential treatment recommendations. During day 2 of the conference, participants discussed the components of a clinical tool kit, refined the initial guideline drafts, and reviewed next steps.

RESULTS

Our results are presented in 2 parts: (1) the numeric findings from the literature reviews, and (2) recommendations developed through the consensus process, along with supporting text derived from the review. Specific details of methods and findings from the consensus survey are presented in a separate article.

Literature Review

By using PsychInfo and Medline, we identified publications that reported controlled trials, open-label studies, and case reports of psychopharmacological and psychosocial treatment of child and adolescent aggression. To inform policy and services issues, we also included publications on challenges in treatment presented by aggressive youth and their families. Table 1 presents the number and type of articles located for each topic and subcategory. Although “assessment and diagnosis” initially contained 4 subcategories, because of the literature overlaps, subcategories 3 (initial management) and 4 (treatment planning) were combined, also adding subcategory 1 (family engagement), thereby forming a new topic: family engagement, initial management, and treatment planning.

As shown, the subcategories family engagement, initial management, and treatment planning yielded from almost 3000 to nearly 10,000 hits, from which ∼200 to 600 abstracts across the 4 categories were identified for review, including both randomized controlled trials (RCTs) and non-RCTs, with the full text of their corresponding articles retrieved and distributed to 4 core groups of writers. Article subcategories often overlapped, particularly psychosocial interventions and assessment and diagnosis. Only 2 articles18,19 directly addressed treatment-planning strategies, whereas most focused on the patient- and parent-clinician relationship, parent training, and prevention programs for high-risk youth.

For the broad subcategory of assessment and diagnosis, which yielded nearly 10,000 hits, the search was limited to clinical trials and reviews by crossing the following terms: random, clinical, trial, RCT, and review. Results were scanned for terms related to psychometric characteristics, such as sensitivity, specificity, positive predictive value, and negative predictive value.

Because of space considerations, Tables 2 and 3 present the subset of the research studies for each of the 2 topic areas that best met the 4 requirements described in Methods. Note that few studies focused explicitly on the topic, and findings had to be gleaned from incidental aspects of study findings.

Treatment Recommendations

Recommendations were generated from the experts and consensus process pertaining to the initial assessment and management of aggression in outpatient youth. Several recommendations were made by more than 1 work group. The literature review, done subsequently, supported the recommendations. Although presented in a specific order, aspects of each recommendation pertain at multiple points during treatment, and may be tailored to each patient’s specific condition and needs.

1. Engage Patient and Parents During Initial Evaluation (Grade of Evidence: B; Strength of Recommendation: Very Strong)

For the boy in our example, setting the fracture is not enough to solve the problems he is facing. It is noteworthy that his parents sought treatment of his painful hand but had not sought treatment of the emotional and behavioral issues that led to the injury. For those to be addressed, a therapeutic alliance is

<table>
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<tr>
<th>Topic</th>
<th>Subcategory Terms</th>
<th>Total Hits</th>
<th>Articles Included in Review</th>
<th>RCTs</th>
<th>Non-RCTs</th>
<th>Total Articles for Topic</th>
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</thead>
<tbody>
<tr>
<td>Family Engagement, Initial Management, and Treatment Planning</td>
<td>engagement, alliance, patient-doctor relationship, empower, support, empathy psychoeducation, patient education, treatment plan, goal, crisis, plan, manage, expect, prioritize, priority setting community, advocate, outreach, resources, family, organization, services, social services, and mental health services</td>
<td>3075</td>
<td>40</td>
<td>27</td>
<td>13</td>
<td>104</td>
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<tr>
<td>Assessment and Diagnosis</td>
<td>evaluation, assessment, measure, diagnosis, screen, scale, referral</td>
<td>9779</td>
<td>45</td>
<td>11</td>
<td>34</td>
<td>85</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Subjects: No. / Age, y/ Primary Diagnoses</td>
<td>Intervention Characteristics</td>
<td>Primary Measures</td>
<td>Findings</td>
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<tr>
<td>Kazdin et al 2006&lt;sup&gt;21&lt;/sup&gt;</td>
<td>LCS</td>
<td>77/ 6–14 / ODD, CD, ADHD, MDD</td>
<td>Patient: Cognitive PSST. Practice, modeling, role-playing, corrective feedback, and social and token reinforcement used to teach problem-solving skills and manage interpersonal problems. Parent: Parent management training. Extensive practice, modeling, role-playing, feedback, and shaping used to develop concrete parenting skills and specific behavior-change programs. PSST and PMT consisted of 12 sessions, administered individually and on a weekly basis.</td>
<td>(1) Therapeutic Alliance Scale for Children (2) Working Alliance Inventory</td>
<td>Greater child-therapist and parent-therapist alliances improved therapeutic outcomes, parenting skills, and interactions at home. Child and parent alliance evaluations more highly correlated than therapist evaluations in relation to treatment outcomes. Relationship between therapeutic alliance and child/parent improvements not attributed to other factors.</td>
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<tr>
<td>Hogue et al 2006&lt;sup&gt;21&lt;/sup&gt;</td>
<td>Comparative study</td>
<td>100 / adolescents/ substance abuse + behavior problems</td>
<td>(1) Individual CBT. 3-stage model involving treatment planning (prioritizing adolescent problems, formulating treatment contract with adolescent and caregiver, and engaging teen in treatment), intensive CBT (targets problematic behavior through drug education, coping with drug cravings, communication and problem solving, cognitive self-monitoring, and increasing prosocial activities), and termination (focus on relapse prevention). (2) MDFT: targets (1) adolescent identity formation, peer relations, prosocial involvement, and drug use consequences, (2) parenting skills (monitoring, limit-setting, rebuilding parent-adolescent bonds), (3) family interactions, and (4) relationships among different social systems (family, school, peer, recreational, juvenile justice, and so forth).</td>
<td>(1) TLFB interview for substance use (2) CBCL and Youth Self-Report Externalizing and Internalizing dimensions (3) Vanderbilt Therapeutic Alliance Scale-Revised</td>
<td>No alliance effects on treatment retention or behavioral outcomes CBT. In MDFT, stronger parent alliance predicted declines in drug use and externalizing behaviors. Improving initially weak adolescent alliances significantly reduced externalizing behaviors.</td>
<td></td>
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<tr>
<td>Kazdin et al 2005&lt;sup&gt;22&lt;/sup&gt;</td>
<td>LCS</td>
<td>185 / 3–14 / ODD, CD, ADHD, MDD</td>
<td>Families with children 7–14 y received both PSST and PMT. PSST combined cognitive and behavioral techniques to teach problem-solving skills. In PMT, parents saw a separate therapist to develop adaptive parenting practices at home. Families with children 3–6 y received PMT alone. Each treatment consisted of ~12 sessions.</td>
<td>(1) Therapeutic Alliance Scale for Children (2) Working Alliance Inventory (3) Treatment Improvement Scale (4) Treatment Evaluation Inventory</td>
<td>Greater child-therapist and parent-therapist alliances associated with greater therapeutic change, fewer perceived barriers to treatment, and greater treatment acceptability. Results not attributable to other factors (ie, socioeconomic disadvantage, parent psychopathology and stress, child dysfunction, rater effects).</td>
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<tr>
<td>Letendre et al 2003&lt;sup&gt;23&lt;/sup&gt;</td>
<td>LCS</td>
<td>794 / school age / high-risk for aggression</td>
<td>Longitudinal study of multicomponent prevention program for urban, low-income, elementary school children participating in prosocial, school-based groups.</td>
<td>Group leader characteristics, group involvement characteristics. Outcomes: Child behavior rating, CBCL.</td>
<td>Development of prosocial skills decreased aggressive behavior. Education level of leaders and group participation contributed to skill development.</td>
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</table>
necessary. Establishing a therapeutic alliance is critical to treatment planning, adherence, and outcomes.20,47–49 The therapeutic alliance seems to be particularly crucial in the evaluation of aggressive youth, whose symptoms may reflect a variety of diagnoses or predisposing environmental circumstances, and crucial in treatment planning particularly if coercive parenting may have contributed to the problem and its perpetuation.50 Procedures to establish treatment alliance have not yet been systematically tested in aggressive youth, however, although research suggests the importance of cultural competence,24 provider training,51 and provider characteristics.23 The variability of the therapeutic alliance necessitates its re-evaluation at multiple points throughout treatment.25

2. Conduct a Thorough Initial Evaluation and Diagnostic Workup Before Initiating Pharmacological Treatment (Grade of Evidence: B; Strength of Recommendation: Very Strong)

Targeting mere symptom reduction, as with pharmacological intervention, will not address precipitating or perpetuating factors. For the boy in our example, trauma stemming from school stress must also be evaluated, and the history suggests that his anger is escalating. Impulsive aggression is a symptom targeted for treatment in multiple childhood disorders, including attention deficit/hyperactivity disorder, conduct disorder, and comorbid conditions.22 Given the multiple etiologies of aggression and the variety of risk factors, assessment and intervention must also be comprehensive.22

Table 2 Continued

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Subjects: No./ Age, y/ Primary Diagnoses</th>
<th>Intervention Characteristics</th>
<th>Primary Measures</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Jackson-Gilfert et al 200124</td>
<td>LCS 18 / 12-17 / CD, substance abuse</td>
<td>Youth received up to 25 sessions of MDF (see above), which was adapted to African-American teenagers through culturally salient themes: anger/rage, alienation, respect, and journey from boyhood to manhood. (1) Cultural Theme Rating Scale (2) Vanderbilt Psychotherapy Processing Scale</td>
<td>Discussing developmentally and culturally related themes improved therapist-adolescent alliance and adolescent engagement. Discussing trust and mistrust negatively predicted therapist-adolescent relationship. Discussing racial identity/racial socialization not linked to adolescent engagement.</td>
<td>Positive working alliance assessed after 3 mo in treatment predicted positive psychological changes and lower rates of recidivism. Positive working alliance assessed early in treatment predicted negative outcomes. Initially optimistic assessments may be prognostic of slow progress or treatment failure.</td>
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<tr>
<td>Florsheim et al 200025</td>
<td>LCS 78 / 15-6 / delinquency</td>
<td>Youth placed in 1 of 3 treatments: (1) proctor homes (27): individual therapy, special educational services. (2) group homes (30): staff supervision, intensive group-oriented treatment, special education services. (3) restitution-oriented work program (21): group-oriented treatment, special education services.</td>
<td>Positive working alliance assessed after 3 mo in treatment predicted positive psychological changes and lower rates of recidivism. Positive working alliance assessed early in treatment predicted negative outcomes. Initially optimistic assessments may be prognostic of slow progress or treatment failure.</td>
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<tr>
<td>Thompson et al 200726</td>
<td>RCT 19 families/ 12-18 / delinquency, truancy, family conflict, running away</td>
<td>12 sessions of strength-based family therapy delivered to families in home rather than office. ‘Engagement Activities’ (experiential interactions and skill-building exercises that elicited active participation from all family members) conducted at beginning of each session.</td>
<td>Families reported positive connections to and collaborative relationships with family therapists. Problem solving /dealing with specific family issues enhanced therapeutic alliance. Positive relationship building within family increased therapeutic engagement.</td>
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ADHD, attention-deficit/hyperactivity disorder; CBCL, Child Behavior Checklist; CBT, cognitive behavior therapy; LCS, Longitudinal Cohort Study; MDD, major depressive disorder; MDF, multidimensional family therapy; OLS, Open Label Study; PMT, parent management training; PSST, problem-solving skills training; TLFB, timeline follow-back.
<table>
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<tr>
<th>Measure</th>
<th>Study</th>
<th>Design</th>
<th>Subjects: No./Age, y/ Primary Diagnoses</th>
<th>Type of Measure/Respondent</th>
<th>Findings</th>
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<tr>
<td>Outburst Monitoring Scale</td>
<td>Kronenberger et al 2007(^{27})</td>
<td>RCT</td>
<td>62 / 12–17 / aggressive-disruptive behaviors</td>
<td>Questionnaire derived from Yudofsky Overt Aggression Scale 17-item measure of specific aggression (correlates specifically with parent-reported symptoms of ODD, CD) / Parent</td>
<td>Good internal consistency, strong correlations with other measures of aggressive/disruptive behavior, good differential validity, and sensitivity to change during medication trial. Quick, valid alternative for measuring frequencies of specific aggressive behaviors in clinical and research settings.</td>
</tr>
<tr>
<td>Impulsive-Premeditated Aggression Scale</td>
<td>Mathias et al 2007(^{\text{28}})</td>
<td>LCS</td>
<td>66 / 13–17 / CD</td>
<td>30-item Likert scale questionnaire / Self-report</td>
<td>Compared with premeditated aggression factor, impulsive aggression factor related to broader range of personality, thought, emotional, and social problems. Characterizing aggressive behavior into two subtypes can differentiate adolescents with CD.</td>
</tr>
<tr>
<td>Children's Aggression Scale - Parent Version (CAS-P)</td>
<td>Halperin et al 2002(^{\text{29}})</td>
<td>LCS</td>
<td>75 / 7–11 / CD, CD+ADHD, ODD, ODD+ ADHD, ADHD</td>
<td>33-item Likert scale (CAS-P) questionnaire targeting verbal aggression, aggression against objects and animals, provoked physical aggression, unprovoked physical aggression, and use of weapons / Parent</td>
<td>Excellent internal consistency. Distinguishes type/severity of aggressive behaviors and their settings. Did not distinguish clinical control children from those with ADHD only. Excellent reliability and convergent/discriminant validity Can distinguish aggression from oppositional and other disruptive behavior disorders.</td>
</tr>
<tr>
<td>Children's Aggression Scale - Teacher Version (CAS-t)</td>
<td>Halperin et al 2003(^{\text{30}})</td>
<td>LCS</td>
<td>67 / 7–11 / CD, ODD, ADHD</td>
<td>23-item Likert scale (CAS-t) questionnaire targeting verbal aggression, aggression against objects and animals, provoked physical aggression, unprovoked physical aggression, and use of weapons / Teacher</td>
<td>Internally consistent and stable when measuring anger subtypes. Males prone to openly expressing anger; females likely to respond to angry feelings with more rational responses. Anger-out correlated with self-ratings of anger, anxiety, and Type A behavior patterns.</td>
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<tr>
<td>Adolescent Anger Rating Scale (AARS)</td>
<td>Burney, 2001(^{\text{31}})</td>
<td>LCS</td>
<td>792 / 12–19 / instrumental and reactive angry behaviors</td>
<td>38-item scale questionnaire (AARS) measuring instrumental and reactive anger / Self-report</td>
<td>Internally consistent and stable when measuring anger subtypes. Males prone to openly expressing anger; females likely to respond to angry feelings with more rational responses. Anger-out correlated with self-ratings of anger, anxiety, and Type A behavior patterns.</td>
</tr>
<tr>
<td>Children's Inventory of Anger (ChIA)</td>
<td>Nelson and Finch, 2000(^{\text{33}})</td>
<td>LCS</td>
<td>1600 / 6–16</td>
<td>39-item questionnaire (ChIA) involving 4 subscales: frustration, physical aggression, peer relationships, and authority relations / Self-report</td>
<td>Normed on age-stratified national representative sample.</td>
</tr>
<tr>
<td>Children's Hostility Inventory (CHI)</td>
<td>Kazdin et al 1987(^{\text{34}})</td>
<td>LCS</td>
<td>255 / 6–12/overt antisocial behavior, internalizing/externalizing symptoms</td>
<td>38-item questionnaire (CHI). Subtests = assaultiveness, indirect expression of hostility, irritability, negativism, verbal hostility, etc. / Self-report</td>
<td>Criterion validity acceptable.</td>
</tr>
<tr>
<td>Modified Overt Aggression Scale (MOAS)</td>
<td>Donovan et al 2000(^{\text{35}})</td>
<td>RCT</td>
<td>10 / 10–18 / CD, ODD</td>
<td>MOAS score based on frequency and severity of outbursts during last week (physical aggression toward others, physical aggression toward self, aggression toward property, or verbal aggression) / Independent evaluator</td>
<td>Excellent reliability</td>
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<td></td>
<td>Kronenberger et al 2007(^{36})</td>
<td>LCS</td>
<td>24 / 12–16 / ADHD + CD/ODD + aggression</td>
<td>MOAS (as above) / Parent</td>
<td>Sensitive to improvement in aggressive behavior during medication treatment.</td>
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<tr>
<td>Measure</td>
<td>Study</td>
<td>Design</td>
<td>Subjects: No./Age, y/ Primary Diagnoses</td>
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<tr>
<td>Rating of Aggression Against People and Property (RAAPP)</td>
<td>Findling et al 200037</td>
<td>RCT</td>
<td>10 youths in treatment arm; 10 control youths.</td>
<td>Single-item, 1-5 scale (RAAPP) of severity of aggressiveness during the past week / Clinician</td>
<td>Scores differed between treatment groups over time.</td>
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<tr>
<td></td>
<td>Kemph et al 199339</td>
<td>OLS</td>
<td>17 / 5–15 / severe aggression</td>
<td></td>
<td>Sensitive to medication treatment.</td>
</tr>
<tr>
<td></td>
<td>Kronenberger et al 200736</td>
<td>OLS</td>
<td>24 / 12–16/ ADHD + CD/ODD + aggression</td>
<td></td>
<td>Sensitive to improvement in aggressive behavior during medication treatment.</td>
</tr>
<tr>
<td>Nisonger Child Behavior Rating Form (NCBR)</td>
<td>Aman et al 198619</td>
<td>LCS</td>
<td>326 / 3–16 / mental retardation</td>
<td>71-item questionnaire (NCRF) measuring problem behaviors / Parent and Teacher</td>
<td>High internal consistency.</td>
</tr>
<tr>
<td></td>
<td>Tasse et al 199640</td>
<td>LCS</td>
<td>326 / 3–16 / mental retardation</td>
<td></td>
<td>Sensitive to improvement in aggressive behavior during medication treatment.</td>
</tr>
<tr>
<td></td>
<td>Lecavalier et al 200441</td>
<td>LCS</td>
<td>330/ 3–18 / autism spectrum disorders</td>
<td></td>
<td>High correlations between analogous subscales from the Aberrant Behavior Checklist.</td>
</tr>
<tr>
<td>Aberrant Behavior Checklist (ABC)</td>
<td>Aman et al 198542</td>
<td>NA</td>
<td>NA</td>
<td>58-item questionnaire (ABC) measuring (1) irritability, agitation, crying, (2) lethargy, social withdrawal, (3) stereotypic behavior; (4) hyperactivity, noncompliance, and (5) inappropriate speech / third party informant (i.e. teacher, parent)</td>
<td>Good internal consistency and test-retest reliability.</td>
</tr>
<tr>
<td></td>
<td>Rojahn and Helsel, 199143</td>
<td>LCS</td>
<td>204 / not specified / mental retardation + psychiatric disturbance</td>
<td>Institutionelized severe mental retardation; mean age 29 y</td>
<td>Generally moderate inter-rater reliability. Validation established for most subscales.</td>
</tr>
<tr>
<td></td>
<td>Freund and Reiss, 199144</td>
<td>LCS</td>
<td>110 /5–25 /mental retardation</td>
<td></td>
<td>Satisfactory internal consistency.</td>
</tr>
<tr>
<td></td>
<td>Marshburn et al 1992 (ABC-Community)45</td>
<td>Comparative Study</td>
<td>666 / /mental retardation</td>
<td></td>
<td>Inter-rater reliability varied between subscales but was relatively low.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sensitive to psychiatric diagnoses and age.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adequate to excellent test-retest reliabilities for all factors on parent and teacher ratings.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adequate parent-teacher cross-informant reliabilities for at least four of the factors.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Useful, reliable instrument for assessing maladaptive behaviors in young, developmentally disabled outpatients.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Classroom placement and age significantly affected subscale scores.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Gender failed to affect ratings.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High congruence with original ABC.</td>
<td></td>
</tr>
</tbody>
</table>
context of maladaptive behaviors. This should include collateral information and evaluation of developmental context and parenting style.

Parenting style, even in caring parents, may perpetuate children’s anger and aggressive behavior. Assessment of the current environment for risk factors, such as neighborhood violence, pressure to join gangs, and the presence of weapons in the home will inform proper treatment sequencing.

3. Assess Treatment Effects and Outcomes With Standardized Measures (Grade of Evidence: A; Strength of Recommendation: Very Strong)

For the boy in our example, it is important to evaluate his aggression at baseline to determine if it increases without treatment or improves with treatment. Clinical impressions at a crisis presentation may not provide full baseline information. Screening and assessment tools, to characterize or quantify symptoms and serve as benchmarks of treatment progress, vary according to their data-gathering style, content, time frame, and scale.

Scales assessing aggression comprise a bimodal group: some are adapted from the adult literature and are mainly applicable in clinical practice, whereas others address theoretical aspects of aggression and are mainly used in research. A number of psychometric analyses and clinical trials support the validity and reliability of various aggression measures for children and adolescents (see online tables at www.T-May.org). The Children's Aggression Scale-Parent and -Teacher versions, for example, which allow respondents to rate the frequency of very specific aggressive behaviors, shows excellent internal consistency and can identify aggression as a specific risk factor in oppositional and other disruptive behavior disorders.

Similarly specific, the Impulsive/Premeditated Aggression scale identifies subtypes of aggressive behavior among adolescents with CD, and has shown that impulsive aggression, compared with premeditated aggression, is associated with a broader range of thought, emotional, and social problems. The Outburst Monitoring Scale is particularly useful for both research and clinical settings, as it can reliably measure specific aggressive behaviors in evaluations as well as during treatment. Aggression scales are completed by parents (eg, Outburst Monitoring Scale), children (eg, Children's Aggression Scale-Parent), teachers, or professionals (eg, Children's Inventory of Anger, Adolescent Anger Rating Scale, EARL-2-B [Early Assessment Risk List - Boys], WAI [Weinberger Adjustment Scale], EBS [Emotional Behavior Scale], BIS [Barratt Impulsiveness Scale]).

Behavior rating scales for disruptive behavior disorders are available in the public domain. In addition to characterizing symptoms, standardized aggression scales also show efficacy in monitoring therapeutic effects of psychotropic medications. Identifying risk may promote use of environmental interventions, such as school-based violence prevention programs, which are differentially more effective for children with higher risk, to decrease aggression and increase in social competence. Such interventions may complement individualized treatment of aggressive behavior.

Diagnostically, it is necessary to distinguish between ODD and CD, and to evaluate the presence of other disorders, such as mood or anxiety disorders, posttraumatic stress disorder, substance abuse, and intellectual disabilities. Diagnostic comorbidity is extensive, and has significance for prognosis. Clinically significant subtypes of CD vary according to age of onset, presence of overt/covert conduct problems, and self-control in times of stress.

Gender differences in aggression, ODD, and CD have been noted, and although

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**TABLE 3 Continued**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Study</th>
<th>Design</th>
<th>Subjects: No./Age, y</th>
<th>Primary Diagnoses</th>
<th>Type of Measure/Respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown et al 2002</td>
<td>ABC-Community</td>
<td>LCS</td>
<td>601 A-22</td>
<td>Special education (deafness, blindness, epilepsy, mental retardation, other medical conditions)</td>
<td>Same as ABC but without fifth factor (inappropriate speech)</td>
</tr>
<tr>
<td>Brown et al 2002</td>
<td>ABC-Parent</td>
<td>LCS</td>
<td>601 A-22</td>
<td>Special education (deafness, blindness, epilepsy, mental retardation, other medical conditions)</td>
<td>Valid for special education settings</td>
</tr>
<tr>
<td>Brown et al 2002</td>
<td>ABC-Teacher</td>
<td>LCS</td>
<td>601 A-22</td>
<td>Special education (deafness, blindness, epilepsy, mental retardation, other medical conditions)</td>
<td>Valid for special education settings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Findings</th>
<th>Measure</th>
<th>Study</th>
<th>Design</th>
<th>Subjects: No./Age, y</th>
<th>Primary Diagnoses</th>
<th>Type of Measure/Respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate to large coefficients of congruence. Main effects for gender on Hyperactivity subscale, age on Irritability and Hyperactivity subscales, classroom placement on Stereotypic Behavior subscale.</td>
<td>Brown et al 2002</td>
<td>ABC-Community</td>
<td>601 A-22</td>
<td>Special education (deafness, blindness, epilepsy, mental retardation, other medical conditions)</td>
<td>Valid for special education settings</td>
<td></td>
</tr>
</tbody>
</table>

**Correlation** coefficient of congruence.

**Table 4**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Study</th>
<th>Design</th>
<th>Subjects: No./Age, y</th>
<th>Primary Diagnoses</th>
<th>Type of Measure/Respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown et al 2002</td>
<td>ABC-Community</td>
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<tr>
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<td>601 A-22</td>
<td>Special education (deafness, blindness, epilepsy, mental retardation, other medical conditions)</td>
<td>Valid for special education settings</td>
</tr>
</tbody>
</table>
diagnostic criteria are thought to be biased to identify externalizing behaviors in boys, rather than relational aggression seen in girls, research from a genetic perspective has found that the diagnostic threshold for CD does not differ by gender.69

4. When Acute Aggression Is the Reason for Referral, Conduct a Risk Assessment and, If Necessary, Consider Referral to a Psychiatrist or an Emergency Department for Evaluation (Grade of Evidence: D; Strength of Recommendation: Very Strong)

The frequency, intensity, duration, and triggers for the child’s aggressive behaviors may predict risk of harm to self or others. Risk may also be related to the family history of aggression, family parenting, and discipline style. Further risk factors may reside in the child’s social network, including exposure to drug and alcohol use/abuse. If there is imminent harm, a significant change in mental status, or the family cannot contain the youngster, referral to child protective services may be warranted, if the child or adolescent presents significant risk to self or others, and referral to a psychiatrist or emergency department may be warranted, it is important to maintain contact with the family to provide support during the crisis. On occasion, referral to child protective services may be warranted, if the child’s aggression emerges from an abusive situation.

Behavioral strategies can be effective, such as cueing or prompting, verbal warnings, verbal interventions, quiet time (time out), and time out from reinforcement (time out).16 Use of medication on a “stat” or “p.r.n.” basis should not be considered a standard treatment of youth manifesting aggressive and disruptive behaviors,16,70 but emergency medications may be necessary, taking into account the patient’s current medications and drug use to evaluate potential drug interactions.16

5. Continuously Track and Reassess Aggression Problems (Grade of Evidence: B; Strength of Recommendation: Strong)

Monitoring should occur to evaluate clinical change to achieve an effect over a reasonable time frame for the particular treatment(s). During follow-up, the clinician should evaluate environmental factors and/or changes that might improve or worsen the child’s symptoms, adherence to treatment, and what the family has observed to be helpful.

Functional behavioral assessment of factors that may precipitate or maintain aggressive behavior in different settings is an evidence-based strategy for developing a treatment plan, and for ongoing assessment of treatment efficacy. Parameters of a sufficient medication treatment trial depend on the disorder, symptoms, and the type of medication that is being administered.16 With atypical (second-generation) antipsychotic medications, clinicians should maintain therapy for at least 2 weeks at therapeutic dose before determining the efficacy of the trial.37 Other medications may similarly take several weeks to achieve a full therapeutic effect.71

During follow-up, the clinician should evaluate environmental factors and/or changes that might improve or worsen the child’s symptoms, as well as potential obstacles to treatment and optimal treatment conditions.

6. Obtain Additional Collateral Information as Needed (Grade of Evidence: D; Strength of Recommendation: Strong)

Consult with teachers, parents, and/or other providers involved in the care of the child. Factors underpinning and eliciting a child’s aggression can be quite complex, as in the case of the boy in our example, and may lie outside the scope of expertise of a specific professional, educator, or parent. Close coordination among primary care, mental health, educational, and parent/family sources of information and support is essential to understand the child’s aggression and to develop an adequate management and treatment plan.

7. Provide Psychoeducation for Patients and Families (Grade of Evidence: B; Strength of Recommendation: Very Strong)

Psychoeducation, a method based on clinical findings that patients and families who have accurate information about the mental condition and coping skills necessary to live with it, has been shown to be a critical basis for treatment planning. It underlies implementation of nonpharmacological treatment, further described in the second article, and is a critical concomitant to pharmacological treatment. Psychoeducational techniques, and intensive psychosocial interventions, such as parent management training, school-based social skills training, and prevention programs, are warranted interventions that have shown efficacy in reducing aggression72,75; promoting positive, prosocial, and compliant behavior in children; and encouraging parents to adopt more positive, consistent, and predictable child management strategies.74–78

An important component of psychoeducation is to provide readable informational materials in the family’s preferred language or in a nonwritten format, preferably materials reviewed by parent focus groups for practical usefulness and cultural competence.24,79

Psychoeducation should be tailored to the family: health care clinicians should maximize 2-way communication and effective learning by learning about parents’ and youths’ preexisting concerns, beliefs, and understanding about the causes, consequences, and interventions for aggression, and targeting education to any areas of incorrect assumptions or misinformation.
Busy health care clinics often do not provide optimal learning conditions, so clinicians must seek out additional resources and tools, to provide truly effective education to families struggling with a child or youth with severe clinical aggression. Web sites of organizations that provide appropriate information materials are available in the toolkit accompanying the T-MAY guideline (www. TheReachInstitute/TMAY.html).

8. Develop an Appropriate Treatment Plan With the Patient/Family and Obtain Buy-in (Grade of Evidence: B; Strength of Recommendation: Very Strong)

Collaboratively develop specific treatment goals with the family. Establish a crisis plan by reviewing 24-hour crisis hotlines or an emergency plan in case of increased problems. Families with a child with a mental health problem bring to the first evaluation their ideas about their child’s problem, its causes, and desired interventions. When the clinician works with the family and incorporates their goals and preferred approaches into the treatment plan, families are more likely to remain in treatment, to form a better therapeutic alliance, and to be satisfied with outcomes.20,47,90,81

Childhood aggression is a misunderstood, highly stigmatized problem. Families of an aggressive child may feel angry, guilty, or overwhelmed, and the child’s symptoms make it more difficult for families to obtain support from school and community. Cocrafting a treatment plan must take this into account. Doubt and loss of trust in the clinician may occur if a severe episode of aggressive behavior recurs, so a plan must be developed with the family for how crises should be handled, how the clinician will be available, and other key aspects of successful management. Planning must be coordinated between primary care and specialty mental health with the patient/parent. It is important to define which outpatient and inpatient settings the child may need, including possible waiver programs and 30-day inpatient diagnostic assessments.

9. Help the Family Establish Community Supports (Grade of Evidence: D; Strength of Recommendation: Strong)

Relevant resources in the community include parent advocates and family organizations with capacity to assist other affected children, adolescents, and family members.

Family advocacy and support organizations such as the National Alliance for Mental Illness (nami.org), Mental Health America, Children and Adults with Attention Deficit Disorder, the Federation of Families, and the Depression and Bipolar Support Alliance and/or the Child & Adolescent Bipolar Foundation may provide local support group meetings, online support resources, or volunteered classes for parents to teach them about community resources, children’s educational rights, and evidence-based interventions.

DISCUSSION AND IMPLICATIONS

These T-MAY recommendations strongly emphasize the importance of family and stakeholder engagement and input in the initial understanding, assessment, and treatment planning for maladaptive aggression; however no RCTs could be located that tested the merits of different strategies for obtaining family input and buy-in, and for increasing the therapeutic alliance in aggressive youth and their families. The literature review did not encompass the rich literature on trauma or early childhood precursors to aggression, or the gender, cultural, and demographic factors contributing to expression of aggression, as it focused on treatment studies of overt aggression by using a valid rating scale to measure aggression in outpatient children and adolescents. Thus, although the general strategies described in the treatment recommendations reflect multiple lines of related research as well as expert opinion, there is considerable need for more-rigorous research on specific methods for enhancing the patient- and family-clinician relationship. In particular, the relationship between family engagement and adherence to treatments needs to be better understood, because treatment adherence has been identified as a key intervening variable in achieving desired outcomes.

Under resource constraints common in usual- and primary-care settings, pharmacotherapy can be more accessible than the resources needed for comprehensive evaluation, family engagement, and psychosocial intervention; a scenario that can lead to overreliance on pharmacological solutions. As the treatment recommendations emphasize, however, psychopharmacological treatment most appropriately serves as 1 of multiple tools in a comprehensive treatment approach that is based on the essential prerequisite of a thorough multidimensional evaluation; uses psychosocial intervention as the first line of treatment; fully engages parents and patients in a collaborative treatment strategy; carefully balances treatment risks and potential benefits on an individualized basis; and carefully monitors treatment effects and outcomes with standardized measures. This approach is consistent with work of the American Academy of Pediatrics Task Force on Mental Health,83,84 clinician decision support for primary care providers. The literature review was constrained by specifying the inclusion of measurements of aggression. Table 3 measures were developed for children aged 6 and older. Table 2 participants were school age, adolescent, or adult. This review points to the important need for better assessment tools for aggression, and for clinician training in the systematic assessment of aggression. This is distinct
from screening. Multiple brief screening tools are available and are of demonstrated use in pediatric care; however, if scores indicate concern, the pediatric primary care provider needs tools for more detailed assessment of aggression. Moreover, details about gender ratios of participants, as well as their cultural characteristics, were frequently abridged in the articles reviewed. Hence, generalizability across diverse demographic and cultural background remains to be established in future research.

How treatment is planned, and whether it is collaborative care with a child psychiatrist will depend on practice patterns and availability of specialists. Increasing integration of behavioral health into the primary care medical home, and increased emphasis on prevention, are consistent with the Affordable Care Act. This means that pediatric primary care providers must have the competence to initially assess behavioral health issues, such as maladaptive aggression. The American Academy of Pediatrics Mental Health Task Force Toolkit84 provides tools for differential diagnosis of aggression. The T-MAY recommendations for family engagement, assessment, diagnosis, and initial management offer specific suggestions. Although it is beyond the scope of practice for most pediatric primary care providers to manage complex medication regimes, it is necessary and appropriate for them to understand basic principles of care, to communicate with treating child psychiatrists, and to communicate with children and families in the medical home.

It will be important to carry out services research studies to evaluate specifically recommended T-MAY steps in the assessment of aggression, what part the symptom of aggression plays in deriving a diagnosis, and how treatment planning specifically addresses this difficult symptom that contributes so significantly to social and functional impairment in youth. Closer investigation of impulsive aggression as a symptom crossing existing categorical diagnostic classification boundaries will point toward more context-based diagnostic formulation and more specific and efficacious interventions. Finally, it will be important to develop continuing education approaches to teach clinicians how to apply these guidelines, and to evaluate the benefits of these educational initiatives.

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Members of the T-MAY Steering Committee are as follows: Peter S. Jensen, MD (Chair) (The REACH Institute, New York, NY; Mayo Clinic, Rochester, MN); Stephen Crystal, PhD (Center for Education and Research on Mental Health Therapeutics Principal Investigator) (Center for Education and Research on Mental Health Therapeutics, Rutgers University, New Brunswick, NJ); Elizabeth Pappadopulos, PhD (The REACH Institute, New York, NY, Pfizer, Inc.), Alanna Chait, BS (The REACH Institute, New York, NY, New York Medical College, White Plains, NY); Nancy Scotto Rosato, PhD (Center for Education and Research on Mental Health Therapeutics, Rutgers University, New Brunswick, NJ); M. Lynn Crismon, Pharm D (School of Pharmacy, University of Texas-Austin, Austin, TX); Robert Findling, MD (Department of Psychiatry, Case Western Reserve University, Cleveland, OH); Penelope Knapp, MD (University of California, Davis, Davis, CA); Mark Olfsen, MD (Columbia University/NY State Psychiatric Research Institute, New York, NY); David Woodlock, MS (Four Winds Hospital, Saratoga, NY); Sherrie Bendele, BS (School of Pharmacy, University of Texas-Austin, Austin, TX); Danielle Laraque, MD (Department of Pediatrics, Mt. Sinai School of Medicine, New York, NY); Laurel Leslie, MD, MPH (New England Medical Center—Tufts University, Boston, MA); Mark Wolraich, MD (Department of Pediatrics, University of Oklahoma, Oklahoma City, OK); Christoph Correll, MD (Zucker-Hillside Hospital, Long Island, NY); Tobias Gerhard, PhD (Center for Education and Research on Mental Health Therapeutics, Rutgers University, New Brunswick, NJ); Karen Hart, BS (NAMI California, Sacramento, CA); Cindy Hopkins (Texas Department of Mental Health & Mental Retardation, Austin, TX); Judith A. Lucas, EdD, RN (Center for Education and Research on Mental Health Therapeutics, Rutgers University, New Brunswick, NJ); Nancy Parker (NAMI - New York, NY); and John Lochman, PhD, ABPP (Department of Psychology, University of Alabama, Tuscaloosa, AL).

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Treatment of Maladaptive Aggression in Youth: CERT Guidelines I.
Engagement, Assessment, and Management
Penelope Knapp, Alanna Chait, Elizabeth Pappadopulos, Stephen Crystal, Peter S. Jensen and on behalf of the T-MAY Steering Group

*Pediatrics* 2012;129:e1562; originally published online May 28, 2012;
DOI: 10.1542/peds.2010-1360

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/129/6/e1562.full.html