Complete Summary

GUIDELINE TITLE

Practice parameter for use of electroconvulsive therapy with adolescents.

BIBLIOGRAPHIC SOURCE(S)

Ghaziuddin N, Kutcher SP, Knapp P, Bernet W, Arnold V, Beitchman J, Benson RS, Bukstein O, Kinlan J, McClellan J, Rue D, Shaw JA, Stock S, Kroeger Ptakowski K. Practice parameter for use of electroconvulsive therapy with adolescents. J Am Acad Child Adolesc Psychiatry 2004 Dec;43(12):1521-39. [73 references] PubMed

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GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
CONTRAINDICATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Severe mood disorders or other Axis I psychiatric disorders that do not respond to more conservative treatments including:

- Severe, persistent major depression or mania with or without psychotic features

- Schizoaffective disorder
- Schizophrenia
- Catatonia
- Neuroleptic malignant syndrome

GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness
Treatment

CLINICAL SPECIALTY

Pediatrics
Psychiatry

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To provide the reader with a review of literature pertinent to the use of electroconvulsive therapy (ECT) for the treatment of adolescents
- To provide guidelines for the safe administration of electroconvulsive therapy and the recognition of possible side effects
- To address ethical and legal issues in the treatment of adolescents with electroconvulsive therapy

TARGET POPULATION

Adolescents with severe neuropsychiatric illnesses

Note: This guideline does not address the use of electroconvulsive therapy (ECT) in preadolescent children because of insufficient data and clinical experience.

INTERVENTIONS AND PRACTICES CONSIDERED

Assessment/Evaluation

1. Psychiatric evaluation with clinical interview
2. Review of past treatments with documentation of previous pharmacotherapy
3. Physical examination
4. Laboratory investigation
    - Complete blood count
    - Differential white blood cell count
    - Thyroid function tests
    - Liver function tests
    - Urinalysis and toxicology screen
    - Electrocardiogram
    - Electroencephalogram
    - Computed tomography or magnetic resonance imaging of the brain

    - Serum or urine pregnancy tests for all female patients
5. Pre- and post-treatment cognitive assessment
6. Obtaining informed consent
7. Obtaining a second opinion
8. Monitoring concurrent treatment
9. Monitoring during and after electroconvulsive therapy (ECT):
    - Seizure duration
    - Airway patency
    - Agitation
    - Vital signs
    - Adverse effects (i.e., impairment of memory and new learning, tardive seizures, prolonged seizures, and risks associated with general anesthesia)

Management/Treatment

1. Electroconvulsive therapy
    - Anesthesia (i.e., methohexital)
    - Muscle relaxation (i.e., succinylcholine)
    - Prevention of vagally induced bradycardia and arrhythmias (intravenous atropine or glycopyrrolate)
    - Ventilation with 100% oxygen
    - Unilateral electrode application to the nondominant hemisphere (preferred method)

MAJOR OUTCOMES CONSIDERED

- Remission of symptoms
- Rate of response
- Adverse effects of treatment

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A review of literature regarding electroconvulsive therapy (ECT) in adolescents was completed with a *Medline* search using the key words *electroconvulsive therapy*, *children*, and *adolescents*. Articles published before 1965 that were not available on *Medline* were collected from citations found in published articles.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Each recommendation is identified as falling into one of the following categories of endorsement, indicated by an abbreviation in brackets following the statement. These categories indicate the degree of importance or certainty of each recommendation.

[**MS**] "Minimal Standards" are recommendations that are based on substantial empirical evidence (such as well-controlled, double-blind trials) or expert clinical consensus. Minimal standards are expected to apply more than 95% of the time (i.e., in almost all cases). When the practitioner does not follow this standard in a particular case, the medical record should indicate the reason for noncompliance.

[**CG**] "Clinical Guidelines" are recommendations that are based on empirical evidence (such as case series, open trials) and/or clinical consensus. Clinical guidelines may be expected to apply in approximately 75% of cases. These recommendations should always be considered by the clinician, but there are exceptions to their application.

[**OP**] "Options" are practices that are acceptable, but not required. There may be insufficient empirical evidence to support recommending these practices as minimal standards or clinical guidelines, or more than one approach demonstrates similar levels of supportive evidence. If possible, these practice parameters will explain the pros and cons of these options.

[**NE**] "Not endorsed" refers to practices that are known to be ineffective or contraindicated.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

This parameter was made available to the entire American Academy of Child and Adolescent Psychiatry (AACAP) membership for review in September 2000 and was approved by the AACAP Council in June 2002.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Recommendations are identified as falling into one of four categories of endorsement. These categories, which are defined at the end of the "Major Recommendations" field, indicate the degree of importance or certainty of each recommendation.

Indications

Before an adolescent is considered for electroconvulsive therapy (ECT), he/she must meet three criteria:

- **Diagnosis**: Severe, persistent major depression or mania with or without psychotic features; schizoaffective disorder; or, less often, schizophrenia. ECT may also be used to treat catatonia and neuroleptic malignant syndrome [**MS**].
- **Severity of Symptoms**: The patient's symptoms must be severe, persistent, and significantly disabling. They may include life-threatening symptoms such as the refusal to eat or drink, severe suicidality, uncontrollable mania, or florid psychosis [**MS**].
- **Lack of Treatment Response**: Failure to respond to at least two adequate trials of appropriate psychopharmacological agents accompanied by other appropriate treatment modalities. Both duration and dosage determine the adequacy of medication trials. It may be necessary to conduct these trials in a hospital setting. ECT may be considered earlier in cases in which (1) adequate medication trials are not possible because of the patient's inability to tolerate psychopharmacological treatment; (2) the adolescent is grossly incapacitated and thus cannot take medication; or (3) waiting for a response to a psychopharmacological treatment may endanger the life of the adolescent [**MS**].

Contraindications

Refer to the "Contraindications" field in this summary for information.

Assessment

Psychiatric Evaluation

The clinician determines that the patient has a condition qualifying for ECT by careful psychiatric and medical evaluation [**MS**]. The psychiatric evaluation must include a detailed clinical interview, collateral information from parents or other informants, and documentation of target symptoms by using reliable rating instruments, when appropriate. It is essential that the severity of illness be carefully assessed.

Review of Past Treatments

Past treatments should be carefully reviewed and documented. Documentation of previous pharmacotherapy should include the following: each medication prescribed, dosage, duration of each trial, compliance, response, side effects, and response to augmentation strategies where appropriate [**MS**]. As adolescents often do not fully comply with taking psychotropic medication, medication adherence should be explored by direct methods (i.e., serum or urine drug levels) [**CG**]. Psychotherapeutic treatments and psychosocial interventions, including but not limited to individual psychotherapy, family psychotherapy, cognitive-behavioral therapy, interpersonal therapy, and hospital milieu, should be reviewed [**MS**].

Physical Examination and Laboratory Investigation

While there are no absolute medical contraindications for ECT, there may be relative contraindications that require identification prior to ECT. Every patient considered for ECT must receive a comprehensive physical evaluation [**MS**].

Evaluation of physiological parameters must be completed before the administration of ECT or anesthesia. Appropriate laboratory investigation, required for the diagnosis of a medical condition, must be completed [**MS**]. Laboratory investigation is dictated by clinical assessment [**OP**] and may include a complete blood cell count, differential white blood cell count, thyroid function tests, liver function tests, urinalysis and toxicology screen, electrocardiogram, electroencephalogram, and computed tomography or magnetic resonance imaging of the brain. All female patients must have a serum or urine pregnancy test [**MS**].

Cognitive Assessment

Every adolescent undergoing ECT must have a memory assessment before treatment, at treatment termination, and at an appropriate time after treatment (usually between 3 and 6 months posttreatment) [**MS**].

Informed Consent

Every attempt must be made to educate the adolescent and parents regarding the procedure, its risks, and benefits [**MS**]. This education must be provided with sensitivity to racial, cultural, and developmental issues [**MS**]. Written informed consent for ECT must be obtained from a parent [**MS**]. In addition, the consent or assent of the adolescent should be obtained [**MS**]. The adolescent's ability to consent/assent will depend on his/her cognitive maturity and the severity of psychiatric symptoms.

Some states specify a mandatory minimum waiting period (usually 72 hours) between signing the consent document and commencing treatment. During this period consent may be withdrawn. However, parents and adolescents should be informed that they may withdraw consent for ECT at any time [**MS**].

Familiarity with state and institutional guidelines is necessary to ensure that treatment requirements mandated by the state or the institution are met [**MS**]. Several states have age-related restrictions regarding the use of ECT.

Second Opinion

Every patient being considered for ECT should receive an independent evaluation from a psychiatrist who is knowledgeable about ECT and not directly responsible for the treatment of the patient [**MS**]. The psychiatrist providing the second opinion should review the diagnosis, confirm illness severity and treatment resistance, corroborate the advisability of ECT, and review the adequacy of the workup.

Concurrent Treatment

Supportive treatment of the adolescent should continue during the course of ECT. The severity of symptoms and post-ECT monitoring require placement in an inpatient setting [**MS**]. The patient should participate in the hospital milieu therapy, and support should be offered to the family.

Certain medications are known to interfere with ECT in adults. It is advised that, whenever possible, ECT be administered without concurrent medications [**CG**]. Some psychotropic medications may be used with appropriate monitoring.

ECT Procedure

The following steps are recommended after the decision to treat with ECT has been made by the physician, the appropriate assessments have been conducted, the independent psychiatrist has provided the second opinion, and informed consent has been obtained.

Anesthesia

Anesthesia should be administered by qualified personnel experienced in treating adolescents [**MS**]. The anesthetic agent commonly used is methohexital. Muscle relaxation is achieved with succinylcholine. Intravenous atropine or glycopyrrolate may be administered immediately prior to ECT to protect from vagally induced bradycardia and arrhythmias. However, at the present time, there is a lack of

consensus as to whether atropine should be administered routinely. Patients are ventilated with 100% oxygen before administration of the electrical stimulation.

Administering ECT

After an overnight fast, the patient is moved to a specially designated area where ECT is administered [**MS**]. The treatment team should include a psychiatrist, personnel experienced in anesthesia, and nursing staff trained in the use of ECT [**MS**]. Treatment may begin at either two or three times weekly, with changes to the schedule if the patient experiences a significant degree of confusion [**CG**].

Unilateral electrode application to the nondominant hemisphere is the preferred method. In a critically ill patient (refusal to eat or drink, severe suicidality, florid psychosis, catatonia), treatment may commence with the bilateral electrode placement. Use of brief pulse and an adequate dosage of electricity are recommended [**CG**].

Patient Monitoring

Close monitoring should be provided during and after treatment, until the patient is fully recovered from anesthesia. During treatment, monitoring should include observation of seizure duration, airway patency, agitation, vital signs, and adverse effects. After treatment, observation should be provided in a designated recovery area with provision for expert nursing care. Patients should be monitored for at least 24 hours for late seizures that may occur after the ECT session (tardive seizures) [**MS**]. A neurology consultation should be obtained if recurrent prolonged seizures or tardive seizures occur [**CG**]. Changing from bilateral to unilateral ECT may be indicated for patients who become manic during the course of treatment.

Adverse Effects

Refer to the "Potential Harms" section of this summary for information.

Patient Management after ECT

Although ECT is an effective treatment of an illness episode, there is no evidence that effective treatment of any given episode prevents future relapse. Therefore, ECT should be regarded as an intervention during the acute phase of the illness. Pharmacotherapy and/or other maintenance treatment (in some cases, maintenance ECT) should be initiated after the last ECT treatment [**MS**]. However, at this time there is no experience with maintenance ECT in adolescents.

Definitions:

[**MS**] "Minimal Standards" are recommendations that are based on substantial empirical evidence (such as well-controlled, double-blind trials) or expert clinical consensus. Minimal standards are expected to apply more than 95% of the time (i.e., in almost all cases). When the practitioner does not follow this standard of care in a particular case, the medical record should indicate the reason for noncompliance.

[**CG**] "Clinical Guidelines" are recommendations that are based on empirical evidence (such as case series, open trials) and/or strong clinical consensus. Clinical guidelines may be expected to apply in approximately 75% of cases. These recommendations should always be considered by the clinician, but there are exceptions to their application.

[**OP**] "Options" are practices that are acceptable, but not required. There may be insufficient empirical evidence to support recommending these practices as minimal standards or clinical guidelines, or more than one approach demonstrates similar levels of supportive evidence. If possible, these practice parameters will explain the pros and cons of these options.

[**NE**] "Not endorsed" refers to practices that are known to be ineffective or contraindicated.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is not specifically stated. In general, the recommendations are based on an evaluation of the scientific literature and relevant clinical consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate use of electroconvulsive therapy for adolescents resulting in improved outcomes

POTENTIAL HARMS

Adverse Effects

- Adverse effects of electroconvulsive therapy (ECT) may include impairment of memory and new learning, tardive seizures, prolonged seizures, and risks associated with general anesthesia. In adults the fatality rate associated with ECT is 0.2 per 10,000 treatments and the anesthesia-related mortality rate is 1.1 per 10,000. Adolescents are not believed to be at additional risk from ECT, nor are they are at increased risk from anesthesia-related complications in the immediate recovery period.
- Tardive seizures are a rare but potentially serious side effect. These usually are encountered in adolescents who have a normal electroencephalogram (EEG) prior to treatment and are not receiving seizure-lowering medications during treatment. Seizures that last longer than 180 seconds are considered, by convention, to be prolonged seizures. A prolonged seizure can be

effectively terminated with additional methohexital, diazepam, or lorazepam. Prolonged seizures are clinically significant because they are associated with greater postictal confusion and amnesia, and inadequate oxygenation resulting in increased hypoxia-related risks (cerebral and cardiovascular complications). Appropriate medical consultation should be considered if difficulties are experienced in terminating a prolonged seizure, if spontaneous seizures occur, or if neurological or other physical sequelae appear to be present. In such cases, ECT should be resumed only after the assessment of treatment risks and benefits.

- Other minor side effects include headache, nausea, vomiting, muscle aches, confusion, and agitation. These usually do not persist beyond the day of the treatment. Some of these are secondary to the anesthetic and some secondary to the ECT treatment itself. These should be managed conservatively.

CONTRAINDICATIONS

CONTRAINDICATIONS

There are no absolute contraindications to the use of electroconvulsive therapy (ECT) in adult patients. It has been beneficially used in patients with mood disorders who have coexisting cardiovascular conditions, neurological conditions, and other medical disorders. While there are insufficient data to generalize these findings to adolescent patients, the available literature demonstrates similar directions. Tumors of the central nervous system associated with elevated cerebrospinal fluid levels, active chest infection, and recent myocardial infarction may be considered relative contraindications in adolescents. Prudent practice includes a medical consultation when the treating psychiatrist is faced with a patient who has a concurrent physical illness. Pregnancy is not a contraindication to the use of electroconvulsive therapy, nor is a comorbid psychiatric condition.

QUALIFYING STATEMENTS

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This parameter is not intended to define the standard of care, nor should it be deemed inclusive of all proper methods of care or exclusive of other methods of care directed at obtaining the desired results. The ultimate judgment regarding the care of a particular patient must be made by the clinician in light of all the circumstances presented by the patient and his/her family, the diagnostic and treatment options available, and available resources. Given inevitable changes in scientific information and technology, this parameter will be reviewed periodically and updated when appropriate.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Ghaziuddin N, Kutcher SP, Knapp P, Bernet W, Arnold V, Beitchman J, Benson RS, Bukstein O, Kinlan J, McClellan J, Rue D, Shaw JA, Stock S, Kroeger Ptakowski K. Practice parameter for use of electroconvulsive therapy with adolescents. J Am Acad Child Adolesc Psychiatry 2004 Dec;43(12):1521-39. [73 references] PubMed

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002

GUIDELINE DEVELOPER(S)

American Academy of Child and Adolescent Psychiatry - Medical Specialty Society

SOURCE(S) OF FUNDING

American Academy of Child and Adolescent Psychiatry

GUIDELINE COMMITTEE

Work Group on Quality Issues

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

This parameter was developed by: Neera Ghaziuddin, M.D., M.R.C.Psych. (U.K.); Stanley P. Kutcher, M.D., F.R.C.P.(C.); Penelope Knapp, M.D.

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

As a matter of policy, some of the authors of this practice parameter are in active clinical practice and have received income related to treatments discussed in this parameter. Some authors may be involved primarily in research or other academic endeavors and also may have received income related to treatments discussed in this parameter. To minimize the potential for this parameter to contain biased recommendations due to conflict of interests, the parameter was reviewed extensively by Work Group members, consultants, and American Academy of Child and Adolescent Psychiatry (AACAP) members. Authors and reviewers were asked to base their recommendations on an objective evaluation of the available evidence. Authors and reviewers who believed that they may have a conflict of interest that would bias or appear to bias their work on this parameter were asked to notify the American Academy of Child and Adolescent Psychiatry.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format from the American Academy of Adolescent and Child Psychiatry (AACAP) Web site.

A CD-ROM containing all parameters is available for a fee. See the AACAP Publication Store for more information.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

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