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ABSTRACT

This paper for educators, school psychologists, and counselors attempts to provide guidance for meeting the needs of students with epilepsy. Stressed throughout the paper are ways to provide for the child's special needs while fostering his/her self esteem and full participation in classroom activities. The paper addresses the following topics: (1) what epilepsy is; (2) types of epilepsy; (3) recognizing epileptic seizures; (4) identification, evaluation, and correct placement; (5) consultation; (6) counseling; (7) coordination of programs; (8) research; (9) specific knowledge educators, counselors, and children should have; (10) medicines for epilepsy and their side effects; (11) administration of antiepileptic drugs by school officials; (12) seizure management; (13) epilepsy and academic achievement; (14) epilepsy and athletics; and (15) the future. Contains 22 references. (DB)

Epilepsy in the Classroom: Guidance for Educators

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Running Head: EPILEPSY IN THE CLASSROOM

Abstract

Although society knows far more about epilepsy than a hundred years ago, teachers and educators in general lack even basic knowledge of epilepsy and its effects on children. They also are unable in many cases to deal with their pupils who, ~~in many cases~~ quite, may be experiencing seizures without either the teacher or even the pupil being aware of it. There are also many cases in which pupils who have seizures are falsely accused of daydreaming or disorderly behavior. This can, in turn, lead to some form of punishment for an act which the pupil cannot control. This paper is an attempt to put the problem into perspective. Epilepsy is not only defined, but is brought into focus in order for both teachers and pupils to address the problem. Roles for educators, school psychologists, counselors, and even children are discussed. First aid strategies, medication, and school administration of medications are also reviewed. Physical activities for children with epilepsy are also briefed.

Epilepsy in the Classroom:

Guidance for Educators

We as human beings experience disabilities at different times in our lives. Due to Public Law 94-142, the public school system must now consider the needs of children who have serious disabilities. Among the student body who have received assistance are those who suffer from blindness, deafness, cerebral palsy as well as other handicaps. The greatest need for students with disabilities is self-esteem. This is because self-esteem affects their overall ability to achieve success in life (Walton, 1982).

What is Epilepsy?

To understand how epilepsy affects education, we must first know what epilepsy is. Many people think epilepsy is a disease that is contagious, or even a sign of mental illness. In fact however, epilepsy is neither a disease, nor is it contagious, a sign of mental illness, or even evidence of low intelligence (Epilepsy Foundation of America, 1988). To put simply, epilepsy is a condition in which a person suffers from continuous seizures. These are due to excessive releases of electricity in the brain. Recurrent changes in behavior or activity may also occur (Middleton, Attwell, and Walsh, 1981). Generally speaking, there are two means by which seizures occur: (a) acquired, meaning the person experienced either injuries to the brain, or high fevers, or (b) idiopathic, meaning the seizures occur for no apparent reason (Goldman, 1985).

Types of Epilepsy

There are two main types of seizures: Generalized and Partial (EFA, 1988). Seizures are referred to as generalized if the discharge of neurons affect the entire brain. Seizures are referred to as partial if the discharge of neurons affect only one part of the brain. Generalized seizures include the following:

1. Tonic-Clonic or Grand-Mal. These are seizures which result in loss of consciousness and convulsions.

2. Absence or Petit-Mal. These are seizures which produce blackouts, or loss of awareness. Other symptoms include staring, twitching, or blinking.

3. Myoclonic. These are seizures in which dysfunctional electrical activity throughout the brain causes muscle spasms strong enough to throw a person to the ground.

Partial seizures include the following:

1. Simple-Partial or Akinetic. These are seizures which consist of uncontrolled body movements. While simple-partial seizures usually do not affect consciousness, they may result in changes in how the person looks, sounds, tastes, or feels.

2. Complex-Partial or Psychomotor. These are seizures which result in confusion, loss of awareness, movements such as lip-smacking or picking at clothes. Confusion is usually prolonged following an akinetic seizure and may be mistaken for drug or alcohol abuse.

3. Infantile Spasms. These are sudden, jerks during which

an infant may either reach up for support or bend at the waist.

Middleton et al. (1981) discusses another type of seizure known as febrile convulsion. Febrile convulsions are seizures which are caused by high fevers. Middleton gives several examples of the types of illnesses which are usually associated with febrile convulsions such as scarlet fever, measles, pneumonia, roseola, even severe sore throat and ear infections can bring on febrile seizures. These type of seizures may occur in infants as early as under 6 months although this is rare. Febrile convulsions usually happen between 9 and 20 months. They rarely occur in children over 5 years of age and generally affect approximately 5% of all infants. It should be noted that febrile convulsions do not originate in the central nervous system as other seizures do.

Middleton et al. (1981) also review what is known as "status epilepticus." This is a condition in which an individual is experiencing one seizure after another without a recovery stage occurring between them. In this situation, the individual regardless of age should be rushed to the hospital immediately.

Recognizing Epileptic Seizures

The alertness of school teachers have played a major role in identifying seizures in children which has resulted in diagnosis and successful treatment. The EFA (1987), lists 8 different characteristics that one should remember in attempting to identify childhood seizures.

They are as follows:

1. Staring or loss of awareness. Child fails to respond to attempts to gain attention.

2. Confusion may occur at different periods of time.

3. The child's head may suddenly drop.

4. Muscle tone will end immediately.

5. Rapid blinking of eyes or the eyes may be rolling upward.

6. Blank expression may be present as well as movements of mouth or face.

7. Child may be walking aimlessly accompanied by dazed behavior, or other types of repetitive activity.

8. Involuntary movements of legs or arms.

Knowledge for School Psychologists and Educators

Frank (1985) noted five basic roles for the school psychologist which are also applicable to educators in general:

1. Identification, evaluation, and correct placement. The most fundamental problem in identifying children with epilepsy is the fact that too often, the symptoms of epilepsy are mistaken for daydreaming or deliberate wrongdoing. Further, the children's feelings must be taken into consideration when being questioned about their condition. Finally, follow-up sessions should include the child or adolescent with epilepsy. Discussions concerning all issues such as medication and test results should be encouraged.

2. Consultation with teachers. There are specific educational objectives for both the children and the teacher. A major objective in

a school psychology review would be how epilepsy affects classroom behavior. It is especially important that teachers know the difference between absence seizures and daydreaming as well as the difference between psychomotor seizures and misbehavior (EFA, 1988).

3. Counseling. There are at least two reasons for why a teacher may want to refer children who have had seizures in the classroom to a school psychologist (Frank, 1985): (a) the children are upset from peer reaction to the seizure, or (b) the children are in "status epilepticus" with one seizure following another continuously.

Stress and anxiety may even bring on seizures. It is crucial in these cases that the authorities understand the exact circumstances in which the seizures occur (Stores, 1980).

4. Coordination of Programs. Stores (1980) states that there is a serious problem when it comes to communication between physicians, parents, and teachers. To correct this problem, there should exist a program for teachers that helps focus attention on the needs of children who have epilepsy. One problem is the fact that many teachers feel that this problem is medical rather than educational in nature. For this reason, there should exist "linkage of educational personnel with medical facilities" (Dreisbach, Ballard, Russo, and Schain, 1982, p. 116).

Educators as well as school personnel in general would benefit from a comprehensive epilepsy program as well as families who must cope

with the challenges of having children with epilepsy. Topics should include the following:

1. Understanding what epilepsy is and the types of seizures associated with it.

2. How to deal with seizures occurring in the classroom.

3. Understanding the types of anticonvulsants available and their effects on children; in particular, having the ability to recognize the difference between the effects of the anticonvulsants and other behavior.

4. Learn what the popular misconceptions concerning epilepsy are and correct people and in particular, school authorities who may have unwarranted fears of epilepsy.

5. Know what learning problems children with epilepsy have and the emotional difficulties that accompany them.

6. Develop an individualized education plan which is a "written statement of education procedures and goals" (Dreisbach, et al. 1981 p. 117).

5. Research. Important research topics for those wishing to broaden the knowledge of epilepsy are the correlation between attention deficits and academic achievement, the effects of antiepileptic medications on children who have epilepsy as well as the attitudes of people toward those who have epilepsy (Frank, 1985).

Knowledge for Counselors

There are 5 basic roles for the school counselor (EFA, 1985). They are as follows:

1. School counselors should study the topic of epilepsy thoroughly in order to gain a comprehensive view of the topic.

2. It is important to know that epilepsy has different side effects. In fact, individuals react in different ways to epilepsy as well as to antiepileptic medications.

3. Physical and social problems abound for children who have epilepsy. Become aware of these problems and help children cope with the situation.

4. Both academic and vocational education can benefit children with epilepsy enormously. Treat children with epilepsy the same as other children. Do not expect less of them because of their condition.

5. School personnel in general should alert teachers and administrators to the problems of epilepsy in public schools across America.

Knowledge for Children

There are 8 fundamental points which every child should learn and understand (EFA, 1987):

1. Epilepsy is neither a disease nor is it contagious.

2. Children are not to blame for their condition nor should epilepsy be feared, but rather understood.

3. It is not possible to hurt someone else when children have

seizures. This is simply another misconception which needs correction.

4. There are symptoms which children may have during a seizure such as hearing noises that other people do not hear, or doing an activity while in a daze. These symptoms are brought on by what is referred to as "little seizures" (EFA, 1987 p. 6).

5. Seizures are not a sign of lack of intelligence in any respect. There are thousands of people with seizures who are lawyers, doctors, professors, and professionals of all kinds. People who experience seizures are like everyone else with capabilities and talents like everyone else.

6. One of the most common misconceptions concerning epilepsy is the idea that you can swallow your tongue. This is impossible since the tongue is securely fastened to the bottom part of your mouth. Anyone who knows first aid should understand this.

7. When children experience seizures nothing should be placed in the mouth. This could cause severe damage to teeth, jaw or bones.

8. Every individual regardless of age who has epilepsy should be encouraged to live life to the fullest potential. Epilepsy may be what you have, but it is not something that you are. Keep that in mind.

Medicines for Epilepsy and their Side Effects

A proper understanding of epilepsy medicines by school officials could help the situation enormously. In many cases, school nurses or

physicians are not available at elementary schools. In such a case, children who have epilepsy may be too young to administer their own medication. In such a case, parents should write a formal letter to the school principal granting the school officials permission to administer the required medication. There must be a bottle with the physician's prescription label giving precise instructions as to how and when the medication should be administered. Under no circumstances should school officials administer medication of any sort without prior written consent from the parent and the physician's prescription with clear instructions on the bottle. It is also important that the physician be notified before consent is given to anyone other than the child's legal guardian to administer medication to children.

Drug Facts and Comparisons (1991) divides epilepsy medications into six categories: (a) Barbiturates (b) Hydantoins (c) Succinimides (d) Oxazolidinediones (e) Benzodiazepines (f) Miscellaneous (Facts and Comparisions, 1991, p. 282c). There is one type of barbiturate which serves as an anticonvulsant. This is phenobarbital (PB). There are three types of hydantoins: (a) Phenytoin (b) Mephenytoin (c) Ethotoin. There are three types of Succinimides: (a) Ethosuximide (b) Methsuximide (c) Phensuximide. There are two types of Oxazolidnediones: (a) Paramethadione (b) Trimethadione. There are three types of Benzodiazepines: (a) Clonazepam (b) Clorazepate (c) Diazepam. There are four types of Miscellaneous: (a) Primidone (b) Valproic acid (c) Carbamazepine (d) Phenacemide.

It is important that one understands that epilepsy medications have both a generic (non-brand) name as well as a brand name. The EFA (1990) gives a review of medications for epilepsy with both names for each medication, the average adult dosage, as well as some side effects. The brand name as well as the generic name for phenobarbital is phenobarbital. This is the only anticonvulsant which has the same brand and generic name. The brand name for phenytoin is dilantin. The brand name for mephenytoin is mesantoin. The brand name for ethotoin is peganone. The brand name for ethosuximide is zarontin. The brand name for methsuximide is celontin. The brand name for phensuximide is milontin (Drugs Facts and Comparisons 1991, p. 283e). The brand name for paramethadione is paradione. The brand name for trimethadione is tridione. The brand name for clonazepam is klonopin. The brand name for clorazepate is tranxene. The brand name for diazepam is valium (Drugs Facts and Comparisons 1991, p. 284b). The brand name for primidone is mysoline. The brand name for valproic acid depends upon which of the two medications is being taken. The brand name for valproate is depakene. The brand name for divalproex sodium is depakote. The brand name for carbamazepine is tegretol. The brand name for phenacemide is phenurone.

Since this article is concerned with children who have epilepsy, adult daily dosage will only be given if it is the same as the pediatric dosage. Further, the term "labeled indications" is used by Drugs Facts and Comparisons in reference to the type of seizure or seizures each

medication treats. Labeled indications for antiepileptic drugs are as follows: For phenobarbital, labeled indications are: (a) status epilepticus (b) epilepsy, all forms (c) tonic-clonic. For phenytoin, labeled indications are: (a) tonic-clonic (b) psychomotor. For mephenytoin, labeled indications are (a) tonic-clonic (b) psychomotor (c) focal (These seizures can be referred to as "partial, or focal, onset" Middleton, et al. 1981 p. 8) (d) Jacksonian. For ethotoin, labeled indications are: (a) tonic-clonic (b) psychomotor.

For ethosuximide, methsuximide, phensuximide, paramethadione, trimethadione, and valproic acid (depakene and depakote), the labeled indication is absence seizures only. For clonazepam, labeled indications are: (a) absence (b) myoclonic (c) akinetic. For clorazepate, the labeled indication is partial. For diazepam, the labeled indications are: (a) status epilepticus (b) epilepsy, all forms. For primidone, the labeled indications are: (a) tonic-clonic (b) psychomotor (c) focal. For carbamzepine, the labeled indications are: (a) tonic-clonic (b) mixed (c) psychomotor. For phenacemide, the labeled indication is severe mixed psychomotor.(Drugs Facts and Comparisons 1991 p. 282c)

While the EFA did not list all the side effects of epilepsy medicines due to lack of space, it does give enough for the purposes of this article. Readers who wish to learn more about anticonvulsants should consult the Physicians Desk Reference, Drugs Facts and Comparisons, or their physician. The EFA (1990) under the heading entitled "Some Side Effects" lists the side effects for 17 different epilepsy medications. They are as follows:

For celontin (methsuximide), some side effects are: (a) blood dyscrasias (b) irritability (c) nausea (d) appetite loss (e) clumsiness (f) rash (g) drowsiness (h) dizziness. For klonopin (clonazepam), some side effects are: (a) drowziness (b) clumsiness (c) behavior changes (d) tremor (e) hair loss (f) hairiness (g) appetite loss. For depakene (valproate), some side effects are: (a) upset stomach (b) altered bleeding time (c) liver toxicity (d) hair loss (e) weight gain (f) tremor. For diamox (acetazolamide), some side effects are: (a) numbness of extremities (b) appetite loss (c) freqent urination (d) drowsiness (e) confusion. For dilantin (phenytoin), some side effects are: (a) clumsiness (b) insomnia (c) motor twitching (d) nausea (e) rash (f) gum overgrowth (g) hairness (h) thickening of features. For mebaral (mephobarbital), some side effects are: (a) dizziness (b) headache (c) nausea (d) skin rash (EFA, 1990 p. 11).

For mesantoin (mephenytoin), some side effects are: (a) blood dyscrasias (b) skin rashes (c) clumsiness (d) double vision (e) tremor (f) drowsiness. For mysoline (primidone), some side effects are: (a) clumsiness (b) vertigo (c) appetite loss (d) fatigue (e) drowsiness (f) hyperirritability. For paradione (paramethadione), some side effects are: (a) nausea (b) appetite loss (c) insomnia (d) double vision (e) skin rash (f) bleeding gums (g) blood dyscrasias. For peganone (ethotoin), some side effects are: (a) nausea (b) fatigue (c) insomnia (d) skin rash (e) fever (f) headache (g) dizziness (h) numbness. For phenobarbital (phenobarbital), some side effects are: (a) drowsiness

(b) irritability (c) hyperactivity. For phenurone (phenacemide), some side effects are: (a) appetite loss (b) drowsiness (c) insomnia (d) psychic changes (e) hepatitis (f) nephritis (g) blood dyscrasias. For tegretol (carbamazepine), some side effects are: (a) dizziness (b) drowsiness (c) blurred or double vision (d) nausea (e) skin rashes (f) blood dyscrasias (g) weight gain. For tranxene (clorazepate), some side effects are: (a) drowsiness (b) fatigue (c) clumsiness (d) depression (e) headache (f) tremor. For tridione (trimethadione), some side effects are: (a) nausea (b) appetite loss (c) insomnia (d) skin rash (e) bleeding gums (f) blood dyscrasias. For zarontin (ethosuximide), some side effects are: (a) appetite loss (b) nausea (c) drowsiness (d) headache (e) dizziness (f) fatigue (EFA, 1990 p.13).

Administration of Antiepileptic Drugs by School Officials

As previously indicated, school officials cannot administer drugs to children without prior written consent of the parents as well as a physician's prescription label on the bottle containing the medication. However to give general readers an idea of how antiepileptic or epilepsy medications are administered to children, the pediatric dosages for these medications are stated here. They have been taken from Drugs Facts and Comparisons (1991). Specific page numbers are also cited. It should be noted that Drug Facts and Comparisons is a work which is used by pharmacists which is continually updated. Different dates will therefore be cited for some drugs. For purpose of clarity, the order of drugs will follow the EPA 1990 work which begins with the drug celontin

and ends with the drug zarontin.

Pediatric dosage for celontin or methsuximide as Drugs Facts and Comparisons (1991) refers to it is as follows: "The 150 mg capsule facilitates pediatric administration." (Drug Facts and Comparisions 1991, p. 283e). Pediatric dosage for klonopin (clonazepam) is as follows: " Infants and children (up to 10 years or 30 kg): To minimize drowsiness, the initial dose should be between 0.01 to 0.03 mg/kg/day, not to exceed 0.05 mg/kg/day, given in 2 or 3 divided doses. Increase dosage by not more than 0.25 to 0.5 mg every third day until a daily maintenance dose of 0.1 to 0.2 mg/kg has been reached, unless seizures are controlled or side effects preclude further increase. When possible, divide the daily dose into 3 equal doses. If doses are not equally divided, give the largest dose at bedtime." (Drug Facts and Comparisons 1991, p. 283h). Pediatric dosage for depakene (valproate) as well as for depakote (divalproex sodium) is not given, however this warning is vital for those who take valproic acid and any of its derivatives: "Hepatic failure resulting in fatalities has occurred in patients receiving valproic acid and its derivatives. Children <2 years of age are at a considerably increased risk of developing fatal hepatotoxicity, especially those on multiple anticonvulsants, those with congenital metabolic disorders, those with severe seizure disorders accompanied by mental retardation and those with organic brain disease. In this patient group, use with extreme caution and as a sole agent. Weigh benefits of seizure control against risks. Above this age group,

the incidence of fetal hepatotoxicity decreases considerably in progressively older patient groups. These incidents usually have occurred during the first 6 months of treatment. Serious or fatal hepatotoxicity may be preceded by nonspecific symptoms such as loss of seizure control, malaise, weakness, lethargy, facial edema, anorexia, jaundice and vomiting. Monitor patients closely for appearance of these symptoms. Perform liver function tests prior to therapy and at frequent intervals thereafter, especially during the first 6 months of therapy; however, serum biochemistry tests may not be abnormal. Also perform a careful interim medical history and physical examination." (Drug Facts and Comparisons 1991, p. 284e). Pediatric dosage for diamox (acetazolamide) is not given. Pediatric dosage for phenytoin and phenytoin sodium, oral is given. However the EFA has told its readers that the "U.S. Food and Drug Administration has advised physicians that generic phenytoin sodium capsules are not bioequivalent with the brand name product, Dilantin Kapseals. Physicians are advised to keep patients on one manufacturer's product and one dosage form. Blood levels should be carefully monitored when a change is made from one manufacturer's product to another's." (EFA, 1990 p. 2-3). The pediatric dosage for phenytoin and for phenytoin sodium, oral is as follows: "Initially, 5 mg/kg/day in 2 or 3 equally divided doses with subsequent dosage individualized to a maximum of 300 mg/day. Daily maintenance dosage- 4 to 8 mg/kg. Children over 6 years may require the minimum adult

dose (300 mg/day)." (Drug Facts and Comparisons 1991, p. 283a). Pediatric dosage for mebaral (mephobarbital) is as follows: "Children (under 5) - 16 to 32 mg, 3 or 4 times per day (Over 5) - 32 to 64 mg, 3 or 4 times per day." (Drug Facts and Comparisons 1986, p. 276b).

Pediatric dosage for mesantoin (mephenytoin) is as follows: "Children usually require from 100 to 400 mg/day. (Drug Facts and Comparisons 1991, p. 283b). Pediatric dosage for mysoline (primidone) is as follows: "Adults and children (>8 years of age): Patients who have received no previous treatment may be started on primidone according to the following regimen: Days 1 to 3 - 50 mg at bedtime. Days 4 to 6 - 100 to 125 mg twice daily. Days 7 to 9 - 100 to 125 mg 3 times daily. Day 10-maintenance - 250 mg 3 to 4 times daily. If required, increase dose to 250 mg 5 to 6 times daily, but do not exceed doses of 500 mg 4 times daily (2 g/day). Children (<8 years): The following regimen may be used to initiate therapy: Days 1 to 3 - 50 mg at bedtime. Days 4 to 6 - 50 mg twice daily. Days 7 to 9 - 100 mg twice daily. Day 10 - maintenance - 125 to 250 mg 3 times daily, or 10 to 25 mg/kg/day in divided doses." (Drugs Facts and Comparisons 1991, p. 284d). Pediatric dosage for peganone (ethotoin) is as follows: "Dosage depends upon the age and weight of the patient. Initial dose should not exceed 750 mg/day. The usual maintenance dose in children ranges from 500 mg to 1 g/day, although occasionally 2 g or rarely 3 g daily may be necessary."

(Drug Facts and Comparisons 1991, p. 283b). Pediatric dosage for phenobarbital (phenobarbital) is as follows: "Oral: Children - Preoperative sedation: 1 to 3 mg/kg. Anticonvulsant (phenobarbital sodium): 15 to 50 mg. 2 or 3 times daily (or 3 to 5 mg/kg day)." (Drug Facts and Comparisons 1986, p. 276). Pediatric dosage for phenurone (phenacemide) is as follows: "Children (5 to 10 years): Give approximately 1/2 the adult dose at the same intervals as for adults." (Drug Facts and Comparisons 1985, p. 285b). Pediatric dosage for tegretol (carbamazepine) is as follows: "Adults and children over 12 years - Initial dose is 200 mg twice daily (100 mg 4 times daily of suspension). Increase at weekly intervals by up to 200 mg/day using a 3 or 4 times per day regimen until the best response is obtained. Do not exceed 1000 mg/day in children 12 to 15 years or 1200 mg/day in patients over 15 years. In rare instances, doses up to 1600 mg/day have been used in adults. Maintenance - Adjust to minimum effective level, usually 800 to 1200 mg daily. Children 6 to 12 years - Initial dose is 100 mg twice daily (50 mg 4 times daily of suspension). Increase at weekly intervals gradually by adding 100 mg/day using a 3 or 4 times a day. Maintenance - Adjust to minimum effective level, usually 400 to 800 mg daily." (Drug Facts and Comparisons 1989, p. 285). Pediatric dosage for tranxene (clorazepate) is as follows: "Adults and children (>12 years): The maximum initial dose is 7.5 mg 3 times daily. Increase dosage by no more than 7.5 mg every week and do not exceed 90 mg/day. Children (9 to 12 years): The maximum

initial dose is 7.5 mg 2 times daily. Increase dosage by no more than 7.5 mg every week and do not exceed 60 mg/day. Not recommended in patients <9 years of age." (Drug Facts and Comparisons 1991, p. 284). Pediatric dosage for tridone (trimethadione) is not given. Pediatric dosage for zarontin (ethosuximide) is as follows: "Children (3 to 6 years of age): Initial dose - 250 mg/day. Children and adults (≥6 years of age): 500 mg/day. Maintenance therapy: Individualize dosage. Increase by small increments. One method is to increase the daily dose by 250 mg every 4 to 7 days until control is achieved with minimal side effects. Administer dosages exceeding 1.5 g/day in divided doses only under strict supervision. The optimal dose for most children is 20 mg/kg/day. Concomitant therapy: May be administered in combination with other anticonvulsants when other forms of epilepsy coexist with absence (petit mal) seizures." (Drug Facts and Comparisons 1991, p. 283e).

The author wishes to make very clear that this information is only for readers to gain an outlook on how epilepsy medicines are administered. School officials and general readers are advised that they must consult their physicians and go by their specific instructions when administering any drug to a child.

Seizure Management

One of the most important challenges America's schools face is dealing with thousands of children in our elementary schools who have epilepsy. In many cases, the symptoms of epilepsy which these children

experience go on unnoticed by the teachers and school officials in general. Further, the symptoms very often are similiar to other conditions such as drug intoxication or misbehavior as previously stated. There are several important steps which school officials can take to help a child who experiences a seizure:

1. The child should be removed from any dangerous objects which could cause injury during the course of the seizure.

2. Make certain that the class enviornment remains calm and collected during the seizure. Reassure the class that what the child is undergoing is only temporary and that the student will be in satisfactory condition shortly.

3. The child will require plenty of oxygen during the seizure. The seizure may very well cut off much of the oxygen. To help the child at this stage, loosen any clothing, particularly tight clothing the child is wearing.

4. It is crucial that the seizure run its course. Do not attempt to prevent any of the child's movements.

5. Do not attempt to force any object into the child's mouth. Despite what many think of seizures, it is not possible to swallow the tongue. The reason for this is that the tongue is secured to the floor of the mouth. This is just one more example of the misconceptions concerning epilepsy which needs to be corrected.

6. When the seizure subsides, the child should be given ample time to rest. The child should be asked if talking to the other

children about the seizure would help alleviate any discomfort or embarrassment the child may be feeling.

7. The child should be questioned as to whether medication is being taken for the condition. If this is a first-time occurrance, the child should be immediately rushed to the nurses' office. If a nurse is not available, the child should be sent to the principal's office at once and a phone call made to student's parents. A consultation between the parents, teacher, and principal should take place. It is crucial that the child be a part of the discussion if at all possible. Students who have epilepsy, especially young children, must feel that they are a part of society not isolated from it. The family should then take the child to the hospital and inform medical authorities of the incident. It is vital that the school make a full report of the incident and that copies of the report be given to the parents, medical authorities, as well as to the child.

8. The child should be allowed to return to class as soon as possible. If the child who experienced the seizure is on medication and the parents are well-aware of the situation, then the child should be allowed to proceed with classwork as if nothing had happened. If authorities, especially a classroom teacher or students express shock at the incident and relays such emotions, this could have severe implications for the child. It may well lead to a point where the child simply feels totally isolated and cannot function at all. This must be prevented at all costs.

9. The loss of muscle or bladder control may occur. In such case, have the matter attended to promptly and as efficiently as possible. The child may need rest after experiencing a seizure accompanied by loss of bladder control. If muscle or bladder control does not return, have the child sent to the school nurse or to the hospital immediately. Do not take risks in cases such as this. Hourcade and Parette (1986 p. 282) state the following: "No medical attention is usually necessary unless: (a) the student has been injured during the seizure activity, (b) the student goes immediately into another seizure, or (c) the seizure lasts more than 10 minutes. The school nurse and parents, however, should be notified for purposes of medical documentation. In some cases, parents may specifically request that medical attention be given in the event of a seizure."

Epilepsy and Academic Achievement

There have been numerous studies on how epilepsy affects academic achievement. It is important to note that while children with epilepsy should not be treated any different or expected to perform at a lower standard than other children. Nevertheless, it is a fact that some children with epilepsy can experience difficulties in basic skills such as writing (Jennekens-Schinkel, Linschooten-Duikersloot, Bouma, Peters, and Stijnen, 1987). Further, there is evidence to suggest that epilepsy may in fact

affect cognition itself (Piccirilli, Alessandro, Tiacci, and Ferroini, 1988). In addition, children with epilepsy may tend to have less positive views on their academic achievement (Matthews, Barabas, and Ferrari, 1983).

The issue at stake therefore, is how do we help children in our schools who have epilepsy without damaging their self-worth? The answer is to mainstream children with epilepsy while at the same time be alert to their needs. There are many programs in public schools to help students with all types of disabilities such as learning disorders, illiteracy, blindness, low-vision, bilingual programs, English as a second language, drug awareness programs, alcohol awareness programs, etc. What is missing however, is a comprehensive epilepsy program in elementary schools which focuses on the needs of students with epilepsy.

Seidenberg, Beck, Geisser, Giordani, Sackellares, Berent, Dreifuss, and Boll (1986) in their study discovered that children with epilepsy had deficiencies in: (a) arithmetic (b) spelling (c) reading comprehension (d) word recognition. The most important point is that these are basic skills which all students must learn if they are to succeed in anything. The mastery of these skills by students with epilepsy will determine their course of academic achievement; whether they finish high school, go on to college, the type of employment they will obtain, etc. Hence, the more we look at the facts, the stronger the case exists for epilepsy education in America's schools.

Epilepsy and Athletics

One significant factor in a child's life is sports and recreation. The child who has epilepsy is no exception. Children with epilepsy however have been misunderstood even discriminated against due to their condition. An important remedy to alleviate some of the pressures a child with epilepsy may be experiencing is to participate in athletic sports.

Arnheim (1989) discusses the issue of epilepsy with regard to athletics by stating that the issue is dependent upon each individual case. This is extremely important. People with epilepsy regardless of age, must be treated as individuals and not as people with a condition. The fact is that epilepsy is unique for each individual. For example, many people experience gran-mal seizures but, it would be a very serious mistake in judgement to suggest that they all be given the same medical treatment for their condition. So too, when discussing athletics, it is the individual and not the condition which should be considered. Nevertheless some sensible restrictions are in order to protect the individual who has epilepsy from serious harm. Arnheim states that even if seizures are controlled, there are still a number of athletic sports which should not be attempted. These include scuba diving or sports which require the individual to be at great heights. Swimming must be very carefully monitored by either lifeguards or people who are trained to rescue people who may experience difficulties in the water. These individuals should also be trained in CPR.

unnecessary risks. A restriction due to a physical condition need not cause a sense of inferiority or being left out of activities. On the contrary, teachers when faced with the problem of dealing with children who have disabilities should find alternative sports or athletic activities which will not put the child in danger. The physician should be consulted as to the type of activities a child with epilepsy should be allowed to participate in. Once again, the issue will depend on each individual case.

To give a comprehensive view on the subject one can turn to O'Donohoe (1983) who states the following: "There is a general agreement that children with epilepsy should not perform activities where a fall would ensue if a seizure were experienced without warning. These include rope climbing, climbing on bars, rock climbing, the rise of parallel bars, and trampolining. These restraints might be waived, however, for a child who has been seizure-free for a prolonged period." (O'Donohoe 1983, p. 936).

An important point to make is that a child with epilepsy should not be kept on the school bench during recess or during recreational activities. This will only cause severe distress for the child, a feeling that this is punishment for a condition that is not the fault of the child in the first place. In fact, children who have experienced seizures have been not only treated differently from other children but have been discriminated outright. The EFA (1986) states that in the past, schools did

refuse to allow children with epilepsy to take part in athletic activities. Schools cannot receive federal funds if they discriminate "on the basis of medical handicap in their programs and services." (EFA 1986, p. 19).

Tremendous progress has been made towards ending discrimination in our country. Athletics is only one example of this, but an excellent example surely. There was a time in America when Black Americans could not participate in professional sports due to the color of their skin. There was a time when people with epilepsy kept silent about their condition due to fear of discrimination. In many cases, this is still the situation. Those who have any handicap must see themselves as human beings and as individuals and not define themselves by their condition.

What Does the Future Hold?

The question becomes "What about the future?" For people with epilepsy the future will depend upon how they perceive themselves as individuals. If people with epilepsy or any disability for that matter can understand that they are citizens like everyone else, they will have the initiative to obtain self-fulfillment. While discrimination does exist, one must not use epilepsy as an excuse not to achieve. People with epilepsy have achieved Ph.D's, become teachers, doctors, lawyers, one even became President of the United States (Garrison, 1993). Individuals must accept responsibility for their success or failure. It is the only sure way to achieve.

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