



# EPILEPSY NEWS

NORTHEAST REGIONAL EPILEPSY GROUP

NEW YORK / NEW JERSEY / CONNECTICUT

The Northeast Regional Epilepsy Group provides comprehensive care to children and adults with epilepsy, using state of the art diagnostic procedures and applying the latest advances in medical and surgical treatment.

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## FROM THE DIRECTOR

There has been much discussion recently throughout the news media about traumatic brain injury as it is affecting our returning Iraqi veterans. Statistics from the Center for Disease Control and Prevention reveal that today 5.3 million Americans live with significant disabilities as a result of brain injuries, and these injuries are the leading cause of death and disability for children and adolescents in the United States.

Dr. Politsky's article below offers a comprehensive discussion on the subject and the possible diagnosis of epilepsy that can follow. I hope you find the information valuable.

**Marcelo Lancman, M. D.**  
**Medical Director**

## Post-Traumatic Epilepsy

By: Jeffery M. Politsky, M.D., FRCP(C)

About 1/2 million annually suffer a head injury sufficient enough to produce skull fractures, neurologic signs, and hospital admission. Depending on the type and extent of head injury, there is at least a threefold increase in the risk of developing recurrent seizures (epilepsy) compared to the general population.

Seizures that occur in relation to head injury can be classified as Immediate (or Impact), Early (within several days to weeks of the injury), or Late (months to years after the injury, after recovery to the best expected level of function).

Head injuries can be broadly classified based on extent of injury (mild, moderate, or severe) and on the type of injury suffered (missile or "penetrating" trauma, and closed or "blunt" trauma). Mild injury generally refers to the absence of injury to the brain or damage to the skull, and few neurologic signs. The classification of type of injury can be a little confusing, because blunt trauma (e.g. a blunt object, like a bat, striking the skull, or the skull striking a blunt object, like a fall onto the pavement), can produce 'open' head injuries with skull fractures and the entrance of skull fragments or foreign bodies into the cranial cavity. The exact mechanism of injury is not always known, but is critical in understanding the extent and manner of brain injury. Acceleration-deceleration and rotational forces associated with blunt trauma, penetrating trauma, and the effect of rapid movement of brain matter against the skull's interior, can all cause shearing injuries to blood vessels and nerve fiber tracts. Microscopic changes may include diffuse axonal injury, neuroglial scarring, axonal retraction balls, and Wallerian degeneration. Macroscopic changes include contusions and frank hemorrhage. Deposits of ferrous or ferric chloride (iron is part of the hemoglobin molecule) is particularly irritating to the brain and is highly epileptogenic (prone to cause seizures).

In the United States, the age group with the highest incidence of head injury is 15-24, followed by infants and the elderly. One out of every 10 traumatic head injury cases result in death, about one in 10 cases are severe and 10% of these result in a persistent vegetative state.

In cases of penetrating head injury, based on data from the Vietnam Head Injury Study, over 50% of veterans had at least one seizure, the majority occurring in the first year. Many veterans went on to have multiple seizures. Seizures did not develop for 5 years in up to 15% of veterans. Evident seizure risk factors in this group included intracranial contusion or blood products, persistent shrapnel or metal fragments, irreversible neurological deficits, and brain volume loss.

In cases of blunt head trauma, more than 1/2 of patients also have their first seizure within one year. Major risk factors for seizures in this group of patients are depressed skull fracture and blood products in the layers of the brain (subdural hematoma) and the brain itself (intracerebral hematoma).

One-quarter to one-third of adult patients who have very early or immediate seizures (less than 24 hours) following head trauma go on to have late seizures (post-traumatic epilepsy). The predictive value of early and immediate post-traumatic seizures in children is less clear. Impact seizures, which occur at the time of head trauma, do not, in and of themselves, appear to increase the risk of developing post-traumatic epilepsy. There is debate as to whether patients who suffer mild to moderate head injury, and who develop post-traumatic epilepsy, also have a genetic predisposition toward seizures.

As with all epileptic conditions, a proper diagnostic work-up is essential. At the time of injury, investigations and management focus on the patient's vital functions, determining the extent of bodily injury, and medical intervention necessary to maintain cardiovascular and respiratory functions if either are compromised. The patient's level of consciousness is measured using the Glasgow Coma Scale. If there is evidence of neurologic dysfunction, with or without evidence of seizures, the diagnostic workup also includes a neuroimaging study, and usually a neurologic consultation. If seizures occur anytime after the original head injury, neurologic consultation is also obtained, as is a repeat neuroimaging study, and an EEG. Once the diagnosis of post-traumatic epilepsy has been rendered, options that may be considered include pharmacologic (drug) treatment, or surgical treatment, which often includes at least one admission to an epilepsy monitoring unit.

The treatment of post-traumatic epilepsy is often complicated by the fact that there may be more than one area of focal brain injury, and thus more than one area capable of generating epileptic discharges. Certainly, the best treatment rationale begins with prevention. The proper use and application of helmets and seatbelts significantly reduces the risk of head trauma, associated with sports-related, bicycle, motorcycle, and motor vehicle accidents. If head trauma does occur, there is no overwhelming evidence to suggest that taking anti-seizure drugs will prevent seizures from developing. However, once post-traumatic epilepsy is diagnosed, almost certainly the patient will require medical (pharmacologic) intervention. There is no evidence that supports the use of one anti-seizure drug over another. Rather, one or more anti-seizure drugs may be used based on cost, efficacy and tolerability.

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Somerset	(732) 246-7722
New Brunswick	(732) 828-1373

**CALENDAR OF EVENTS**

**PHYSICIAN PROGRAM NEW YORK**

**Symposium:**  
Saturday, October 25th

**"Advancements in the Management of Epilepsy"**  
Hilton Rye Town; 699 Westchester Ave.; Rye Brook, NY 10573

**COMMUNITY EDUCATION PROGRAM**

**"La epilepsia en diferentes momentos de la vida"** ("Epilepsy through the lifespan")

Saturday, November 8<sup>th</sup> - 9:00am  
The NYC Seminar & Conference Center; 71 W 23<sup>rd</sup> St;  
New York, NY 10010

**ADULTS WITH EPILEPSY AND THEIR CARETAKERS**

1<sup>st</sup> Thurs. of the Month - 6:30 pm  
White Plains Hospital Medical Library; Davis Ave & E Post Rd;  
White Plains, NY 10601

2<sup>nd</sup> Tues. of the Month - 6:30 pm  
Walkill Medical Arts Building; 390 Crystal Run Rd - Ste 101;  
Middletown, NY 10941

2<sup>nd</sup> Wed. of the Month - 3:00pm  
Medical Pavilion; 4256-1 Bronx Blvd; Bronx, NY 10466  
(call (718) 654-6184 to register or for info.)

2<sup>nd</sup> Thurs. of the Month - 6:30 pm  
Overlook Hospital; Atlantic Neuroscience Inst. Conf. Rm.;  
99 Beauvoir Ave.; Summit, NJ 07902  
(call (908) 522-2092 to register or for info.)

3<sup>rd</sup> Mon. of the Month - 7:00pm  
Richmond University Medical Center - Conf. Rm C; 355 Bard Ave;  
Staten Island, NY 10310  
(call (718) 818-1214 to register or for info.)

3<sup>rd</sup> Tues. of the Month - 6:30pm  
St. Luke's Cornwall Hospital - Newburgh Campus; Conf. Rm. C  
(3rd fl); 70 Dubois St, Newburgh, NY 12550

3<sup>rd</sup> Thurs. of the Month - 6:30pm  
Hackensack University Medical Center - 20 Prospect Ave -  
Ste 800; Main Conf. Rm; Hackensack, NJ 07601  
(call (908) 522-2092 to register or for info.)

**VETERANS EDUCATIONAL SUPPORT GROUP**

3<sup>rd</sup> Mon. of the Month - 10:00am  
Walkill Medical Arts Building; 390 Crystal Run Rd - Ste 101;  
Middletown, NY 10941

**PARENTS OF CHILDREN WITH EPILEPSY**

1<sup>st</sup> Tues. of the Month - 6:30pm  
Northeast Regional Epilepsy Group; 21 Old Main St - Ste 101;  
Fishkill, NY 12524

For more information or to register for a group educational program  
call Ann Marie at (845) 695-6885.

PLEASE CHECK OUR WEBSITE FOR UPCOMING EDUCATIONAL EVENTS  
WWW.EPILEPSYGROUP.COM



**Northeast Regional Epilepsy Group**

Walkill Medical Arts Building  
390 Crystal Run Road, Suite 101  
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