

# AES News

AMERICAN EPILEPSY SOCIETY

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Winter 2006



## AES Announces First Ever Mid-Year Meeting

The American Epilepsy Society will be sponsoring their first annual Mid-Year Meeting entitled Update on the Diagnosis and Treatment of Epilepsy. The meeting will take place in Oak Brook, IL June 16-17, 2006.

The Mid-Year Meeting will be a state of the art conference for professionals practicing on the front lines of epilepsy care. Designed to meet the needs of practicing clinicians, this conference will offer a combination of didactic sessions and smaller workgroup sessions. Morning plenary sessions will deal with the issues of epilepsy diagnosis and management. Several small concurrent workgroups will be offered each afternoon, covering more specific issues that practitioners deal with daily. The afternoon workgroups will focus on the needs of different health care practitioners (i.e., neurologists, pediatricians, internists, nurses, social workers, pharmacists, psychologists). Informal "Ask-the-Expert" sessions will be run daily during lunch.

Breakfast and lunch will be provided daily as will coffee breaks. Friday features one morning plenary session, Ask-the-Expert networking lunch and three concurrent 90-minute breakout sessions. Up to five topics will be available during the breakout sessions. Saturday features one morning plenary session on a more advanced topic, one all day plenary session covering more basic, day to day practice issues, an Ask-the-Expert networking lunch and two concurrent 90-minute breakout sessions with up to five topics available.

CME will be provided for physicians and CE for nurses, pharmacists and psychologists.

*Friday AM Plenary* – Treating Epilepsy is more than stopping seizures. Topics may include:

- Consequences and burdens
- Comorbidities
- Predisposition/Cognitive Consequences

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### PRESIDENT'S MESSAGE

It is wonderful to take over the reins of president of AES at a time when the Society is rapidly growing in strength and prestige. I wish to thank my predecessor Joan



Austin who taught me a great deal about how to be a great president. Her work ethic, wisdom, and warm personality served the AES well. Her dedication and leadership will be impossible to match, although I will try. Fortunately for me, Joan stays on the board for another year as past-president and I plan to take full advantage of her expertise. In addition to continuing to work with Joan, I will be working closely with John Swann, first vice-president. John brings expertise in basic neuroscience to the executive committee of AES, which will allow us to continue to integrate basic and clinical neuroscience.

I am also pleased to have the support of an excellent board. This board has diverse interests and expertise and includes leaders from nursing, basic neuroscience, neurosurgery, and neurology. This board is well poised to bring our Society to an even

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# AES News



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**Editorial Deadlines**

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Membership consists of clinicians, scientists investigating basic and clinical aspects of epilepsy, and other professionals interested in seizure disorders. Members represent both pediatric and adult aspects of epilepsy.

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## President's Message

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higher level in education, research, and patient care.

The Annual Meeting in Washington, DC, was highly successful. We set records for attendance (approximately 3,900). There were 18 symposia, 15 investigator workshops, 36 Special Interest Groups, 904 posters and 36 platform presentations. Over 1,100 people presented either at the lectern or at posters. While the “formal” educational programs remain an essential component of the program, our meeting is much more than didactic sessions. Networking and socializing with our colleagues from around the world is equally important and the AES Annual Meeting allows us to do this in a wonderful setting.

While the high point of the AES each year is the Annual Meeting, AES does far more than conduct a wonderful meeting. AES members and staff are busy year-round developing enduring educational material, eliciting and reviewing grants and fellowships, providing information to our members through our Web site, answering questions from the press, and addressing concerns from our members. This year a task force headed by Mick Privitera and John Levisohn is beginning the important tasks of developing safety recommendations for epilepsy monitoring units. In addition, plans are moving ahead rapidly for our new Mid-Year Meeting (June 16-17, 2006) in the Greater Chicago area. This is an exciting educational opportunity for individuals caring for patients with epilepsy. Timely and important topics germane to daily patient care will be

discussed by excellent and experienced teachers.

While there is much to be excited about in AES, we also have many challenges ahead of us. Continued decreases in Medicare and Medicaid funding will continue to limit access of needy patients with epilepsy to specialty care. A medical system where healthcare workers operate at deficit when caring for chronically ill patients will have dramatic effects on our patients' epilepsy care. At the same time we are facing untenable governmental financial restraints in health care delivery, NIH funding has stagnated. The days of doubling the NIH budget are over and both new and established investigators are having increasing difficulties in securing funding and maintaining their laboratories. During these difficult financial times it is important for professionals dedicated to diagnosing, treating, and curing epilepsy to work together to achieve our goals. Using the skills and dedication of our membership the AES has the opportunity, and obligation, to play a role in addressing these issues.

As we approach our 60th anniversary the AES remains in a great position to positively influence epilepsy care and research for many years to come. I am looking forward to working with you in what should prove to be an exciting journey.

*Gregory J. Holmes, MD*



**Incoming President Gregory Holmes with Past President Joan K. Austin at the AES Business Meeting.**

## EPILEPSY FOUNDATION UPDATE

# Beliefs About Epilepsy Among Hispanics a Significant National Health Issue

By Judith O'Toole, Managing Editor, EpilepsyUSA



Our community talks often of the stigma associated with epilepsy. Across the board, many Americans with the disorder don't tell friends, teachers, co-workers or employers about the condition because of a fear they will be rejected. A lot of the time, they have good reason to feel that way. Additional concerns plague minority communities where deep-rooted cultural and religious issues often intensify these fears and who aren't easy to reach with traditional outreach efforts.

Unfortunately, stigma will likely remain until those with epilepsy, as well as the general population, are better educated about the condition.

Over the past several years, the Epilepsy Foundation and its affiliate network have been seeing an increase in the health issues facing the Hispanic population with epilepsy. With the support of the national Centers for Disease Control and Prevention, a survey was conducted for the Foundation among close to 800 Spanish-speaking adults in the United States on the topic of epilepsy.

What the results show is disappointing but not entirely shocking. A large portion of the Hispanic community in this country fears epilepsy, often attributes seizures to substance abuse and spiritual causes, and would most likely hide a family member with the disorder. Additionally, the survey revealed a good number of Hispanics still believe in the myths that continue to provide barriers to the reduction of stigma. Twenty-five percent related seizures to death. Nearly 10 percent believed you received seizures if you lacked spiritual faith and 10 percent believed having an exorcism performed on the person with epilepsy would be a good cure.

The findings, which were published by lead author Joseph I. Sirven, M.D., of the Mayo Clinic College of Medicine, Scottsdale, AZ, and colleagues in the October 2005 issue of *Epilepsy & Behavior*, are of concern from a public health perspective because of the education and service delivery problems that such attitudes and beliefs are likely to present.

According to the report by Sirven, the study has important implications for neurologists and all health practitioners. "More time needs to be devoted to education and counseling during clinical visits with Latinos to debunk the myriad myths associated with the condition in order to lessen the burden of disease," says the report. "One must be prepared to bridge the cultural and language barriers that typify this patient encounter. The only certainty we have is that Latino patients with epilepsy or any neurological condition will be increasingly more commonplace regardless of the location of one's practice in the United States."

A substantial future growth in the number of Hispanics with epilepsy is of particular concern to the Epilepsy Foundation. Currently, about one in seven Americans is of Hispanic heritage. Seizures are almost twice as common among Hispanics as they are in non-Hispanics, according to background in the report, due to cysticercosis (an infection endemic in many areas of Latin America from which people immigrate) and a higher incidence of birth trauma, head trauma and stroke in this population.

The Epilepsy Foundation is committed to reaching the Hispanic population through public awareness campaigns and services. We have just started our first national awareness campaign and are beginning to realize results from the strategies developed.

Our main objectives for the campaign are to provide basic and accurate epilepsy information to the Hispanic community by using national and local partnerships; and to provide our affiliate network with the adequate tools and resources to successfully

reach the largest minority group in the United States.

The Foundation has developed a media campaign with our media partner Hispanic Radio Network throughout its organization of more than 200 Spanish format radio stations and close to 100 Spanish format newspapers.

The Foundation's message will be broadcast more than 11,000 times during the campaign, which runs until the end of June. At the same time, the weekly circulation for the newspapers, which are running our editorial columns, is close to 4 million.

We have also partnered with well-known and well-respected organizations in the Hispanic community such as The National Council of La Raza, which is providing our message during vocational classes, community meetings and English as a Second Language courses. This partnership is important because it increases the Foundation's presence in the community and delivers our message in the community's language and culture.

The Epilepsy Foundation is bringing epilepsy messages to Hispanic families in their own homes with the support of our community partner, the Lay Health Workers National Network. This program has been received with much success as people feel safe talking about the disorder in their home and believe what the community health workers in this program have to say. Additionally, the community health workers, called Promotoras, have become helpful for our affiliates that don't have Spanish-speaking staff.

As the Hispanic population is expected to grow to more than 25 percent of the U.S. population by 2050, we believe it is imperative to the public health of the country to reach and educate this community about epilepsy. We must all do our part to fill in the gaps to reach all Americans – even the ones who are the hardest to reach.

*Editor's note: the writer is the Managing Editor of EpilepsyUSA and Director, Communications Products & Marketing for the Epilepsy Foundation.*

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***Over the past several years, the Epilepsy Foundation and its affiliate network have been seeing an increase in the health issues facing the Hispanic population with epilepsy.***

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# Special Recognition Awards

The American Epilepsy Society (AES) has announced Tallie Z. Baram, M.D., Ph.D. and Jean Gotman, Ph.D. as the recipients of the coveted and prestigious American Epilepsy Society Epilepsy Research Awards.

The awards, considered the most prestigious prizes for research on epilepsy, are given annually to active scientists and clinicians

working in all aspects of epilepsy research. They are designed to recognize outstanding professional excellence reflected in a distinguished history of research as well as a current active research program that promise to improve understanding, diagnosis or treatment of epilepsy. The awards of \$10,000 each are the flagship prizes of the AES Grant and Fellowship Program.

## Basic Science – Tallie Z. Baram, M.D., Ph.D.

Dr. Tallie Z. Baram is a Professor in the Departments of Pediatrics, Anatomy/Neurobiology and Neurology at the University of California, Irvine (UCI), where she holds the Danette Shepard endowed chair in Neurological Sciences. Dr. Baram is the Scientific Director of the UCI Epilepsy program, and the founder and Executive Committee chair of the UCI Epilepsy Research Center (EpiCenter). Dr. Baram received a Ph.D. at the Weizmann Institute of Science in Israel, and an M.D. degree from the University of Miami School of Medicine. She completed her clinical training in Pediatrics and in Child Neurology at Baylor College of Medicine, Houston.

Dr. Baram has focused her research efforts on understanding the neurobiological basis of seizures and epilepsies of infants and children, and particularly on febrile seizures and infantile spasms. Creating suitable immature animal models for these seizures, Dr. Baram's work has led to important discoveries about the mechanisms of infantile spasms, and about the long-lasting functional effects of experimental prolonged febrile seizures on the developing brain.

Her work (over 100 peer-reviewed papers) has been published in the top journals in the fields of Neuroscience and Medicine, and she is co-editor (with Dr. Shinnar) of a popular book on febrile seizures.

Dr. Baram is a member of the Board of Directors of the American Epilepsy Society and has served on several AES committees including Research and Training and Year-round Education. She has co-organized the Children's Hour SIG and has chaired AES Investigators' Workshops. Dr. Baram is a member of the Professional Advisory Board of the Epilepsy Foundation of America. She has contributed to National Institutes of Health, AES, Epilepsy Foundation of America, Pediatric Partnership and CURE study sections and has devoted considerable effort to the mentoring of junior clinician/scientists.



## Clinical – Jean Gotman, Ph.D.

Dr. Gotman is a Professor in the Department of Neurology and Neurosurgery, McGill University and Director of the Computer Laboratory, EEG Department, Montreal Neurological Hospital. He is also an Associate Member of the Departments of Biomedical Engineering and Electrical Engineering. Dr. Gotman has been the recipient of several awards including a Killam Scholarship (1975–1978), a Medical Research Council of Canada Scholarship (1979–1984) and the Pierre Gloor Award from the American Clinical Neurophysiology Society (2000).

Dr. Gotman obtained his degree in Engineering from the École Supérieure d'Electricité, Université de Paris (Computer Science) in 1969. He then went to Dartmouth College on a Fulbright Fellowship, receiving his M.E. (Computer Science) in 1971. Dr. Gotman received his Ph.D. in Neuroscience from McGill University in 1976 under the supervision of Dr. P. Gloor and joined the faculty at the Montreal Neurological Institute in 1977.

Dr. Gotman designed methods for the analysis of EEG in the study of epilepsy, particularly for automatically recognizing spikes and seizures in the context of long-term EEG-video monitoring. These methods are in use in hundreds of hospitals worldwide. He studies the propagation of epileptic seizures in the brain and is also devising techniques that can automatically monitor brain functions in patients in intensive care and in the operating room.

He is now looking into the correlation of EEG results and imaging methods, particularly functional MRI, thus providing new ways to investigate epileptic discharges. Dr. Gotman is the founder of Stellate Systems. He is widely sought after as a consultant and as a lecturer and has published more than 150 scientific papers.



The awards were presented to Drs. Baram and Gotman on Monday, December 5 at the AES Annual Meeting in Washington, DC.

## J. Kiffin Penry Award

The American Epilepsy Society (AES) posthumously presented Dr. John R. Gates with the 2005 J. Kiffin Penry Award for Excellence In Epilepsy Care. The award was accepted on his behalf by his wife, Rita Meyer.

The J. Kiffin Penry Award honors Dr. Penry's lifelong focus on and genuine concern for patients with epilepsy, by recognizing individuals whose work has had a major impact on patient care and improving quality of life.

On September 28, Dr. John Gates passed away after a courageous battle with cancer. Dr. Gates graduated Magna Cum Laude from Harvard University and completed his medical internship, residency, and fellowship at the University of Minnesota Medical School, where he earned the Benjamin Shapiro Award for Most Outstanding Neurology Resident.

He later co-founded the Minnesota Epilepsy Group and grew the practice into one of the world's most regarded comprehensive epilepsy treatment centers.

Dr. Gates contributed a significant amount of his time to the success of the American Epilepsy Society. He was active in every facet of the Society, serving on the board of directors, corporate advisory council, employment guidelines task force, epilepsy & employment task force, epilepsy surgery task force, finance committee, guidelines task force, practice committee, long range planning committee, therapeutics committee and as a special interest group coordinator.

Dr. Gates was a world-renowned speaker, writer and authority on epilepsy research and development. He was as renowned for his



contributions in the epilepsy community as he was for his big heart and his endless devotion to his family and friends. He was beloved by many both for his brilliance in epilepsy and his enthusiasm and passionate zeal for living life to the fullest.

## AES Service Award – Jacqueline A. French, M.D., Hospital of University of Pennsylvania



**About the AES Service Award:** The Award recognizes outstanding service by an AES member in the field of epilepsy (including non-educational and non-scientific) with emphasis on exemplary contributions to the welfare of the American Epilepsy Society and its members.

The AES Service Award winner, Dr. Jacqueline French, is a professor in the Department of Neurology at the University of Pennsylvania, Co-Director of the Penn Epilepsy Center and Assistant Dean for Clinical Trials at the University of Pennsylvania. Dr. French trained in Neurology at Mount Sinai Hospital in New York and did her fellowship training in EEG and epilepsy at Mount Sinai Hospital and Yale University.

Dr. French has focused her research efforts on development of new therapeutics for epilepsy. She has written many articles, editorials and chapters, has edited two books on this subject, and is the co-director of a biannual symposium on trial design and its implications. This symposium is an opportunity for representatives from government (the FDA and the NIH), members of the academic community, and members of the private research community to discuss drug development and

determine new strategies. This meeting has led to the implementation of new trial designs, as well as new strategies for the approval of drugs for use in monotherapy.

Dr. French has also been active in creating practice parameters, serving on committees of the AAN and the AES and chairing several practice parameter Task Forces. She has served as an ad hoc reviewer for many journals, is an editor for *Epileptic Disorders*, and is the Epilepsy Section Editor of *Clinical Neuropharmacology*.

She has served on the board of the AES and the American Society of Experimental Therapeutics. In addition, she is the head of the scientific advisory board of the Epilepsy Therapy Development Project, a private group devoted to the development of new epilepsy therapies.

## William G. Lennox Award – Marc A. Dichter, M.D., Ph.D., University of Pennsylvania



**About the Lennox Award:** Established in 1966, the Lennox Award is given annually to a senior member who has a record of lifetime contributions and accomplishments related to epilepsy. The award is funded by the William G. Lennox Trust Fund established in 1962 to advance and disseminate knowledge concerning epilepsy in all of its aspects—biological, clinical and social—and to promote better care and treatment for persons with epilepsy.

Dr. Marc A. Dichter is Professor of Neurology and Pharmacology at the University of Pennsylvania and Co-Director of the Penn Epilepsy Center. He is also the former Director of the David Mahoney Institute of Neurological Sciences at Penn. Dr. Dichter received a B.S. from Queens College of the City University of New York and an M.D. and Ph.D. (Neurophysiology) from New York University School of Medicine. He trained in Medicine at Beth Israel Hospital (Harvard Medical School), did a postdoctoral fellowship in the Laboratory of Electroencephalography at the NINDS, and returned to the Harvard Longwood Area Neurology Program for his neurology training. He remained on the faculty of Neurology at Harvard for 11 years before moving to Penn in 1986.

Dr. Dichter has actively and substantially contributed to epilepsy research at both the basic and clinical levels. His neuroscience research focuses on mechanisms of epilepsy, mechanisms

of action of antiepileptic drugs, neuroprotection, and brain stimulation as a treatment for epilepsy. At the clinical level, Dr. Dichter is involved in the development and evaluation of new antiepileptic drugs and new therapies for preventing seizures, and in clinical trials to prevent the development of epilepsy after brain injuries. Dr. Dichter is also leading efforts at Penn dedicated toward developing translational research in neuroprotection.

Among his proudest accomplishments, Dr. Dichter has been mentor to 13 graduate students, 44 postdoctoral fellows, and a number of junior faculty, many of whom have gone on to outstanding careers in epilepsy research. Dr. Dichter has served the AES over many years and in many capacities, including as its President. He has published more than 150 articles and chapters, has edited 3 books on epilepsy, and has served on the Editorial Boards of *Epilepsia* and *Seizure*.

## NINDS REPORT

# NIH Blueprint for Neuroscience Research

By Margaret P. Jacobs, Program Director, NIH/NINDS Extramural Research Program



**T**he National Institutes of Health

Neuroscience Blueprint is a collaborative effort across fifteen NIH Institutes and Centers

that support research on the nervous system. It is based on the premise that in order to more rapidly and comprehensively understand the brain and its disorders we need the databases, infrastructure and technology of "large-scale science." By pooling resources and expertise, the Blueprint charge is to develop resources to serve the entire neuroscience community. Each Institute continues to carry out the basic and disease-specific research unique to its mission. As such, Blueprint activities do not target individual disorders, but instead, the tools and infrastructure created have the potential to affect a broad range of disorders. Under this program resources

established by one Institute or Center are made available to neuroscientists supported by others.

The Blueprint agenda is focusing on three themes of neuroscience research common to all neuroscience Institutes and Centers — degeneration, development and plasticity. Examples of activities funded that are available to epilepsy and other researchers include:

- **NIH Neuroscience Microarray Consortium**, which offers investigators access to state-of-the-art technologies for gene expression profiling and SNP genotyping; data generated are publicly available through a Web database <http://arrayconsortium.tgen.org/np2/public/overview.jsp>
- **Gene Expression Nervous System Atlas (GENSAT)**, a project to map the expression of thousands of genes in the brain and spinal cord in which mice are being genetically engineered to produce

visible fluorescent signals wherever and whenever a particular gene is expressed <http://www.gensat.org/index.html>

- **Pediatric MRI Study of Normal Brain Development**, an effort to collect a series of brain images throughout normal development <http://www.brain-child.org/home.htm>
- **Course Development in the Neurobiology of Disease**, an initiative to include courses on this topic for graduate students receiving basic neuroscience testing [http://neuroscienceblueprint.nih.gov/NIH\\_Blueprint\\_awards\\_FY05.html](http://neuroscienceblueprint.nih.gov/NIH_Blueprint_awards_FY05.html)

For Fiscal Year 2007 (beginning in October 2006) Blueprint Initiatives will focus on tools and resources for neurodegeneration. Future efforts will concentrate on development and plasticity. Epilepsy researchers are urged to consult the Blueprint Web site (<http://neuroscienceblueprint.nih.gov/>) to take advantage of these funding opportunities.

## 2006 Abstract Submitter

You have asked and we have listened! The abstract submission deadline will be extended one month to **June 3, 2006**. This change is made possible because we will not longer be printing the *Epilepsia* Supplement. The abstracts will be on the citable Blackwell Publishing Web site as well as the AES Web site. A CD-ROM will also be mailed to all members in place of the Supplement before the Annual Meeting.

### AES Announces First Ever Mid-Year Meeting

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Friday PM Breakout sessions to include:

- Psychiatric Comorbidities
- Assessment of Drug Interactions
- Drug Selection & Non-pharmacological Alternatives
- Developmental Issues
- Status Epilepticus – Cognitive Changes Are Real
- Neuropsychiatric Evaluation

Saturday AM Plenary A – Epilepsy Across the Life Span. Specialty populations will be covered including pediatric.

Saturday Plenary B — to run all day — Epilepsy Diagnosis, Evaluation and Treatment Selection — Latest Advances in Epilepsy Care for Clinicians. Topics may include:

- Latest Advances in Epilepsy Care
- When Seizures Won't Respond

Saturday Break Out Sessions to include:

- Pregnancy

- Genetics, When and How to Do Genetic and Metabolic Testing
- Epilepsy Surgery in Children
- Pathophysiology of Neonatal Seizures
- Self-Management Varies According to Age
- Mood Disorders
- Cognitive Functioning with Aging
- Models for Brain Aging
- Mechanisms of Action – Interaction with Common Medications
- Imaging
- Neurosteroids and Women
- Seizure Semiology in Children
- Pitfalls of Pharmacokinetics

Information regarding the Mid-Year Meeting is available on the AES Web site at [www.aesnet.org](http://www.aesnet.org). For any questions, please contact the American Epilepsy Society at 860.586.7505.

– The Best Musical Satire on Washington –

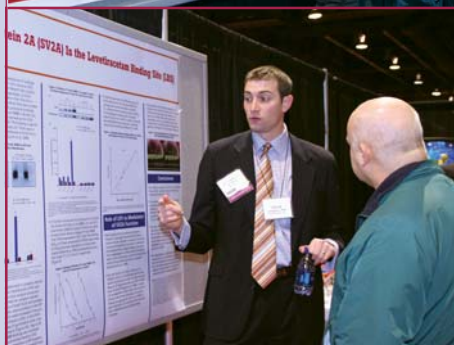
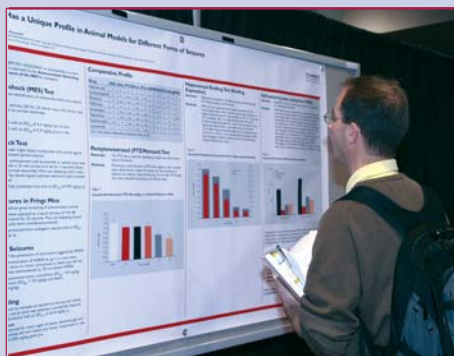
# CAPITOL STEPS



# Annual Meeting



# December 2-6, 2005



## SIGnals

*SIGnals provides ongoing information on the areas of focus and the activities of AES Special Interest Groups (SIG). For more information on current SIGs or guidelines for creating a SIG, visit the AES Web site at [www.aesnet.org](http://www.aesnet.org).*

### Children's Hour

*Sookyong Koh, M.D., Ph.D and Susan Koh, M.D.*

The theme for this year's Children's Hour was "Benign Partial Epilepsies of Childhood — Is it Truly Benign?" Following a brief introduction and definition of benign partial epilepsies by the coordinators, Dr. Rochelle Caplan (UCLA) started the presentation by reviewing the neuropsychiatric literature that indicates that both benign rolandic and benign occipital epilepsies are associated with cognitive, linguistic, and behavioral disturbances. Dr. Douglas R. Nordli (Northwestern University) discussed the concept of benign childhood seizure susceptibility syndrome (BCSSS) for spectrum of idiopathic epilepsies with partial seizures including benign infantile focal epilepsies (BIMSE), rolandic epilepsy (BECT), Panayiotopoulos syndrome (early onset BOE), and Gastaut type occipital epilepsy (late onset BOE). Dr. Carl E. Stafstrom (University of Wisconsin-Madison) ended the didactic portion of Children's Hour by presenting the genetics and pathophysiology of BECT. Differentiating genetics of centrotemporal spikes (EEG signature) versus syndrome of BECT, he noted a lack of concordance in twins in rolandic epilepsy in contrast to twins with idiopathic generalized epilepsy. He questioned whether those impressive interictal spikes were causally related to cognitive dysfunction and seizure generation in children with BECT. Open discussion focused on when to treat, and if treated, when to stop, and whether treatment will change ultimate neuropsychiatric outcome. A poll was taken to show that about half of the participants were inclined to treat while the other half did not treat benign partial epilepsies of childhood. Topics suggested for next year's Children's Hour included Movement Disorders and Epilepsy, and Early Life Febrile Convulsion and Epilepsy-FEBSTAT study update. Please contact [skoh@childrensmemorial.org](mailto:skoh@childrensmemorial.org) or [skoh@mednet.ucla.edu](mailto:skoh@mednet.ucla.edu) if you are interested in presenting or have topic suggestions.

### Clinical Roundtable

*James W.Y. Chen, M.D., Ph.D.*

During the American Epilepsy Society's 59th Annual Meeting, a clinical roundtable discussion on "Impending Status Epilepticus — A Useful Concept?" was coordinated by James W.Y. Chen, M.D., Ph.D. The other presenting speakers included Robert J. DeLorenzo, M.D., Ph.D., Simon D. Shorvon, M.B., M.D., BChir, FRCP, Jerome Engel, Jr., M.D., Ph.D. and Raman Sankar, M.D., Ph.D. Impending Status Epilepticus, proposed by James W.Y. Chen, M.D., Ph.D., and Claude G. Wasterlain, M.D., is a time-dependent definition to distinguish the initiation phase of generalized convulsive status epilepticus, and is defined as "continuous or intermittent seizures lasting more than 5 minutes, without full recovery of consciousness between seizures." The definition of status epilepticus is reverted to "clinical or electrographic seizures lasting more than 30 minutes without full recovery of consciousness between seizures." Dr. DeLorenzo compared seizures lasting from 10-29 minutes vs. status epilepticus; 10-29 minute seizures constitute about 36% of status epilepticus cases and show very different features from status epilepticus in response to treatment and outcome. Dr. Shorvon gave a presentation on the prodromal period of status epilepticus. He cited Clark and Prout's description that the prodromal period was observed in 32/35 cases of status epilepticus. He proposed using "early status epilepticus" to describe the prodromal period. Dr. Engel discussed the difficulties in defining status epilepticus and pointed out several pressing research issues, such as the need to understand the development of pharmacoresistance in status epilepticus. Dr. Sankar discussed the duration of seizures in children and the implication for treatments. He also described findings from animal researchers showing cell damage after 30 minutes of seizures. Many of the attendees participated in the discussion and exchanged ideas with the panel. It was concluded that more research is

needed of the early phase of status epilepticus.

### Controversies in Epilepsy: Epilepsy Surgery Case Discussions

*Hans O. Lüders, M.D., Ph.D.*

The session was extremely well attended with many attendees unable to find seating. Dr. Felix Rosenow, Dr. Prakash Kotagal, and Dr. Imad Najm presented pharmacologically intractable cases with focal epilepsy. For each case the ictal semiology, interictal and ictal EEG, and neuroimaging results were presented and this led to heated discussion by the attendees and faculty. Different approaches to invasive recordings were discussed even if in general there was agreement between the different schools regarding the questions the invasive recordings should elucidate. In general, as expected, the French School supported the use of stereoelectroencephalography (sEEG) and the Americans applied primarily subdural electrodes even if they recognized that in selected cases sEEG could have advantages. In general, it was felt that the cases illustrated well the complicated process of presurgical evaluation of patients with intractable epilepsy and it demonstrated how a detailed invasive evaluation can help in the planning of a successful surgical resection leading to seizure freedom without neurological complications.

### Engineering and Epilepsy

*Robert B. Duckrow, M.D. and Hitten P. Zaveri, Ph.D.*

The Engineering and Epilepsy SIG, at the 2005 joint meeting of AES and ACNS in Washington, DC, focused on challenges to the continued development of the field of

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**Clinical Roundtable**

## SIGnals

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seizure prediction. The SIG was very well attended. Five speakers accepted invitations to present. The speakers and the titles of their presentations were: Florian Mormann, M.D., Ph.D., University of Bonn, "A comparison of different approaches to seizure prediction with special emphasis on statistical validation"; Stephen Wong, M.D., University of Pennsylvania, "Statistical evaluation of early seizure detection and prediction algorithms with hidden Markov models"; J. Chris Sackellares, M.D., University of Florida, "Evaluation of an automated seizure prediction algorithm in human epilepsy and an animal model of epilepsy"; Jean Gotman, Ph.D., Montreal Neurological Institute, "High frequency activity (above 100Hz) in the human EEG"; and Steven Schiff, M.D., Ph.D., George Mason University, "Dynamical evolution of seizures." The positions articulated included: that a pre-seizure state exists; there is a need for more rigorous testing of seizure prediction, and complete data sets are needed to avoid sampling errors; intermittent high frequency activity may be a component of the pre-seizure state, though it remains to be defined how best to spatially sample this activity; defining and incorporating patient state will be a critical component of further progress; and there is a need to expand on work in animal models. After the SIG, the attendees, several of the speakers and the session co-chairs continued the discussions from the SIG in an informal setting. The SIG was taped by the Epilepsy Therapy Development Project, and the taped proceedings will be hosted by <http://professionals.epilepsy.com>.

### Herbs and Botanicals: Botanicals as Anticonvulsant Therapy

*Steven C. Schachter, M.D.*

Herbal medicines have a rich tradition in many cultures around the world and are often taken by patients with epilepsy—but do they help control seizures? The first special interest group on herbs and botanicals met in Washington at AES 2005 to discuss the use and development of botanicals (e.g., herbs, mushrooms) for the treatment of epilepsy. While herbal medicines are classified as "dietary supplements" in the US, in the Far East herbal medicines enjoy a more mainstream role in medical therapeutics. In China, herbal medicines are prescribed in many hospitals.

In Japan, herbal medicines, known as "Kampo," are manufactured to the same standards as prescription drugs and may be available by prescription only.

Nikolaus J. Sucher, M.D., explained that herbal medicines in China are prepared according to a sophisticated system of medical theory and practice. Chinese prescriptions contain four groups of drugs: (1) the principal drug directed at the main cause or symptom of the disease ("Ruler"); (2) drugs directed at the underlying cause as well as accompanying symptoms and complications ("Minister"); (3) drugs that treat secondary symptoms and counteract any potential adverse effects of the primary drugs ("Assistant") and (4) drugs that direct the other drugs into the right channels and insure that they don't overwhelm the patient's capacity to cope with their actions ("Enabler"). Dr. Sucher presented his findings on potential mechanisms of action that may underlie the effectiveness of traditional Chinese medicines used for stroke, observing mechanisms such as NMDA antagonist activity and blockade of caspase 8.

Siegward M. Elsas, M.D., reviewed six botanicals used for the treatment of epilepsy worldwide. These include Valerian, a European traditional herb, *Passiflora incarnata*, used by native Americans, *Kava-kava* from the South Pacific, *Piper nigrum* used in traditional Chinese medicine, *Cynanchum otophyllum*, also used in traditional Chinese medicine, and *Withania somnifera* (Ashwagandha), used by Indian (Ayurvedic) medicine. Dr. Elsas outlined requirements for clinical trials that should be considered to test the efficacy of these and other compounds for the treatment of epilepsy.

### Magnetoencephalography/Magnetic Source Imaging

*Wenbo Zhang, M.D., Ph.D.*

Clinical application of Magnetoencephalography/magnetic source imaging (MEG/MSI) is increasing. This session addressed recent progress in epileptogenic localization, language and memory mapping. Dr. James Wheless pointed out that as a presurgical evaluation



**Herbs and Botanicals: Botanicals as Anticonvulsant Therapy**

tool, MEG is superior to scalp video EEG recording referenced to the surgical outcome. Dr. Robert Knowlton presented his exciting data in patients with non-localizable MRI findings. In this group of patients, the sensitivity of MEG/MSI is high at 70-80% and with high positive predictive value (82-90%). MEG/MSI was comparable to intra-cranial EEG monitoring. Dr. Gail Risse raised questions about the significance of non-dominant hemispheric dipoles in MEG/MSI language mapping and Dr. Eduardo Castillo presented promising data with a bimodal association task to map memory function. In the future, MEG/MSI may focus on: 1) further validation with comparing IC EEG to improved MEG technology; 2) multiple modeling analysis; and 3) better tasks to map memory and expressive language.

### Neuroendocrine

*Cynthia L. Harden, M.D.*

The 2005 Neuroendocrine SIG focused on the connection between seizures, sleep and hormones. The speakers this year were Dr. Susan Herman, Dr. Mark Quigg, and Dr. Pavel Klein, who briefly presented their work. The discussion was lively and it appears that the association between seizures and hormones during sleep is an area for which research paradigms are still being developed. At this time, the correlation between seizures and hormones such as melatonin, and various neuroactive steroids is likely present but unclear. The occurrence of temporal lobe seizures typically in the late afternoon and secondarily generalized during the night differs from the circadian pattern of frontal lobe seizures (mostly

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nocturnal) and from primary generalized epilepsy (usually during wakefulness). The association between hormones and seizures must be studied by considering seizure type, and both ultradian rhythms such as pulsatility of hormonal secretion, and circadian rhythm based on light exposure. The effects of neuroactive steroids and melatonin on seizures during sleep was discussed; further investigation will hopefully determine whether changes in hormone secretion during sleep influence the timing and occurrence of seizures. The SIG this year differed from the previous years when we focused almost exclusively on reproductive hormones. Sleep-related neuroendocrine factors and their relationship to seizures is an area that is relatively unexplored and holds promise for our further understanding of epilepsy.

### **Neuroimaging: Imaging in Reoperation**

*Harry T. Chugani, M.D.*

The success rates (seizure freedom) in neocortical epilepsy surgery have not changed appreciably in the past several decades and remain in the 50-60% range. Some of these patients will be candidates for a second epilepsy surgery evaluation, since it is well documented that reoperation can achieve seizure control in a significant number of cases (Salanova et al., 1994; Siegel et al., 2004). This problem was reviewed by Dr. Vicenta Salanova from Indiana University.

There have been remarkably few neuroimaging studies aimed at the localization of residual epileptogenic cortex. With the more widely used PET tracers FDG and FMZ, one typically looks for decreased glucose metabolism or GABA<sub>A</sub> receptor binding (i.e., a “negative” signal) in epilepsy surgery evaluation, but both of these PET tracers are of little use in the setting of reoperation evaluation because the initial resection results in diaschisis or tissue damage, which also appears as areas of decreased uptake. Ideally, a PET tracer that gives a “positive” signal interictally (i.e., increased uptake) in epileptogenic cortex would be preferable in order to avoid the confounding effects of prior resection. Csaba Juhasz from the Children’s Hospital of Michigan, Wayne State University group discussed the use of AMT PET in 33 patients (mean age: 10.8 years; age range 3-26 years)

who continued to have seizures following a neocortical resection. They reported that 10 (43%) of 23 patients scanned greater than 2 months, but less than 2.3 years of the failed resection manifested increased AMT uptake. These areas of increased uptake showed excellent concordance with the area of seizure onset on ictal EEG. Seven patients with localizing AMT PET scans underwent a second resection and five became seizure free, while the remaining two showed considerable decrease in seizure frequency. While the sensitivity of AMT PET in detecting residual epileptogenic cortex may not be great, the technique is useful in a considerable number of subjects undergoing reoperation and sets the stage for further research in this group of patients.

The Mayo Clinic group discussed their experience with the use of SPECT (SISCOM) in the evaluation of patients being considered for reoperation. The signal from neuroimaging is again a “positive” signal, and this tool also promises to be very useful in this difficult group of patients. The Mayo Clinic group reported very favorable surgical results after a second surgery guided by results from SISCOM. There was good concordance between SISCOM localization and intracranial EEG data. Also, this method is more widely available than AMT PET. Dr. Hiroshi Otsubo from Sick Children’s Hospital in Toronto discussed briefly the use of MEG in evaluation for reoperation, showing some interesting data and potential clinical use, but since this is not strictly neuroimaging, the discussion was brief. The overall consensus was that much more imaging research is required to decide how best to approach reoperation patients from an imaging perspective.

### **Neuropharmacology**

*Andres M. Kanner, M.D.*

The Neuropharmacology SIG was devoted to the review of the role of drug transporter proteins (DTPs) in the causation of refractory epilepsy.

Dr. Graeme Sills defended the position on the role of DTPs in refractory epilepsy. He showed data indicating that their mechanism of action is detectable in relevant brain tissue (i.e., at the site of the epileptogenic area in mesial temporal structures of patients with mesial temporal sclerosis, in dysembryoplastic neuroepitheliomas and in epileptogenic tubers of patients with

Tuberous Sclerosis). Dr. Sills made a point that multiple AEDs have been shown to be substrates for DTP mediated transport (i.e., phenobarbital, phenytoin, carbamazepine, lamotrigine, felbamate), which serves as evidence of DTPs’ role in refractory epilepsy. Finally, he reviewed studies that suggested that DTPs are active in drug resistance, which is counteracted by overcoming their mechanism of action.

Dr. Gail Anderson, on the other hand, cautioned against reaching premature conclusions on the role of DTPs in refractory epilepsy by showing studies that do not demonstrate that inhibition of DTP mechanisms of action increase (i.e., with verapamil or probenecid) the brain concentration of the AEDs cited above. She also showed similar results from animal models with MDR1 knockouts. Dr. Anderson also showed several studies that demonstrated excellent and linear correlation between unbound plasma concentrations of phenytoin, carbamazepine and phenobarbital and microdialysate and/or brain concentrations in brains. The studies included wide range of doses and concentrations with no evidence of saturation and were done primarily in patients with refractory epilepsy. She concluded that these data strongly argued against transporter dependent blood brain barrier uptake and that older AEDs are either not substrates or very weak substrates for DTPs and that the excellent correlation between brain and/or microdialysate concentrations and unbound serum concentrations suggest a lack of a major role for an efflux transport system in blood-brain barrier transport of the AEDs. These two presentations were followed by a very lively discussion that included several authorities in the field including Dr. Wolfgang Loscher.

### **Neurostimulation**

*James W. Wheless, M.D.*

The 2005 AES Neurostimulation SIG attracted over 200 people to listen as three speakers presented talks on the behavioral effects of Neurostimulation. Dr. Sarah Lisanby, Director of the Magnetic Stimulation Laboratory and the Brain Behavior Clinic at the New York Psychiatric Institute, and Associate Professor of Clinical Psychiatry at Columbia University, discussed her research studies using transcranial

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stimulation as a treatment for depression. She reviewed rapid transcranial magnetic stimulation (rTMS) as a treatment for depression. She explained how this works by inducing a focal seizure, how to identify the target of the therapy, stimulation parameters used, the electrodynamic effects of this compared to electroconvulsive therapy, the cognitive profile of this therapy, and its antidepressant response.

Her presentation was followed by Dr. Helen S. Mayberg, Professor of Psychiatry and Neurology at the Emory University School of Medicine discussing deep brain stimulation for treatment resistant depression. She explained their initial neuroimaging studies that led them to target the cingulate gyrus (Brodmann area 25). She explained how they determined this was a possible site to stimulate, the implant procedure and the clinical outcome that has led to a patent in this area.

Finally, Dr. David Labiner, Professor of Neurology and Pharmacy Practice and Director, Arizona Comprehensive Epilepsy Program at the University of Arizona, discussed the use of vagal nerve stimulation to treat depression. He reviewed the initial observations that suggested VNS therapy may be an effective treatment for depression and the results of the pivotal trials that led to the approval of this device for treating patients with refractory depression.

All three speakers kept the audience engaged and lively questions were asked. The 2005 Neurostimulation SIG was a success and we look forward to the 2006 event.

### Nursing Research

*Janice M. Buelow, Ph.D., RN*

As nurses, our focus is on helping patients reach their highest level of wellness despite their medical diagnosis. While part of what we do is help patients manage their medical condition we also help them to find ways to manage their life with this medical condition. This is especially true in epilepsy, a chronic condition with acute events that can be disruptive to daily life.

The nursing research special interest group would like to identify research areas that will facilitate our understanding of how to help our patients live well with epilepsy. At the AES meeting in Washington, DC, we began to identify several priority issues that nurses could be involved with to assist their

patients using best practices. What we discovered was that there is little research evidence available to drive our practice. Nurse researchers like Dr. Colleen DiIorio and Patty Schaefer have addressed self-management and adherence issues that might support our practice in these areas. In addition, Dr. Joan Austin has conducted research regarding children with epilepsy and the significant issues surrounding their lives. However, we recognized that there is still much work to be done.

This year we began to identify the priority issues for nursing research. We identified four specific areas that we believe need immediate attention. These include (1) adherence to medical prescriptions, (2) pediatric epilepsy and school issues, (3) safety issues in daily life, and (4) safety issues in the hospital.

We will continue our discussion at our AES Nursing Research discussion site. We hope that our discussion and ongoing work will generate a greater understanding of evidence-based practice in nursing and generate new nursing research that is clinically driven.

### Pregnancy Outcomes

*Kimford J. Meador, M.D.*

The second meeting of the Special Interest Group on Pregnancy Outcomes occurred at the AES annual meeting in December 2005. The most recent findings from four major antiepileptic drug (AED) pregnancy registries and a NIH multicenter study were presented. Although there are multiple design differences, all of the investigations are observational prospective studies. Most women were treated with AED monotherapy and were seizure free. The most commonly

used AEDs across all studies were carbamazepine, lamotrigine and valproate. The EURAP is a prospective registry in 39 countries which has enrolled 7236 mothers (4134 completed prospective outcomes); AED specific outcomes are not available yet. The North American AED Pregnancy Registry has enrolled 4,376 pregnant women; it requires

women to make the initial call to enroll (888.233.2334). This registry has reported an increased incidence of major malformations for phenobarbital (6.5%; 95% CI 2.1-14.5%) and valproate (10.7%; 95% CI 6.3-16.9); a third drug with an increase in one specific malformation will be reported soon. The Australian Pregnancy Registry has enrolled 810 women (723 outcomes) and reported an increased incidence of major malformation for valproate (14.3% for monotherapy), which was dose dependent. The UK Epilepsy Pregnancy Registry has enrolled 4,414 women (3,607 full outcome data) and reported an increased major malformations for valproate (6.2%; 95% CI 4.6-6.2%); dose dependent effects were present for valproate and lamotrigine. In contrast, the Glaxo Lamictal Registry has not found a dose dependent effect for lamotrigine. The NEAD Study is a multicenter study in the UK and USA designed to examine cognitive outcomes; it has enrolled 333 mother/child pairs on AED monotherapy. Early findings revealed an increased risk of major malformations for valproate (17.4%), which was dose dependent. The results across studies, thus far, suggest a special risk for valproate, especially at higher doses.

### Psychological Nonepileptic Seizures

*W. Curt LaFrance, Jr., M.D. and Selim Benbadis, M.D.*

Psychological nonepileptic seizures (NES) are neuropsychiatric disorders, presenting with a combination of neurological signs, underlying psychological conflicts, and without associated epileptogenic pathology. For more than a century, the

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**Pregnancy Outcomes**

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medical community has accumulated data and insights about the phenomenology, epidemiology, risks, comorbidities, and prognosis of NES. The use of intensive video-electroencephalographic monitoring (vEEG) has greatly increased our knowledge of NES. However, we have not progressed much beyond anecdotal reports of treatments for NES, and no randomized, placebo-controlled trials of treatment for the disorder have been completed.

The NES SIG was well attended and those present actively participated in discussion as we summarized and reviewed the NES Treatment Workshop, held in May 2005. The NES Treatment Workshop was composed of a multidisciplinary group of experts in neurology, psychiatry, and psychology familiar with NES gathered to propose a research agenda for NES treatment trials. We were also able to honor the late Dr. John Gates, who was instrumental in the first two conferences on NES, held in the 1990s.

The majority of the work from the prior workshops yielded information on diagnosis, neurological and psychiatric comorbidity, and psychological functioning in NES patients. The focus of the May 2005 workshop was on advancing the treatment research in NES, and specific topics of the treatment workshop discussion included: 1) classification of NES subtypes, 2) the presentation of the diagnosis of NES to the patient, 3) treatments for patients with NES, 4) outcomes in NES trials, and 5) child and adolescent NES. Each of the topics was addressed in the SIG, and discussion on future research initiatives followed. We also surveyed the current “treatment as usual” used in the various epilepsy centers, in preparation for a multi-center treatment trial for patients with NES.

**Temporal Lobe****Sleep and Epilepsy***Nancy Foldvary-Schaefer, D.O.*

The 2005 Sleep and Epilepsy SIG focused on daytime sleepiness in epilepsy, one of the most common complaints of persons with epilepsy and a major public health concern for the general population. Yet, few have studied its causes and even fewer have attempted to measure it objectively. Drs. Merrill Wise and Martin Salinsky were guest speakers. Dr. Wise is a pediatric neurologist and sleep medicine expert at Baylor College of Medicine and Texas Children’s Hospital in Houston, Texas and has served on the Standards of Practice committee of the American Academy of Sleep Medicine. Dr. Wise reviewed objective (laboratory) tests of daytime sleepiness, the Multiple Sleep Latency Test and the Maintenance of Wakefulness Test and discussed the literature in which these tests have been applied in epilepsy populations. Dr. Salinsky, Director of the Oregon Health Sciences University Epilepsy Center, discussed his work using another measure, the Awake Maintenance Task, to study sleepiness and cognitive complaints in patient with epilepsy taking different AEDs. The SIG ended with a lively question and answer session and discussed strategies on how to carry this field of research forward.

**Surgery***Steven N. Roper, M.D.*

The Surgery Special Interest Group session was held on December 6 at the 2005 Annual Meeting of the American Epilepsy Society. Once again, it was very well attended. A series of cases were presented to the group that attempted to elicit discussions about the conceptual boundaries of surgical therapy for intractable epilepsy. The presentations were thought-provoking and were followed by lively discussions from the entire group. Dr. Michael Haglund from Duke University was appointed as the organizer for the Surgery SIG for the next three years. The organizer would like to thank the presenters as well as the attendees who provided their insightful comments during the group discussions. We look forward to another provocative and interactive session next year.

**Temporal Lobe***Andres M. Kanner, M.D. and Jerome Engel, Jr., M.D., Ph.D.*

The Temporal Lobe Epilepsy SIG held at the AES meeting addressed the problem of psychiatric evaluations in patients undergoing a presurgical evaluation for temporal lobectomy. The data presented and the discussion that followed revealed the following points: (1) Psychiatric comorbidity in patients with refractory temporal lobe epilepsy is relatively high and is a strong predictor of post-surgical psychiatric complications. (2) A life-time history of mood disorder may be one of the predictors of post-surgical seizure outcome as well as of failure to be gainfully employed after surgery. (3) The above findings are not surprising given that abnormalities in mesial temporal structures (i.e., hippocampal atrophy) are associated with primary major depressive disorders. (4) Post-surgical depressive and anxiety disorders can occur in up to 30% of patients during the first 12 months following surgery. (5) Despite the high prevalence of comorbid psychiatric disorders and post-surgical complications in the first post-surgical year, only 20% of 47 major epilepsy centers that completed a survey perform a psychiatric evaluation in *every* patient undergoing a presurgical evaluation. (6) There is a lack of consensus among these epilepsy centers on the frequency of post-surgical psychiatric complications. For example, data from this survey revealed that 53% of centers thought that post-surgical psychiatric complications constituted a frequent problem while 47% did not. (7) The absence of consensus reflects the fact that this problem has not been studied in a systematic manner. The lack of such data may result from the lack of access to psychiatrists with expertise (and interest?) in psychiatric disorders of epilepsy. For example, among the 47 epilepsy surgery centers that completed the survey, only 25% had a psychiatrist on their epilepsy team and 50% had to rely on a different psychiatrist when a consultation was requested. Of note, those centers with a psychiatrist on their team were more likely to recognize post-surgical psychiatric complications as a relatively frequent occurrence.

The possible causes for the relative “unavailability” of well trained psychiatrists

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### Translational Research

in psychiatric disorders of epilepsy were attributed to: economic reasons (i.e., psychiatrists not allowed by their department to dedicate a portion of their time to only one service); inadequate training of psychiatrists in neurologic disorders, and poor communication between the two disciplines.

### Translational Research

*Orrin Devinsky, M.D. and Warren Lammert*

This special interest group focused on the challenges involved in translating basic science research into useful treatments for people with epilepsy. Steven Schachter, M.D., outlined the progress and potential of botanicals, which may represent a rich

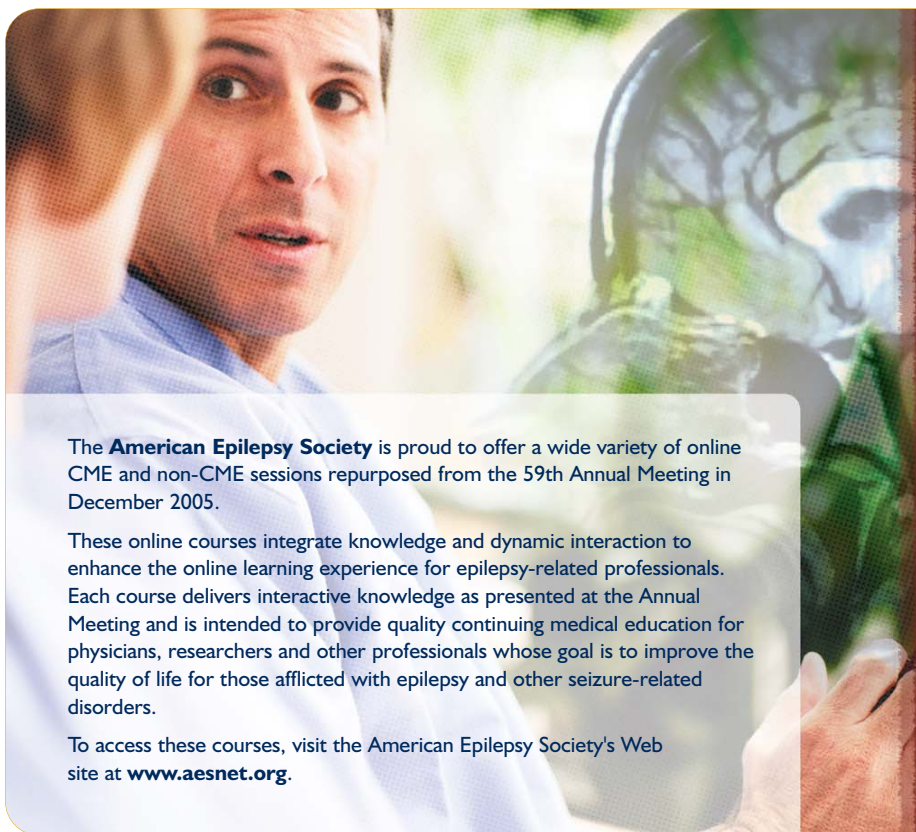
potential source of new antiepileptic drugs. Botanicals are used widely in the Far East and other cultures and may represent a low cost solution for the treatment of epilepsy in developing nations. Medically important botanicals include paclitaxel (bark of Pacific yew tree), aspirin (willow bark), galantamine (daffodil bulbs) and digitalis (foxglove).

Frances Jensen, M.D., described the multiple changes that occur in the central nervous system stemming from a primary brain event (i.e., first episode of status epilepticus) and leading to the development of chronic epilepsy. These include activation of ion channels and ligand-gated receptors, posttranslational receptor modifications,

transcriptional events, neuronal death, inflammatory cascades, neurogenesis, mossy fiber sprouting, and network reorganization. All of these changes represent potential targets for treatment. Application of these treatments may be time sensitive, and there may be a role for polytherapy.

Steve Collins, M.D., Ph.D., directed his comments to the practical issues facing the development of new drugs. Dr. Collins emphasized the importance of "exclusivity" in a successful business plan, which can be achieved by utilizing the Orphan Drug Law or by performing studies focused on the pediatric population.

Gregory Went, Ph.D., described the timeline of development of a new drug, which may take 11-15 years and cost \$200-800 million dollars. A less expensive option for drug development is combination therapy, which may be accomplished in 3-5 years and cost \$20-40 million. Another approach is the development of controlled release technologies, such as matrices, tablets, and osmotic pumps. Dr. Went emphasized the challenging nature of translating new drugs into successful products.



The **American Epilepsy Society** is proud to offer a wide variety of online CME and non-CME sessions repurposed from the 59th Annual Meeting in December 2005.

These online courses integrate knowledge and dynamic interaction to enhance the online learning experience for epilepsy-related professionals. Each course delivers interactive knowledge as presented at the Annual Meeting and is intended to provide quality continuing medical education for physicians, researchers and other professionals whose goal is to improve the quality of life for those afflicted with epilepsy and other seizure-related disorders.

To access these courses, visit the American Epilepsy Society's Web site at [www.aesnet.org](http://www.aesnet.org).

*AET Symposium*  
Seizure Aggravation During Antiepileptic Therapy

*Presidential Symposium*  
Behavioral and Cognitive  
Co-morbidities in Pediatric Epilepsy; Recognition,  
Mechanisms, Assessment, and Treatment

*Annual Course*  
Evidence Used to Diagnose and  
Treat Patients

*Evening Symposium*  
AED Pharmacology: Application to Practice

*Evening Symposium*  
Consciousness Impairment: Mechanisms  
and Consequences

*Evening Symposium*  
Hot Topics in Epilepsy 2005

*Evening Symposium*  
Resective Epilepsy Surgery: Patient Selection  
and Outcomes

*Merritt-Putnam Symposium*  
Pharmacoresistance: From Clinic  
to Mechanism

*Pediatric Epilepsy State of the Art Symposium*  
Seizures and Epilepsy: Complicating Medical  
Conditions in Childhood

*Plenary II*  
Neurophysiological Monitoring of the Critically Ill

*Plenary III*  
Maladaptive Neuroplasticity in Stress and Epilepsy

*Professionals in Epilepsy Care*  
Controversies and Challenges  
of EEG Monitoring

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