Comorbidities:
Pediatric, Adolescent, and Young Adults
Behavioral, psychiatric, and cognitive co-morbidities in epilepsy and their consequences

- Compared to others in the population, people with epilepsy have higher frequencies of:
  - Cognitive and educational difficulties
  - Behavioral problems
  - Psychiatric disorders
  - Sleep and pain disorders or complaints
  - Poorer social & educational outcomes

Psychological stress comorbidities, and health behaviors among US adults with seizures: Results from the 2002 National Health Interview Survey. Strine et al. Epilepsia 2005
Sources of increased co-morbidity and poor outcome

- Underlying structural lesions and other disorders that cause epilepsy
- Effects of seizures
- Essential co-morbidity: common factors/mechanisms underlying both seizure propensity and various co-morbidities
- Effects of medications
- Social influences, stigma
Underlying structural or other insult/condition

- 1/5 to 1/3 of epilepsy is associated with positive MRI or other findings indicative of brain disorder underlying epilepsy.
  - IQ <80:
    - ~20% if negative MRI
    - ~55% if positive MRI

Berg et al. Brain 2009
Effects of seizures: Acute / Peri-ictal

- Increased cortical excitability up to 24 hours before a seizure
- Decreased cortical excitability up to 24 hours after a seizure.
- In someone with daily seizures, is there ever truly an interictal state?

Effects of seizures: Progressive

Proportion of cases ( light gray) and controls ( dark gray) with abnormal test-retest performance

Effects of seizures: Developmental epileptic encephalopathy

- Abnormal activity impedes development of normal pathways and function during critical periods particularly early in development
  - e.g. West syndrome
  - e.g. Lennox-Gastaut Syndrome
- Window of opportunity missed
  - Not reversible (?)
“Essential” Co-morbidity:

- Otherwise neurologically “normal”
  - Exam
  - Intelligence
  - Imaging
  - Noncontributory history

- Higher levels at or before onset of epilepsy:
  - Behavioral problems (Austin, Pediatrics 2001)
  - Psychiatric diagnoses (McAfee, Epilepsia 2007)
  - ADD (Hesdorffer, Arch Gen Psychiatry 2004)
  - Autism (Tuchman, Pediatrics 1991)
  - Cognitive difficulties (Hermann, Brain 2006, Taylor, Epilepsia 2009)
  - School problems (Berg, DMCN 2005)
Disorders may persist after epilepsy resolves

- Relative to sibling controls:
  - Increased levels of behavioral problems (Berg, DMNC 2007)
  - Increased levels of cognitive problems (Berg, E&B 2008)
  - Poorer quality of life (Baca, Value in Health 2010)

- In adults relative to population
  - Lower educational attainment
  - Lower employment
  - Few married, have children
  - Fewer drive

- End of seizures is not necessarily the end of epilepsy or its impact on the individual.
Timing and source of co-morbidities

Essential Co-morbidities

Structural/other insult

Onset of epilepsy

Resolution of epilepsy

Developmental Encephalopathic

Chronic / progressive

Acute / peri-ictal

Social/Stigma

Treatment
Ideal situation

- Specialty evaluation, diagnosis, and treatment
A model system:
Children’s Memorial Hospital, Chicago

Multi-disciplinary Team

- Ketogenic diet nutritionist
- Pediatric epileptologists
- Neuro-psychologist
- Educational Liaison
- Psychiatrist
- Neurosurgeons
- APNs
- Social work
The NCYPE’s Childhood Epilepsy Information Service has developed two books for parents and carers of children with epilepsy:

- **Epilepsy - A Parent's Handbook** is aimed at parents whose children have been newly diagnosed and it covers a wide range of useful topics from the basics of epilepsy to some of the day-to-day issues that are likely to arise.

- **Complex Childhood Epilepsy - A Parent's Handbook** is aimed at parents whose children have added complications to their condition. It explains some of the more serious epilepsies, often referred to as 'epilepsy plus' or 'difficult to control' epilepsy.

For free copies of either book contact the NCYPE at info@ncype.org.uk or 01342 832243 ext 508 or go to www.ncype.org.uk/epilepsy.
Realistic Goal:

- Convey to community providers importance of
  - Effective early control of seizures
  - Early screening, detection and intervention for comorbidities
Current Guidelines

- Guidelines for care
  - National Institutes of Clinical Excellence (N.I.C.E.)
- Referral for specialty evaluation
  - ILAE: Referral Guidelines, Cross, 2006
- Screening and intervention for developmental, cognitive, and psychiatric disorders
  - US Preventive Services Task Force
    - Screening of adolescents for depression
  - American Academy of Pediatrics
    Screening recommendations for developmental delay and Autism Spectrum Disorder
Barriers

- Inadequate knowledge of epilepsy
- Clinician knowledge and time
  - “My patients are not depressed”
  - No time
- Medical-legal concerns
  - If you find something, you own it
- Availability and adequacy referral specialists
- Availability of useful screening tools, and schedule
  - Screening for everything can be costly and time consuming
Recommendations

- Improve visibility and implementation of relevant referral and screening guidelines when available.
- Develop new guidelines where needed
- Highlight and formalize the role of allied health professionals in care of people with epilepsy.
- Develop comprehensive guidelines for care of children and young people with epilepsy (e.g. N.I.C.E.).
  - Treatment of seizures may ameliorate or prevent certain co-morbidities, but not all