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Comprehensive  
Epilepsy  
Centre

# Diagnosis + Management *of psychogenic non-epileptic event* the truth about lying

ANNUAL MEETING of EPILEPSY SOCIETY :  
challenge in epilepsy management  
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# SCOPE

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- introduction
- diagnosis
- management
- conclusion



# INTRODUCTION



# IMPACT

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- 10-20% thought to have PNES
- 80% of cases = female
- 83% of cases = 15-35 year old
- 20-50% of cases admitted to EMU
- 10% have co-morbid of ES and PNES



paroxysmal event

epileptic seizure

non-epileptic seizure  
(NES)

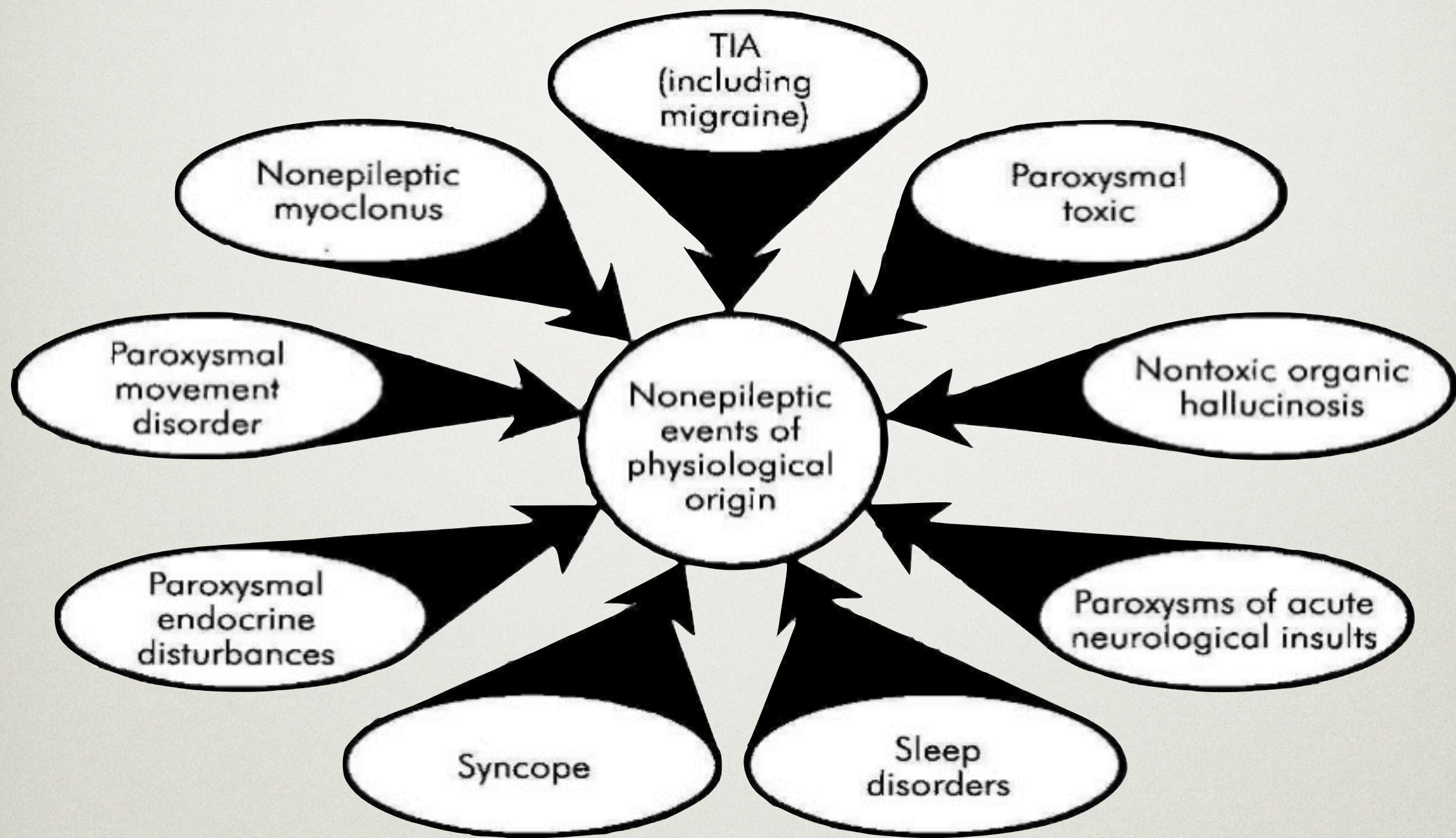
**PHYSIOLOGIC  
NON-EPILEPTIC SEIZURE**

- syncope
- movement disorder
- sleep disorder
- drop attack

**PSYCHOGENIC  
NON-EPILEPTIC SEIZURE**

- conversion
- factitious
- malingering







# PSYCHIATRIC CO-MORBIDITY

diagnosis	lifetime	current
<b>MDD</b>	<b>80%</b>	<b>47%</b>
Any affective disorder	98%	64%
<b>PTSD</b>	<b>58%</b>	<b>49%</b>
Any anxiety disorder exc. PTSD	51%	47%
<b>Any somatoform disorder</b>	<b>98%</b>	<b>89%</b>
conversion seizure	89%	78%
conversion non-seizure	82%	4%
<b>Any dissociative disorder</b>	<b>93%</b>	<b>91%</b>
<b>Personality disorder</b>		<b>72%</b>

Bowman 1994 (N=45)



# RISK FACTORS

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- children :
  - 46% difficulty in school
  - 42% family discord
  - 25% interpersonal conflict
  - 12% physical abuse
  - 5% sexual abuse
- adolescent
  - depression, cognitive dysfunction, co-morbid epilepsy
- Adult
  - female : sexual abuse, male : predisposing of epilepsy



# RISK FACTORS

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- male with PNES : chronic pain, anxiety, PTSD
- adult PNES exhibit physical-health problems



# PATHOGENESIS

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- unknown
- majority have a history of developmental insults or trauma -> psychological stress
- traumatic memories could dissociate from awareness -> psychological automatism
- both primary and secondary gain



# DIAGNOSIS

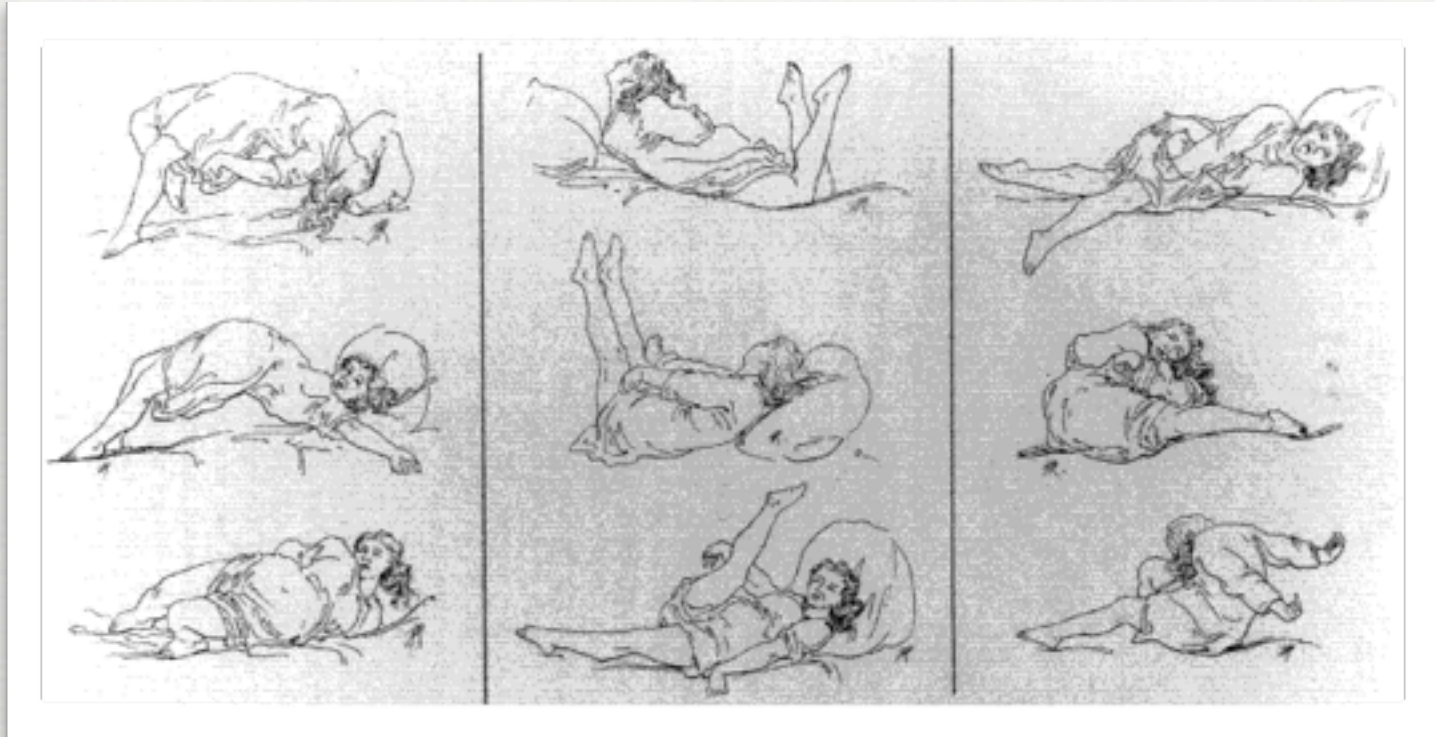


# DIAGNOSIS OF PNES

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- clinical features
- EEG (routine)
- video-EEG
- home-video recording
- provocative testing
- neurophysiological assay
- non-invasive imaging
- psychiatric consultation





HYSTERICAL  
SEIZURE

*"arc en cercle"*

2<sup>e</sup> PERIODE — PERIODE DE CLOWNISME



Fig 1. Phase des grands mouvements



Fig 2. Phase des contorsions  
( Arc de cercle. )

A. Delahaye et E. Leconsier.



**Table 1**  
Behaviors to distinguish between psychogenic nonepileptic and epileptic seizures

Observation	PNES	ES
Situational onset	Common	Rare
Gradual onset	Common	Rare
Precipitated by stimuli (noise, light)	Occasional	Rare
Purposeful movements	Occasional	Very rare
Opisthotonus ( <i>arc de cercle</i> )	Occasional	Very rare
Tongue biting (tip)	Occasional	Rare
Tongue biting (side)	Very Rare	Common
Prolonged ictal atonia	Occasional	Very rare
Vocalization during tonic-clonic phase	Occasional	Very rare
Reactivity during unconsciousness	Occasional	Very rare
Rapid postictal reorientation	Common	Unusual
Undulating motor activity	Common	Very rare
Asynchronous limb movements	Common	Rare
Rhythmical pelvic movements	Occasional	Rare
Side-to-side head shaking	Common	Rare
Ictal crying	Occasional	Very rare
Ictal stuttering	Occasional	Rare
Postictal whispering	Occasional	Not present
Closed mouth in tonic phase	Occasional	Very rare
Closed eyelids during seizure onset	Very common	Rare
Convulsion >2 min	Common	Very rare
Resisted lid opening	Common	Very rare
Pupillary light reflex	Usually retained	Commonly absent
Cyanosis	Rare	Common
Ictal grasping	Rare	Occurs in FLE and TLE
Postictal nose rubbing	Not present	Can occur in TLE
Stertorous breathing postictally	Not present	Common
Self-injury	May be present (especially excoriations)	May be present (especially lacerations)
Incontinence	May be present	May be present

non-epileptic event  
vs.  
Epileptic seizure

92% specificity



# ICTAL COURSE

	ES	PNES
<i>stereotypy</i>	YES	may be < <b>may not</b>
<i>stage</i>	wake / <b>sleep</b>	100% wake (pseudosleep)
<i>onset</i>	abrupt	abrupt / <b>gradual</b>
<i>duration</i>	FLE <60s TLE CPS (10-140s)	variable (20-805 secs)
<i>offset</i>	gradual >>abrupt except FLE	abrupt >> gradual

Devinsky et al. 2011



# MOTOR MANIFESTATIONS

	ES	PNES
<i>complex movement</i>	FLE > TLE	more common
❖ <i>thrashing &amp; writhing</i>	17%	45%
❖ <i>side-to-side head move</i>	rare	<b>suggestive</b>
❖ <i>out-of-phase movement</i>	atypical	<b>suggestive</b>
<i>'arc en cercle'</i>	??	28%
<i>discontinuous (on-off-on)</i>	rare	<b>suggestive</b>
<i>absence of motor feature</i>	yes	yes (prolong flaccidity)

Devinsky et al. 2011



# CHARACTERISTICS OF FRONTAL CPS

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- prominent motor automatism, complex, axial, aggressive sexual automatism, vocalization with variable complexity
- sudden onset, brief <1 min
- short postictal period with rapid clearing
- clusters, frequent, many per day
- **stereotype**
- **nocturnal**



# SENSORY AND AUTONOMIC MANIFESTATIONS

	ES	PNES
<i>isolated sensory symptom</i>	possible	rare (9%)
<i>pupillary response/ palpitation / pallor</i>	possible	possible
❖ <i>pupillary response</i>	often dilate	<b>88% normal</b>
❖ <i>change in HR</i>	suggestive if >30%	unusual
<i>urinary incontinence</i>	23%	6%

Devinsky et al. 2011



# AFFECTIVE AND VOCALIZATION

	ES	PNES
<i>feeling anxiety, moaning or crying</i>	uncommon	more common
<i>speech</i>	less emotional and intelligible	more emotional and intelligible
<i>timing of vocalization</i>	60% during ictus	44% at onset only
<i>ictal stuttering</i>	almost never	suggestive

Devinsky et al. 2011



# FACIAL FEATURES AND INJURIES

	ES	PNES
<i>eye closure</i>	uncommon	<b>common</b> esp. during entire sz
<i>forced eye closure</i>	no	yes / no
<i>mouth during tonic phase</i>	usually agape	<b>often clenched shut</b>
<i>tongue biting</i>	lateral tongue / buccal	tip / buccal
<i>physical injuries</i>	may be <b>esp. burns</b>	may be

Devinsky et al. 2011



# POST-ICTAL FINDINGS

	ES	PNES
<i>recovery</i>	gradual >> abrupt except FLE	abrupt >> gradual
<i>stertorous breathing</i>	may be	no
<i>postictal nose wiping</i>	may be	no
<i>postictal headache</i>	may be	no
<i>postictal fatigue</i>	may be	no
<i>ability to recall</i>	no	yes

Devinsky et al. 2011



# EEG

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- can be misleading
  - 30% of epilepsy can have normal EEG
  - >10% of healthy have non-sp abnormal
  - 0.5% of healthy have epileptiform d/c
  - in psychiatric patients = higher rate of benign variants and epileptiform d/c
  - finding may due to underlying pathology
- PNES can have motion artifact, but rarely progress from fast to slow.
- “stuttering” pattern can be found in PNES



# RULES OF “2”

- intractable to 2 AEDs
- at least 2 events per week
- at least 2 EEGs without epileptiform discharges

85 % positive predictive value



# VIDEO-EEG

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- diagnostic “gold-standard” for PNES
- differentiate ES VS NES, and physiologic VS psychogenic NES
- dual diagnosis is possible
- typical seizure must be recorded : verified by pt. and / or family
- Ideally, all different types were recorded
- 10% of PNES have true ES
- in frequent seizures, OPD VEM is possible



# LIMITATION OF VIDEO-EEG

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- time and space limitation
- anticipator with ES may desire to produce symptom
- no seizure without stressful events
- ictal EEG can yield negative in...
  - suboptimal study
  - artifact obscure (esp.FLE)
  - simple PS, or FLE
- withdrawal of BZD can cause gen. IED



# EEG

## epileptic seizure

characteristics

GTC/GT

CPS

PNES

*ictal EEG*

**always**

abnormal + change  
from preictal

**almost always**

abnormal + change  
from preictal

Usually

normal + unchanged  
from preictal

*postictal EEG*

**almost always**

abnormal + change  
from preictal

**frequently**

abnormal + change  
from preictal

Usually

normal + unchanged  
from preictal



# PROVOCATIVE TESTING

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- contentious issue !
- use when spontaneous sz are diff. to obtain
- reduce time to diagnosis
- including,
  - body part compression
  - verbal suggestion
  - placement of tuning fork or moist patch
  - IV saline
  - hypnosis (pediatric)



# CONCERN & LIMITATION

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- ethical issue !
- compromise patient-physician relationship
- the result and process should be disclosed to the patient in supportive manner
- could lead to atypical event = incorrect diagnosis
- photic stimulation and hyperventilation may be better options.



# HOME-VIDEO RECORDING

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- home video and audio recording could be helpful
- limitation
  - lack of EEG
  - fail to show onset
  - obscure by bedsheets & family member!!?
- care givers should inform to record : face, limbs, trunk, test level of consciousness, ability to follow command, etc.



# NEUROPHYSIOLOGICAL ASSAYS

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- serum prolactin may raise  $> 500$  IU / ml in
  - 89.8% of generalized convulsion
  - 69.4% in complex partial seizure
- depends on limbic region involvement
- **AAN** : serum prolactin level should be measured 10-20 min postictally can help to...
  - differentiate CPS / GT / GTC ES from PNES
- **BUT NOT** help to...
  - differentiate ES and syncope
  - partial ES and PNES



# NON-INVASIVE IMAGING

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- 30% of PNES can have MRI abnormal (most often non-specific WM change, post-op change)
- HS / FCD support ES BUT didn't confirm
- SPECT : lack of study
  - ictal SPECT inconsistently found abnormal in ES than PNES
  - 85% of SISCOM in PNES showed normal
- limitation : time-consuming, expense



# PSYCHIATRIC EVALUATION

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- psychiatric co-morbidity is common in ES and PNES but with different diagnosis
- only 5% of PNES cannot identified stressor or psych. diagnosis
- PNES : depression, anxiety, PTSD, PD
- Epilepsy : depression, anxiety, ADHD
- PNES > epilepsy : dissociative, somatoform disorder, borderline PD, OC PD, GID, eating disorder
- absence of evidence is not evidence of absence



# TREATMENT

NOT MERELY JUST **DIAGNOSE AND ADIOS**'



# 4 STAGES OF PNES MANAGEMENT

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- making diagnosis
- presenting diagnosis
- gaining control of seizures
- management of seizure and life activity

LaFrance et al. 2013



# MAKING DIAGNOSIS

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*“Accurate diagnosis is an ESSENTIAL aid to subsequent management”*

LaFrance et al. 2013



# PRESENTING THE DIAGNOSIS

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- neurologist should explain the diagnosis
- mental health professions should get involve
- having family members during presentation may facilitate understanding
- the seizure could be cease immediately after explanation.

ATTITUDE & PROCESS

LaFrance et al. 2013



nah...This patient is  
psychological-ill

doc, plz help me !  
all of my physically-ill  
are all because  
of my seizure

The clinician's comfort level with  
explaining somatoform disorder  
diagnosis is likely to impact the  
**ACCEPTANCE** by the patient and family.



**Table 1. Strategies used for the communication of the diagnosis of psychogenic nonepileptic seizures**

Shen et al. (1990)	Mellers (2005)	Duncan (2010)	Hall-Patch et al. (2010)
Good news—the seizures are not caused by epilepsy, explain vEEG findings.	Cover reasons for concluding they do not have epilepsy. Relay what they do have (explain	Explain how vEEG works and how it has helped with the diagnosis.	Genuine symptoms. Real events—can be frightening or disabling.

1. establish the 'typical event'
2. this is not epileptic seizure
3. the detail of nature / cause of the disease may or may not explain
4. they are not 'mad' or 'putting on'
5. this condition is common and well-recognized
6. For most cases (telling indirectly),
  - predisposing is difficult to identified
  - precipitating is related to stress / emotion
  - perpetuating factor should worsen the situation(vicious cycle)
7. the unconscious process should be best address by psychiatrist, psychologist
8. AED didn't help and can be harmful, therefore, should be gradually decrease
9. Evidences show that psychotherapy is generally helpful
10. follow up in both neurology and psychiatry department are suggested
11. Improvement is anticipated

The seizures may stop spontaneously. Although they are subconscious, a conscious effort can sometimes stop them. More seizures may occur before complete control is achieved.

Include patients' caregivers when delivering this explanation.

LaFrance et al. 2013



# PRESENTING THE DIAGNOSIS

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- avoid “hysterical seizures” or “pseudoseizure”
  - (แกล้งชัก, ชักแก้, ชักปลอม, ชักเทียม)
- better use “attack” or “seizure”
- more important = how empathetically the diagnosis is presented
- the communication with *other doctors*



# PROGNOSTIC FACTORS

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## bad factors

- depression
- personality disorder
- abuse history

## good factors

- recent onset
- absence of co-morbidity
- continued employment
- lack of financial benefit from state



# FURTHER PSYCHOLOGICAL TREATMENT

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- formal psychiatric assessment
- predisposing, precipitating and perpetuating factors should be listed
- psychotherapy should be implemented when indicated
- pharmacoRx should begin with early tapering and discontinue AED
- In mixed ES+PNES, reduce high doses of AEDs or polytherapy if possible
- use of psychopharmacologic agents to treat co-morbid



# PSYCHOTHERAPY

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- psychotherapy is recommended and best-validated as Rx of PNES
  - “the patient should accept the diagnosis”
- **Individual psychotherapy**
    - Cognitive behavioral therapy
    - psychodynamic therapy
    - others
  - **family therapy** may be indicated if family dysfunction is present



# TREATMENT MAINTENANCE

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- despite all treatments be given, many pts will continue to seize !
- despite seizure freedom, many remain disabled.
- Association of PNES with Personality disorder, PTSD, somatization disorder
- the benefits of long term follow remain...



# TREATMENT MAINTENANCE

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- 1. opportunity to review the diagnosis
- 2. make sure the diagnosis of PNES does not change inappropriately (inapp retreat with AED)
- 3. allow doctor to limit investigation for which medical cause is unlikely
- 4. reduce risk of iatrogenic injury
- 5. opportunity to interact with caregivers to limit overprotection or inapp dependence and to limit harm done by PNES
- 6. make it possible for doctor to refer pts for treatment they formally defer
- 7. able to offer or refer pts for treatment approaches that aim to reduce handicap
- 8. consider more intensive treatment program



# CONCLUSION



# CONCLUSION

- PNES are often **misdiagnosed** and **mistreated** as epilepsy
- The accuracy of diagnosis is crucial
- The analysis of clinical features with simultaneous EEG (VEM) is gold standard. Some investigation and underlying psychiatric conditions could support the diagnosis



# CONCLUSION

- presentation of diagnosis is also very important step
- PNES is the symptom, not disease.
- treatment of associated underlie psychological disease and co-morbidity is essential
- The correct diagnosis and management will at least reduce the unnecessary expense and harm