



# An Evaluation of Three Hour EEG Recordings in Neurophysiology

Gayle Hall (gayle.hall@nuth.nhs.uk), Chief Physiologist

## Introduction

Epilepsy is the most common serious neurological condition and affects approx. 600,000 people in the UK (Epilepsy in Action, 2016). A timely and correct diagnosis is important as 600 people with epilepsy die from SUDEP every year and misdiagnosis – thought to occur in up to 20% (NICE, 2014) – may lead to patients receiving unnecessary medication.

Certain types of epileptic seizures can be confused with other conditions such as syncope and dissociative seizures. Whilst the diagnosis of epilepsy is primarily clinical, video EEG can provide vital evidence to support or refute the diagnosis.

**3 hour video EEG recordings typically aim to capture one or more events. However, they are time-consuming and anecdotal evidence suggests that they are poorly attended and not very successful in capturing attacks.**

## Aims

To investigate whether 3 hour video EEG recordings are an efficient use of Neurophysiology service time.

## Methods

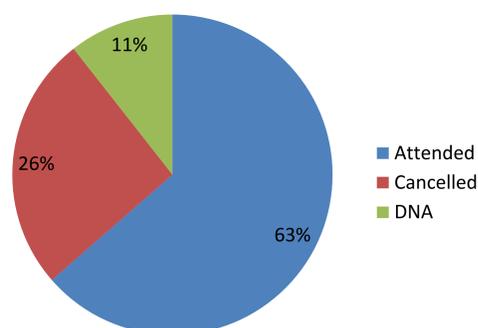
Information gathered for every 3 hour appointment in 2015:

- Did patient confirm appointment
- Did patient cancel appointment; if so:
  - How many times
  - Did patient give enough notice for slot to be filled
- Did patient attend; if so:
  - Did patient have an attack, was it typical and did it confirm diagnosis?
  - Was attack associated with epileptic activity and how soon after the start of the recording did it occur?
  - Was attack provoked by activation procedure or other stimulus?
  - Was patient referred for any further investigation, if so which one(s)?

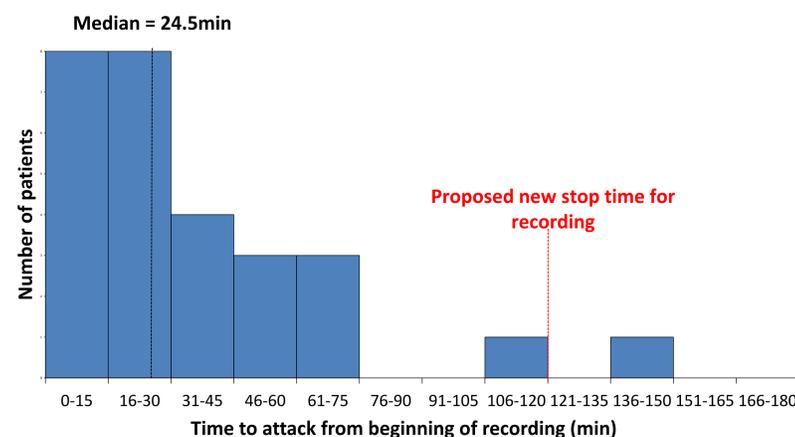
## Results

### Appointments and Attendance

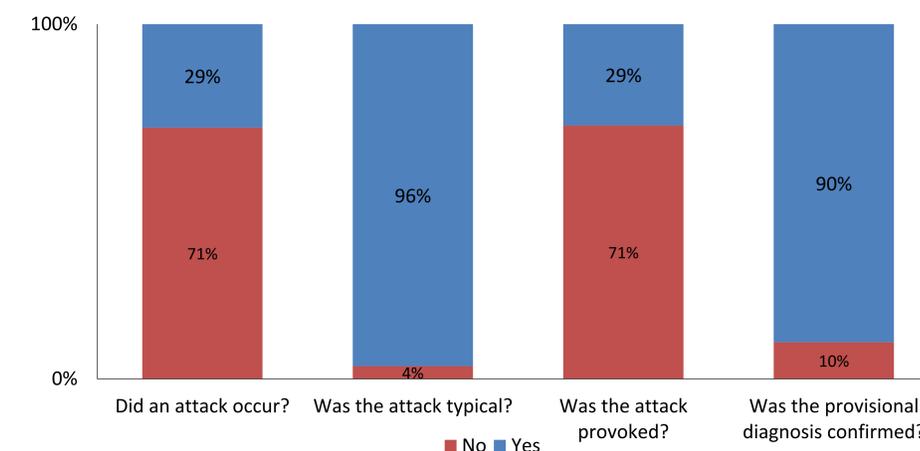
107 patients were given 151 appointments



### Time of Attack Onset



### Attack Occurrence and Features



### Additional Investigations

30 patients were referred for further investigations as follows

Test	No	Outcome			Attack Captured	
		Attended	Cancelled	DNA	Yes	No
Ambulatory EEG	4	3	1		3	
Cluster List EEG	1	1			1	
Prolonged EEG	1			1		
Routine EEG	1			1		
Sleep Deprived EEG	4	4		1		4
Videotelemetry	15	9	4	1	6	
Home Videotelemetry	4	4			2	

## Conclusions and Recommendations

1. In 29% of recordings an attack occurred. Superficially, this suggests that 3 hour recordings do not represent an efficient use of service time. However, 5/6 of patients who attended were not referred for further investigation in Neurophysiology.
2. Although the 3 hour DNA rate is comparable to the department average of 12%, a DNA equates to 3 hours of potentially wasted service time in comparison to 1 hour for a routine EEG. In order to minimise this, patients are asked to confirm attendance and secretarial staff attempt to contact those that have not confirmed. However, confirmation or non-confirmation of the appointment is not a reliable indicator that the patient will or will not attend.
3. 93% of attacks occurred within 2 hours of recording, which suggests that the length of recordings could be shortened to 2 hours without compromising diagnostic yield. This would allow more flexibility of staffing and service provision of routine tests as well as being more compatible with ambulance timings.