Enhancing brain health:
Innovative neuro-monitoring solutions

Dilraj Singh Sokhi *FRCPE FCP(ECSA)*

Associate Professor, Neurology

Aga Khan University Medical College (Nairobi)

IGAP

Intersectoral global action plan on epilepsy and other neurological disorders

2022–2031

Strategic objectives

21. The intersectoral global action plan on epilepsy and other neurological disorders 2022–2031 has the following strategic objectives:

1. Raise policy prioritization and strengthen governance
2. Provide effective, timely and responsive diagnosis, treatment and care
3. Implement strategies for promotion and prevention
4. Foster research and innovation and strengthen information systems
5. Strengthen the public health approach to epilepsy

Surveying for epilepsy in the community

The American Journal of Tropical Medicine and Hygiene

The American Society of Tropical Medicine and Hygiene

Prevalence of Epilepsy, Human Cysticercosis, and Porcine Cysticercosis in Western Kenya

Monica M. Diaz, Dilraj Sokhi, [...], and Ana-Claire L. Meyer

Am J Trop Med Hyg. 2022 May; 106(5): 1450–1455.

OpenDataKit

magnifying human resources through technology

Collect | Scan | Sensors | Survey | Tables || Aggregate

Dementia

CLINICAL LINGUISTICS & PHONETICS
https://doi.org/10.1080/02699206.2023.2254458

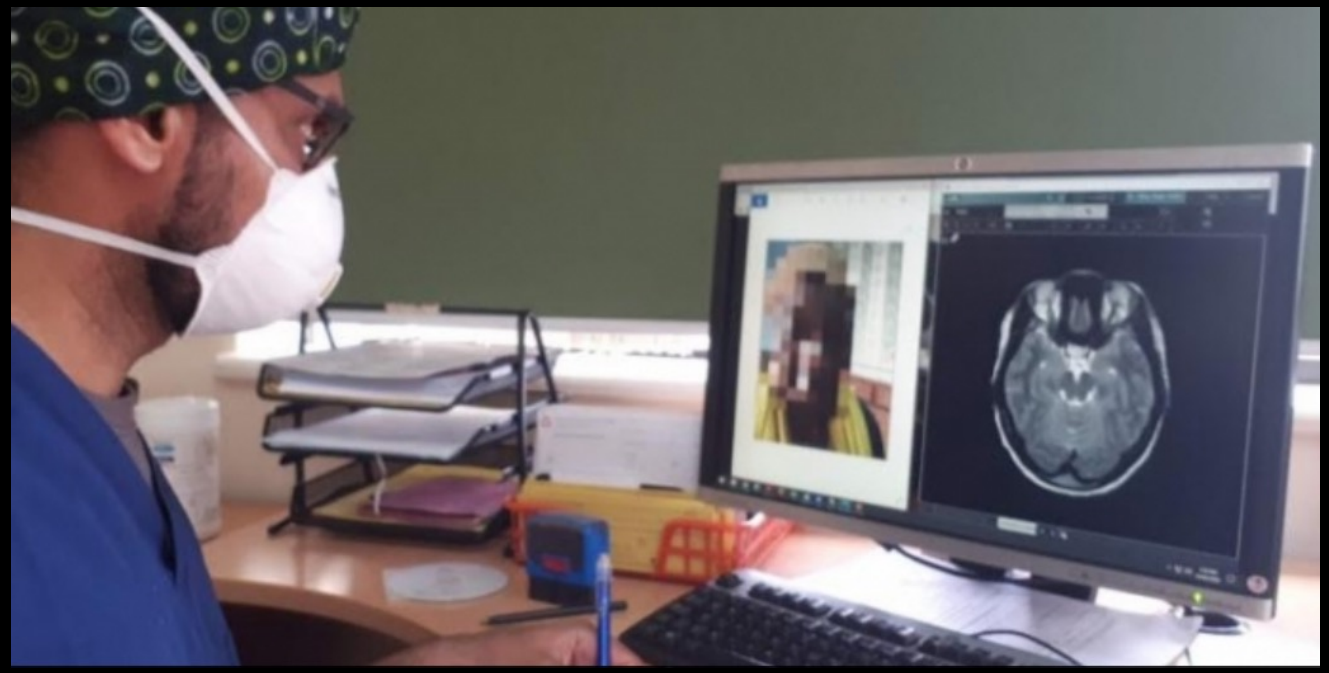
Taylor & Francis
Taylor & Francis Group

OPEN ACCESS Check for updates

Speech patterns in responses to questions asked by an intelligent virtual agent can help to distinguish between people with early stage neurodegenerative disorders and healthy controls

Gareth Walker[a], Nathan Pevy[b], Ronan O'Malley[c], Bahman Mirheidari[b], Markus Reuber[d], Heidi Christensen[b], and Daniel J Blackburn[c]

Tele-neurology



ELSEVIER

eNeurologicalSci

Available online 10 November 2023, 100484

In Press, Journal Pre-proof What's this?

High acceptability, convenience and reduced carbon emissions of tele-neurology outpatient services at a regional referral centre in Kenya

Fazal Abdulaziz Yakub [a], Jasmit Shah [a b], Dilraj Singh Sokhi [a]

Convenience Markers (n = 146)	Median [IQR]	Total
Time (that would have been) taken out of routine (hours)	3.0 [2.0-4.0]	1,143
Distance to hospital (km)	11.0 [7.2-21.1]	25,506
Approximate travel cost undertaken/if was to travel ($)	9.09 [4.55-18.18]	6,166.72

Patients with Drug-resistant epilepsy

An estimation of global volume of surgically treatable epilepsy based on a systematic review and meta-analysis of epilepsy

- 15-20% of epilepsies are drug-resistant
  - ***Failed in 2 drugs***
  - ***appropriate choice***
  - ***adequate doses***
- 10.1 million may be surgical candidates

The Aga Khan University Hospital

The first hospital in Kenya Accredited by Joint Commission International, USA

CAP ACCREDITED
COLLEGE of AMERICAN PATHOLOGISTS

Epilepsy/Sleep In-patient Monitoring Unit

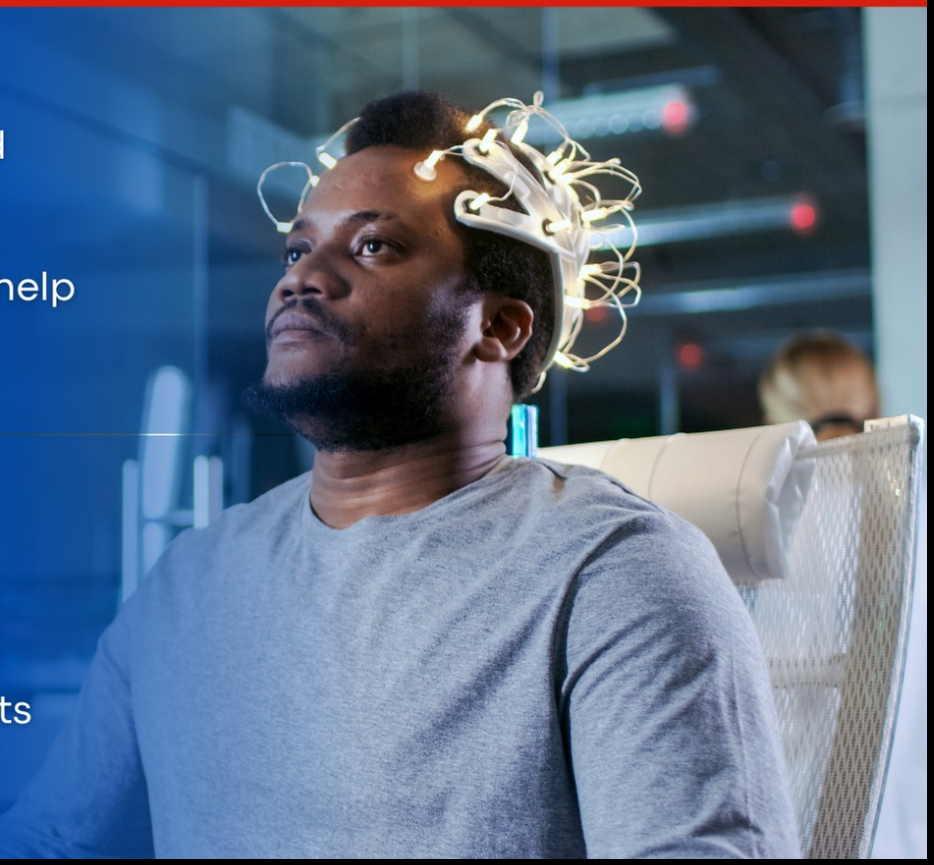
We are delighted to announce the new service of long-term inpatient EEG with video telemetry and monitoring.

This service is the international gold standard to help manage patients with:

- Epilepsy and non-epileptic seizures;
- Uncontrolled epilepsy requiring brain surgery;
- Sleep issues and sleep-related disorders.

Patients can be admitted for between 2 to 5 weekdays for their benefit.

We are delighted to provide this service to patients of any age.



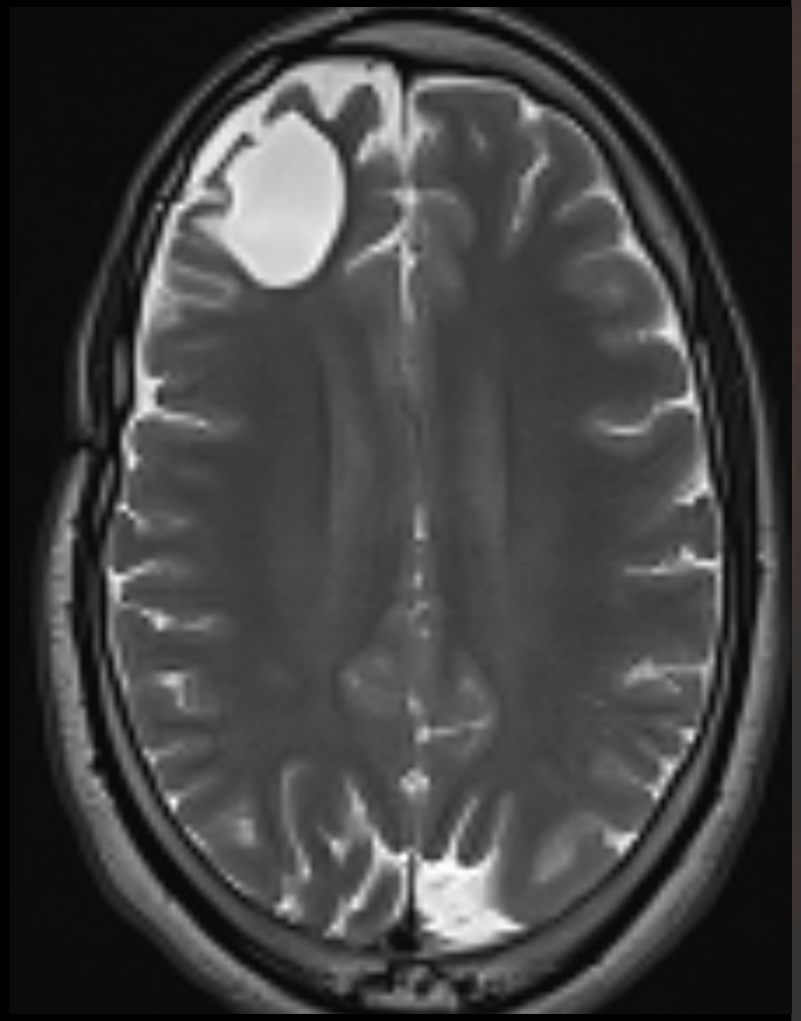
What is needed for an epilepsy surgery centre?

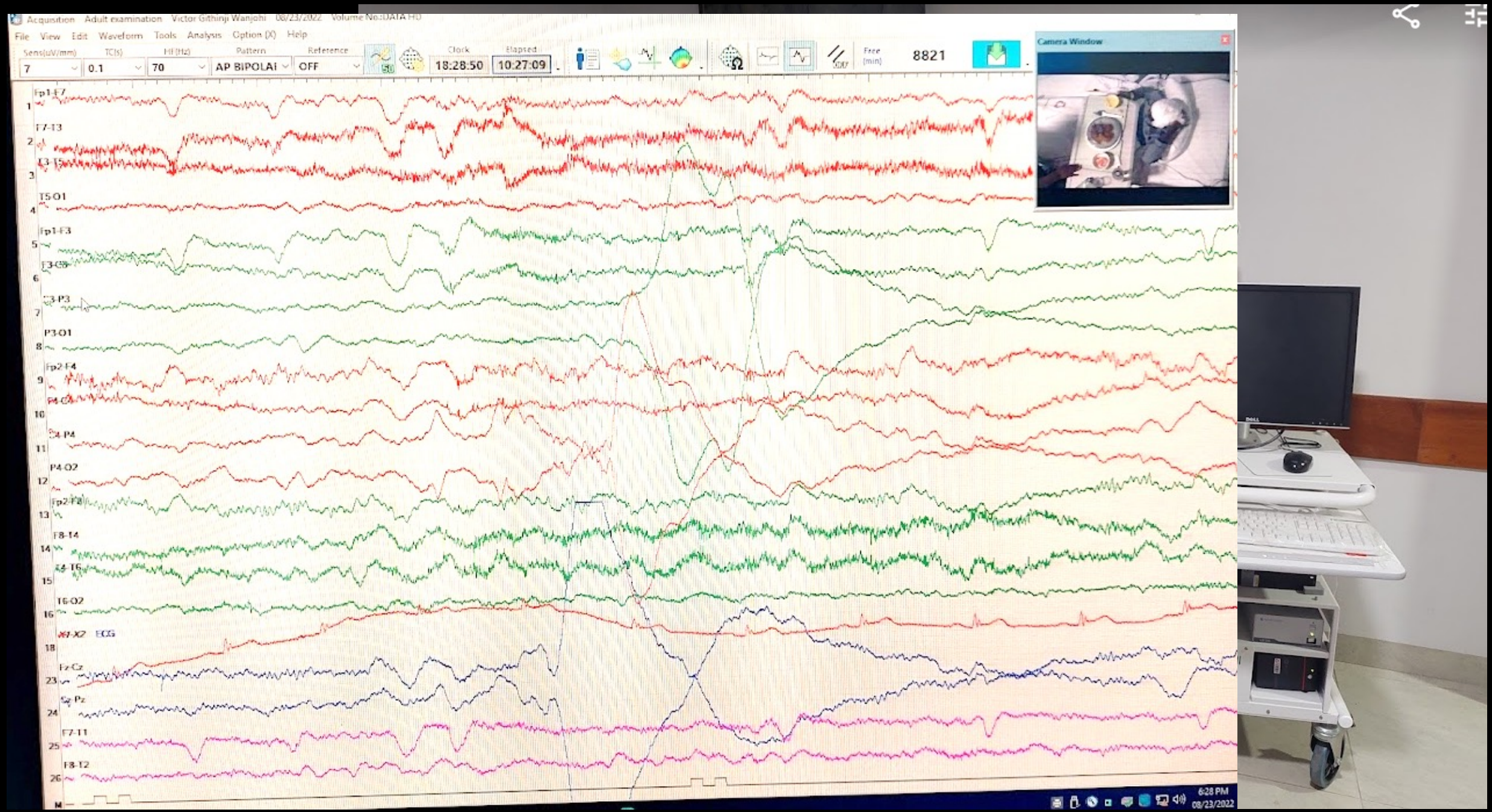
- Clinical information (history, history, history…)
- EEG:
  - Video-EEG monitoring
  - Interictal EEG
  - Ictal EEG
- Brain imaging (MRI, CT)

Telemetry

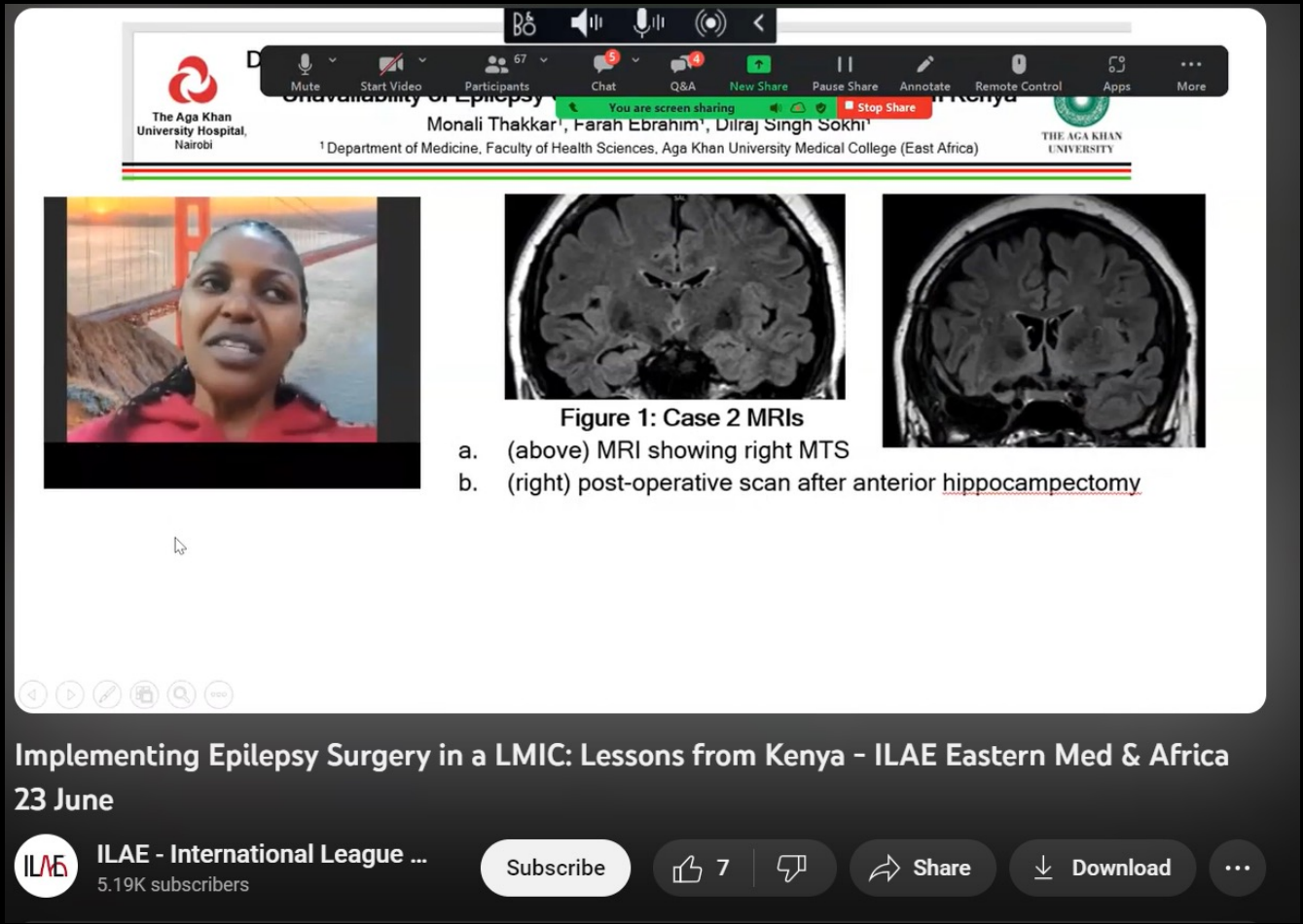
- Telemetry is an extended recording of electrical activity from the brain or “EEG” (Electroencephalograph)
- Patients are continuously monitored
  - Recording of both video (audio & visual) and EEG
- Recordings usually last for 3 or 5 days
- Electrodes connect to a “headbox” connected to wall box
- Patients must stay “plugged in” for the majority of the time so that data is not lost

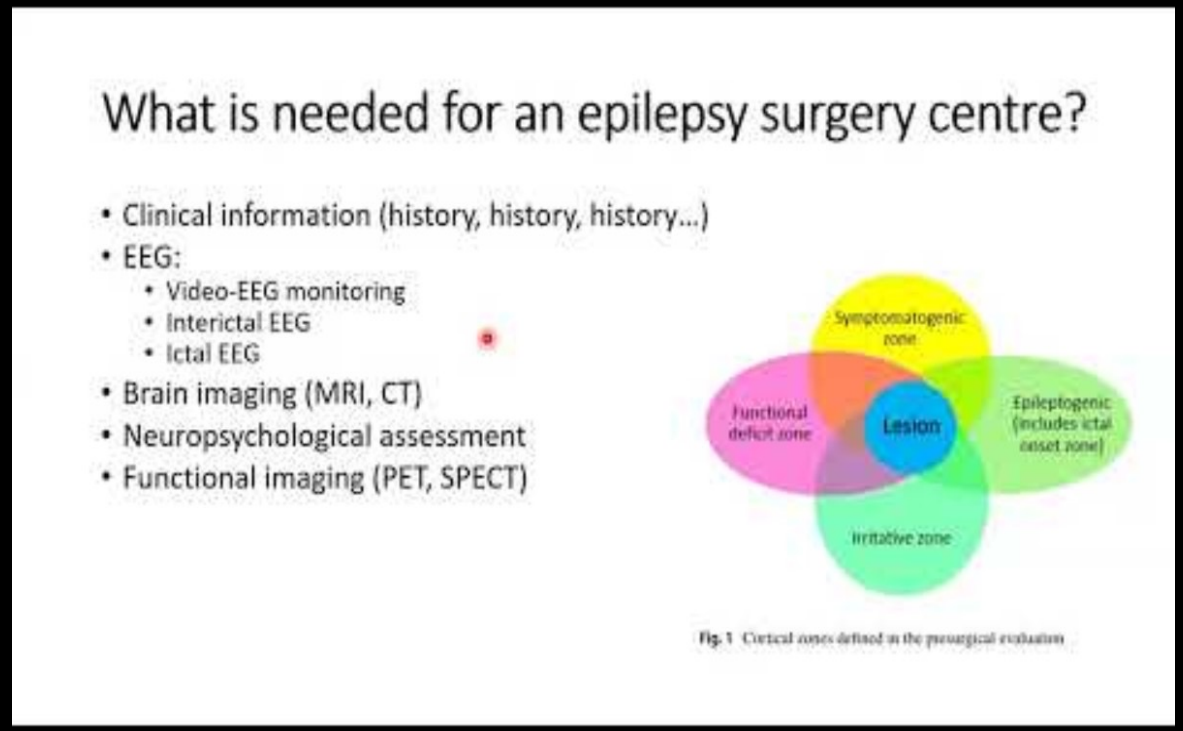
Case: brain tumour operated 2009. Seizures since then




Acquisition Adult examination Victor Githinji Wanjohi 08/23/2022 Volume No:DATA HD
File View Edit Waveform Tools Analysis Option (X) Help
Sens(uV/mm) TC(s) HF(Hz) Pattern Reference Clock Elapsed
7 0.1 70 AP BIPOLAI OFF 18:28:50 10:27:09
Free (min) 8821
Camera Window
Fp1-F7
F7-T3
T3-T5
T5-O1
Fp1-F3
F3-C3
C3-P3
P3-O1
Fp2-F4
P4-C4
C4-P4
P4-O2
Fp2-F8
F8-T4
T4-T6
T6-O2
X1-X2 ECG
Fz-Cz
Cz-Pz
F7-T1
F8-T2
6:28 PM
08/23/2022

Local challenges are multifactorial…





10+ years of “seizures”

BrainCapture

Remote EEG monitoring

KENYA

- High Epilepsy Burden / Strong Middle Class
- Established regulations for startup/med-tech
- Test market for expansion to E/W Africa

- High Epilepsy Burden / Strong Middle Class

- Excellent market potential
- Government policies driving tech adoption