Routine EEG examination used in this study (without feedback).

Routine EEG Test

Introduction

You are being invited to participate in an EEG education study led by Fabio Nascimento, Roy Strowd, Samantha Yap, Rebecca Fasano, Stefan Rampp, William Tatum, and Sandor Beniczky whose purpose is to obtain a baseline knowledge about routine EEG (rEEG) findings among trainees. All information will be collected anonymously and cannot be linked back to you.

This rEEG test comprises 30 multiple choice question and contains both normal and abnormal EEG findings.

Please note that you may zoom in and out EEGs by using zoom settings in your web browser.

1. By clicking "I agree" below you are indicating that you have read and understood the instructions above and agree to participate in this educational program, whose anonymized findings will be analyzed and subsequently published.

🔘 I agree

🔿 I disagree

Routine EEG Test

* 2. What country are you from?

* 3. What is your profession?

- O Medical student
- O Adult neurology resident
- O Pediatric neurology resident
- EEG/epilepsy clinical fellow

Other (please specify)

Routine EEG Test Medical Student Year

4. What year of training are you in?

🔿 1st year (MS1)	🔿 4th year (MS4)
○ 2nd year (MS2)	🔿 5th year (MS5)
🔿 3rd year (MS3)	◯ 6th year and above (MS6 and above)

Routine EEG Test Adult or Pediatric Neurology Resident



6. How many weeks dedicated to EEG learning have you undergone in your training?

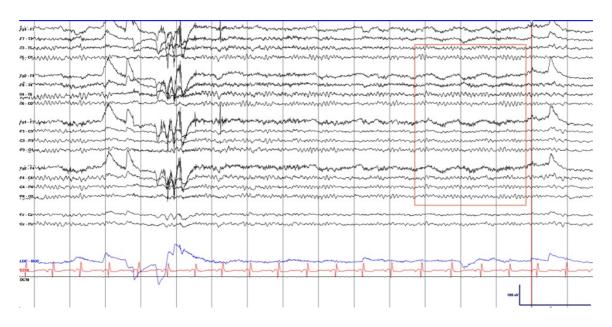
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0 1-4) >12
○ 5-8	

Routine EEG Test Level of Confidence * 7. What is your level of confidence identifying each of the findings on EEG independently/without supervision?

	Not at all confident	Only slightly confident	Somewhat confident	Moderately confident	Very confident
States of wakefulness and sleep	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Sleep structures (such as vertex waves, sleep spindles, and K- complexes)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Normal variants (such as wickets, small sharp spikes, and posterior slow waves of youth)	0	0	\bigcirc	0	\bigcirc
Artifacts (such as EKG artifact, lateral rectus spikes, and electro pop)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

Routine EEG Test 1) What finding/pattern is shown on the EEG below/within the red box?

This is an adult patient.



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- * 8. Please select correct answer.
 - Normal posterior dominant rhythm (PDR)

🔿 Mu ryhthm

 \bigcirc Posterior slow waves of youth

- 🔘 Lambda waves
- Positive occipital sharp transients of sleep (POSTS)

Routine EEG Test

2) What finding/pattern is shown on the EEG below/within the red box?

Bipolar

															Y	
p1 - F7						m	m	nm	www.www.	mmm	hum		men			
7-13							m	mm	www.und		-	harm				
3-15-						mm	m	m	mm	m	mun			hanne	m	how
5-01			m	m			~~	m	mm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m		mun		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
12 - F8				more				m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			m				m
8-14		man	mon	man	m	m	h	hm	mmmm	man .	mm		man	· ·····		
4-16-			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m		m	m	have	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	mun	mm			m	m
6-02	~~~~~		m	man		m	m	~~~	min			m				
p1-F3	non			m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	m	m	munum	man	mm	h	mm	mm		m
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* 9. Please select correct answer.

○ Generalized seizure ○ Sleep spindles

🔘 Mu rhythm

O Breach rhyhtm

○ Focal seizure

### **Routine EEG Test**

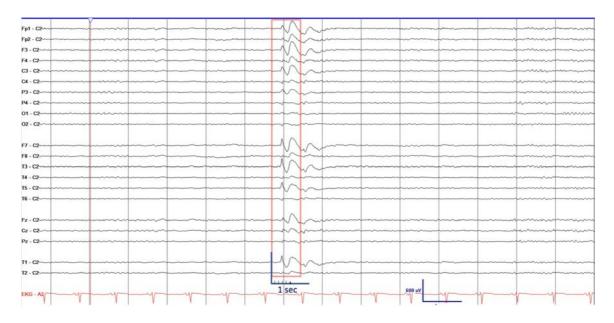
3) What finding/pattern is shown on the EEG below/within the red

### box?

#### Bipolar

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p1 - F7				m			 		
7 - 13			- w	m			 		
3 - T5			-	m			 		
5 - 01	**************************************		Martin M	m			 		
p2 - F8							 		
8 - T4				-			 	~~~~~	
4 - 16			-			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	 +		
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p1 - F3			h	m			 		
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p2 - F4							 		
4 - C4	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Vinton	·····	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	 	m	
4 - P4				min			 harmon	mm	
4 - 02	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	+	-				 	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
2 - Cz	mannana						 	~~~~~	
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z - C3			h	Mon	man		 	~~~~~~	
3- T3			h	into			 		
8 - T1			-	-			 		
1-12			- Ar	Vala			 hand		
2 - 14			V				 +		
1-C4							 harmont	~~~~	
4 - Cz				mon			 	m	
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0G - A1			No.	war-					
OG - A2						400 uV			
KG - A2			- month	-	1 million		 the state of the s	- y	

#### Average



- * 10. Please select correct answer.
  - O Myogenic artifact

O Focal epileptiform discharges, spike

🔘 Wicket

- Focal epileptiform discharges, sharp
- O Sharp transient of the background/non-epileptiform

# **Routine EEG Test** 4) What finding/pattern is shown on the EEG below/within the red box?

Bipolar

FDI-F7 FDI-F7 FFI-T3	Why working the and the structure	amounter all within	and the manual and the second	Marian Marian Marian Marian	with hope an and the service	to an full state of the second state of the se
F7 - T3 manuppen month	how we have a server a	moning	mmmmm	month	manyaman	mmmmmm
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Fp2 - F8, manufacture and provided and the free of the	home when	manuna	Republican and Ambre	monuman	man with the stranger	and management and the second
F8 - Thy man from	homenum	montiment	monthing	mmillion	montanna	montin
14 - Tour many many many	munman	mannam	when when when we	www.www.	mannen	remembershink
T6 - O2M www.www.	mont	mann	manna	monum	man	munum
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-3 - C3whamment waanne water and	Address of the stand of the second stand	and a second a second and the second	Antonia Antole recommenda	a new hours a constant of the first of the f	Antonio and an an addition of the	and a service and a second second
C3 - P3	horman	-hur manufactures of	mp man	and an and a second second	mental	moundary
P3-01, Manuna	havenhamm	mummin	munum	www.m.m.	mannahan	moundary
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C3 - AVERAGE	mumm	monum	manphan	mannaman	manunum	mannon	mm
C4 - AVERAGE	manna	mon	momm	mound	nammanman	v mummmm	m
P3 - AVERAGE	mount	mound	mmm	monimmen	annahannaman	monthemarking	m
P4 - AVERAGE	mun	Merronner	mmmm	mmumme	manham	man man man	am
F7 - AVERAGE	mmmmm	man	marken	momming	mann	mymmum	nin
F8 - AVERAGE	mann	month	manne	Mannow	immun	minum	vur
T3 - AVERAGEMMAN	hunnen	mmm/	WANNUN MAN	mann	mannanna	Man Manna Ma Manna Manna	MAN
T4 - AVERAGE	monter	mmin	mont	mannon	mannen	mannam	man
TS - AVERAGE	howman	manne	mann	mannan	moundary	monun	MM
TE - AVERAGE	manna	munt	mont	manum	monument	manning	m
01 - AVERAGE	mommin	minum	minum	monorman	mannimm	mommun	mm
02 - AVERAGE	human	Manun	mmmm	mummum	mannann	mannen	www
Fz - AVERAGE	mmen	mon	mann	mmmm	man	mann	m
Cz - AVERAGE	moun	mound	mannin	mannon	mannon	hannan	nom
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FCGI			and month M	VVVVV -V	Marrie	1 sec	

* 11. Please select correct answer.

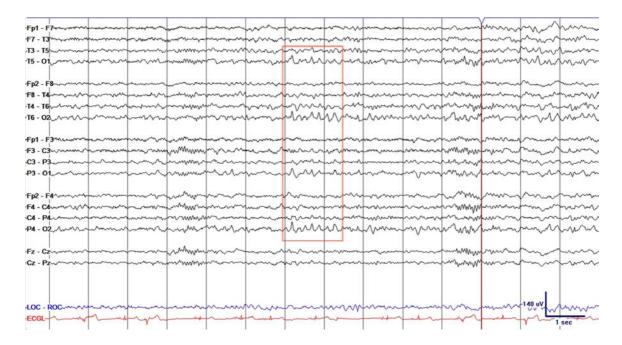
	$\bigcirc$	Focal epileptiform	discharges, sharps	O Fo	ocal epileptiform	discharges, sj	pikes
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$\bigcirc$	Wickets
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◯ Focal seizure

O Mu rhythm

# **Routine EEG Test** 5) What finding/pattern is shown on the EEG below/within the red box?



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Fp1 - AVERAGE	- www.	mont	manu	moundant	have have been
Fp2 - AVERAGE	fr.m.m.	hanne	mannam	mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	monthem
F3 - AVERAGE	mmmmm	mon	manum	monter	munition
F4 - AVERAGE	furminan	mon	mmmmmm	mmmmmm	montant
C3 - AVERAGE	mon	forman	mmmmmmm	man man man	man man
C4 - AVERAGE	mmmm	hannen	manne	aman market	mmmmmm
P3 - AVERAGE	mann	mm	mmmmm	mmmmmmm	mont
P4 - AVERAGE	mary Munimum	man	monter		
F7 - AVERAGE	mmmmmm	mmm	mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	mmmmmmmm	mmmmmm
F8 - AVERAGE	mmmmm	fundam	mmmmm	mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	mmmmmmm
-T3 - AVERAGE	hummun	mm	mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	month	mount
-T4 - AVERAGE	mmmm	hanne	mmmm	mannon	minimum
T5 - AVERAGE	monter	mmm	mynum	mmmmmmm	monter
T6 - AVERAGE	mon	monton	monum	mmmm	mannim
01 - AVERAGE	mummin	mmm	mann	mmmmm	homenon
02 - AVERAGE	mann	mini	mmm	munnin	minutin
Fz - AVERAGE	m	m	mann		mummin
Cz - AVERAGE	mmm	from the second	monorman	mmmmmm	monter
Pz - AVERAGE	mann	man	mmmmmm	mmmmmmm	mmmmmmm
LOC - ROC	minnin	min	man	mann	mmm 140 uv
ECGL		man	***********	- manun	1 sec
* 12. Please select	correct answ	ver	*	Andrea	1 sec

○ Vertex waves

 Positive occipital sharp transients of sleep (POSTS)

- Focal epileptiform discharges, spikes
- Occipital seizure

🔿 Lambda waves

### **Routine EEG Test**

6) What finding/pattern is shown on the EEG below/within the red box?

#### Bipolar

		mon			S	1.2	100 00000				Y
p1 - F7											
7-13	mumm	mahhhhh	monu	mont	mmm	- marine	from	mon	-	mana	
3 - 15		mark									
5-01	manne	moun	mm	massan	mm	mm	m			m	
p2 - F8						1					
p2 - Filmen			hanne	The same	man		hanne		Anna		man
B-TAMANA AND AND AND AND AND AND AND AND AND											
4 - T6	mummen	man	m	MMW	man	mun	man	monum	mon	man	man
6 - 02 ·····	mann	mann	man	mm	mm	mm	mm		m	from	m
		(11)	L	2.00							
	mon market										
3-C3	monter	mann	monum	moun	m	m	from	hanne		money	furm
3 - P3		m									
3-01		mm		mon		ham	funn				
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p2 - F4											
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z - Cz				20000		0.0000					
z - Pz											
2-12	mhumhum	m	m	h	m		f		1		
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7 - AVERAGE	mm	mm	mm	man	mm	mm	m	haven		m	m
B - AVERAGE		mm	harm	town	mm	m	min	mm	m		www
13 - AVERAGE	mm	how	mound	minu	mm	mm	mm	min	min	mon	m
A - AVERAGE	mm	min	mm	MMW	how	mm	mmm	mon	muma	from	mm
15 - AVERAGE	man	how	form	mini	mm	hann	aman		m	murma	m
16 - AVERAGE	men	min	him	mym	mun	man	mm		m	formen	mm
D1 - AVERAGE	mm	mm	mon	m	mm	m	m	m	m	harm	
D2 - AVERAGE	mm	mm	home	form	hum	from	mon		m	m	
2 - AVERAGE		mm	mm	him	mon	form	han	h	300 uV		m
2 - AVERAGE		mm	mm	m	m	ham	hom	han		sec	m
2 - AVERAGE	h	h	harm	mm	m	him	hann				mm
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# * 13. Please select correct answer.

O Midline theta rhythm (Ciganek rhyhtm)

O Myogenic artifact

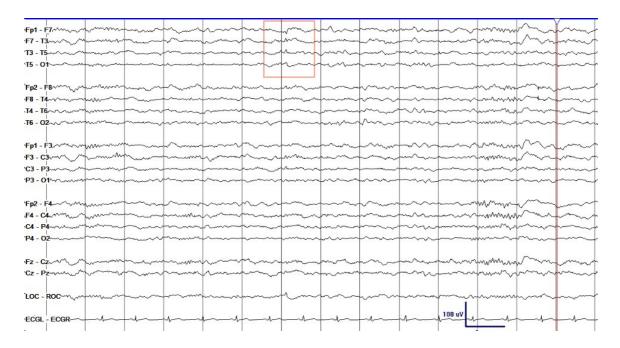
🔘 Mu rhythm

 Rhythmic mid-temporal theta of drowsiness (RMTD)

○ Focal seizure

# **Routine EEG Test** 7) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



				V T
Fp1 - AVERAGE	mon	mann	manna	man
Fp2 - AVERAGE	manne	mmmm	monter	man man
F3 - AVERAGE		mount	hannen	mannen
.F4 - AVERAGE	minner	man		manna man
C3 - AVERAGE			harmon	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
C4 - AVERAGE	mmmmm	mmmmm	hand	man man
P3 - AVERAGE	hamman	man	hand	manna manna
P4 - AVERAGE			have been been been been been been been be	www.
F7 - AVERAGE	m	man	······································	manyman
.F8 - AVERAGE	mmmm	mm	mon	mmmmmm
T3 - AVERAGE	mmmmm	mon	hannen	mummin
.T4 - AVERAGE	mmmmmm	mmm	mon	mont
T5 - AVERAGE	mmmmmm	montan	hand	mummum
TE - AVERAGE		mmmmm	mont	
OI - AVERAGE	hand	monorma	from when a	man provide
·O2 - AVERAGE		- marine marine	han har	man harmon
Fz - AVERAGE	m		hand	man man
Cz - AVERAGE	mmm		minum	mann
Pz - AVERAGE	mann	mon	hummun	man man
LOC - ROC	hannen	mpmm	from the second second	manna man
ECGL - ECGR	frank			- American and a second

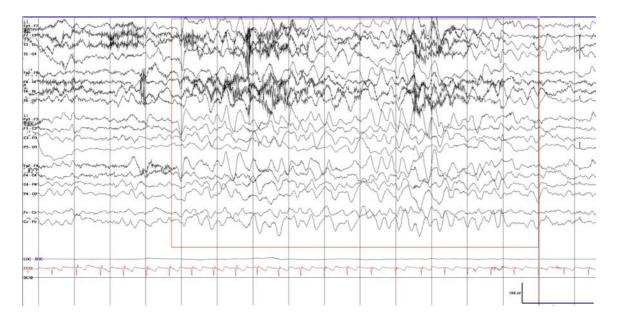
* 14. Please select correct answer.

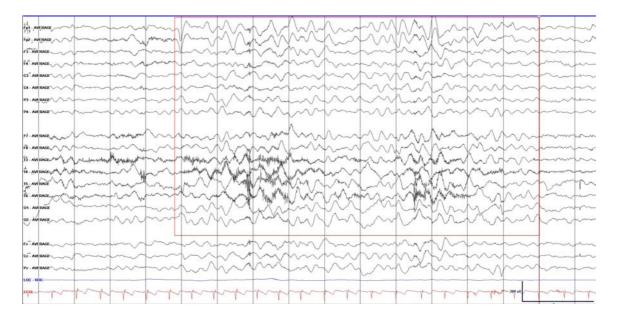
🔿 Lambda wave	◯ Wicket
O Myogenic artifact	O EKG artifact
○ Small sharp spike	

# **Routine EEG Test**

# 8) What finding/pattern is shown on the EEG below/within the red box?

Note: this pattern occurred 30-60 seconds after hyperventilation.





- * 15. Please select correct answer.
  - O Photoparoxysmal response
  - K complexes

O Hyperventilation-induced generalized slowing (normal pattern)

O Myogenic artifact

 $\bigcirc$  Sweat artifact

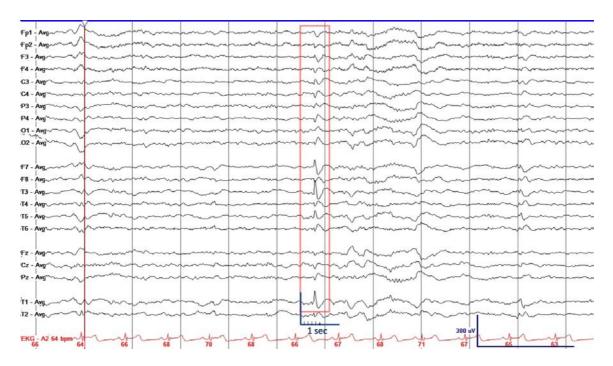
### **Routine EEG Test**

9) What finding/pattern is shown on the EEG below/within the red box?

#### Bipolar

	1											
Fp1 - F7	Am				han	m	mm	amount	1		man	
F7 - 13	man	m	han	hann	han	no	mon	mon	him	minum	mon	
13-15	man.		hanne			M	min	harmon	1		m	
T5 - 01	m		man		former	mil	man	mann	I		him	france
						v	235 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2				North Advention	
Fp2 - F8	manno				-	ment	m	manner	harment	-	-	former
F8 - T4	man	m			from		m		4 mm		m	maria
T4 - T6	2				form		man	m	Ym			
T6 - 02				hannen	free		mennon	mound	h	man	m	
Fp1 - F3	man	mann	hanne	munn	man	mon	money	man	man	man	hamme	
F3-C3		man	Jummen	manne	form	min	mhi	Lumm	umm	mum	mum	mar
C3 - P3	min					m	mm	m	J		hann	
P3 - 01	m				m	m		m		man	h	
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T2 - T4	min		ford		-	m	mon	1 million			him	
T4 - C4	mon	m	man	manner	m	m	m	mm	m		man	
C4 - Cz	mm		h	hamman	m		mm	m	m	hannen	mm	
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ROG - A2	· ······								300	uV.		
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#### Average



- * 16. Please select correct answer.
  - 🔘 Wicket

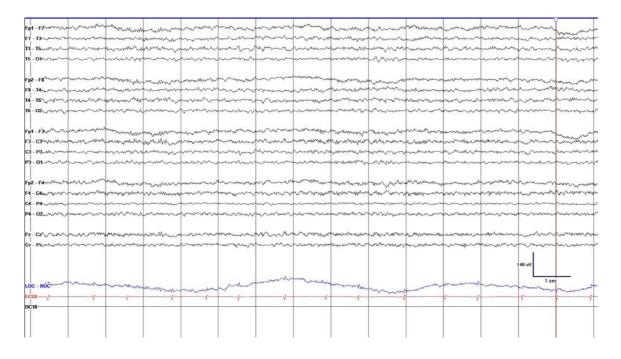
 $\bigcirc$  Focal epileptiform discharge, sharp

O Myogenic artifact

- Focal epileptiform discharge, spike
- O Sharp transient of the background/non-epileptiform

# **Routine EEG Test** 10) What finding/pattern is shown on the EEG below?

Bipolar



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GL/	-					-			- v - ment					

* 17. Please select correct answer.

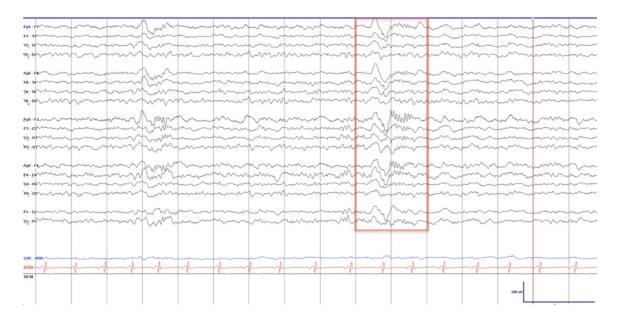
○ Stage 3 sleep (NREM)	O Drowsiness
○ Rapid eye movement (REM) sleep	◯ Wakefulness

◯ Stage 2 sleep (NREM)

# **Routine EEG Test**

# 11) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



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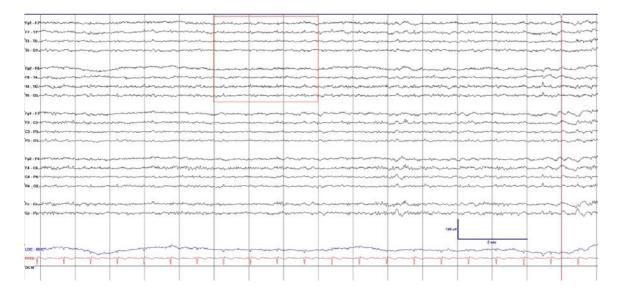
* 18. Please select correct answer.

○ Generalized epileptiform discharge	○ Vertex wave
⊖ K complex	O Positive occipital sharp transient of
O Generalized delta slowing	sleep (POSTS)

# Routine EEG Test

# 12) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



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av y	-	The	my	T		1-1	T			1-1			m	m	T

* 19. Please select correct answer.

◯ EKG artifact

○ Focal seizure

○ Small sharp spikes

O Focal epileptiform discharges, spikes

◯ Wickets

# Routine EEG Test

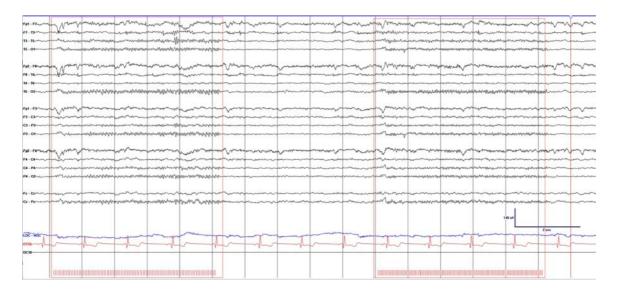
# 13) What finding/pattern is shown on the EEG below/within the red box?



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CA - AVERAGE						
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T6 - AVERAGE						
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Pz - AVERAGE	minim	manne	mannen	mann	- mananapara	mannowan
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ecol						1-1-1

- * 20. Please select correct answer.
- Vertex wave
  Generalized epileptiform discharge
  EKG artifact
  Focal epileptiform discharge, sharp
  K complex

# **Routine EEG Test** 14) What finding/pattern is shown on the EEG below/within the red box?



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* 21. Please select correct answer.

🔘 60 Hz artifact

○ Generalized epileptiform discharges

◯ Generalized seizures

 $\bigcirc$  Focal epileptiform discharges, spikes

O Photic driving

# **Routine EEG Test**

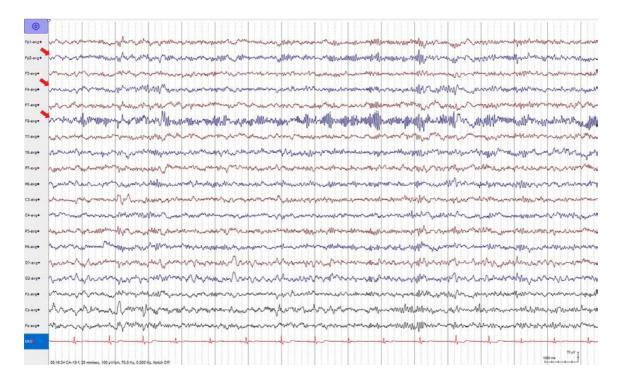
# 15) What finding/pattern is shown on the EEG below/within the red box?

This patient has a history of a prior craniotomy in the right anterior quadrant.

Bipolar

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P4-02+	man man and the second se
EKG-Bipolar	e
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#### Average



* 22. Please select correct answer.

O Myogenic artifact

○ Focal epileptiform discharges, spikes

○ Focal seizure

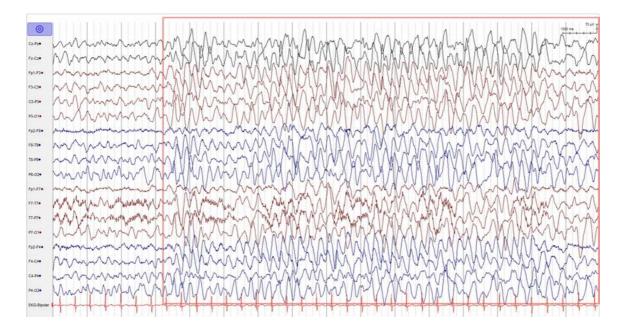
O Breach

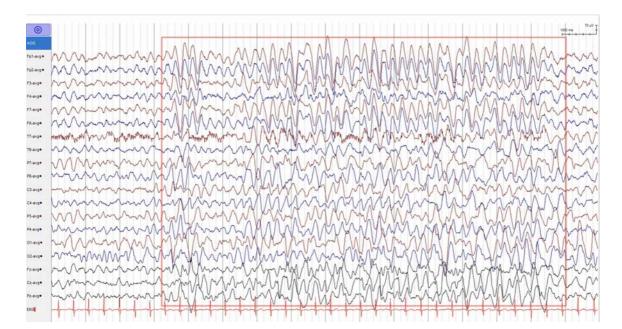
○ Focal epileptiform discharges, sharps

# **Routine EEG Test** 16) What finding/pattern is shown on the EEG below/within the red box?

This is a 6-year-old patient.

#### Bipolar





- * 23. Please select correct answer.
- O Patting artifact

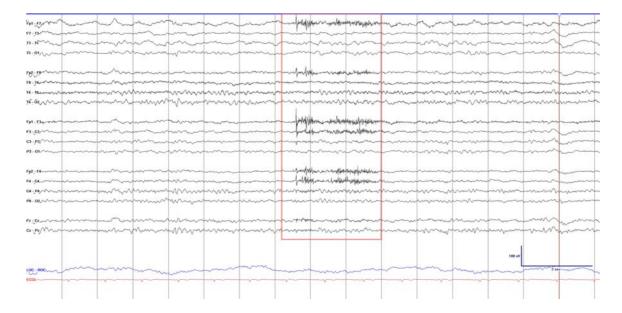
O Hypnagogic hypersynchrony

- O Excessive beta frequency
- 🔘 Hypsarrhythmia

◯ Generalized seizure

# **Routine EEG Test** 17) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



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02-AVERAGE	mann	man	mm	mmmm	m.m.m.m.	mmmmm	mann	man man
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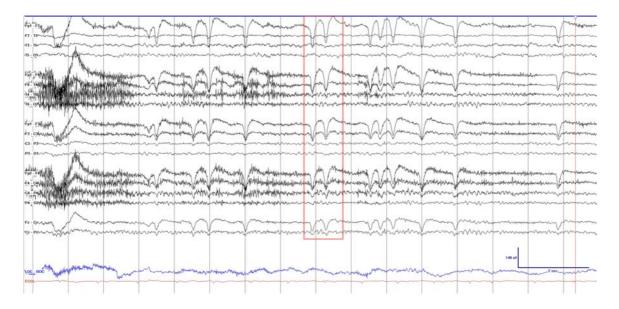
*	24.	Please	select	correct	answer.
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○ EKG artifact	◯ Generalized seizure
○ Generalized polyspikes	◯ Wickets
O Myogenic artifact	

## **Routine EEG Test**

# 18) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



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- * 25. Please select correct answer.
- 🔘 Eye blinks



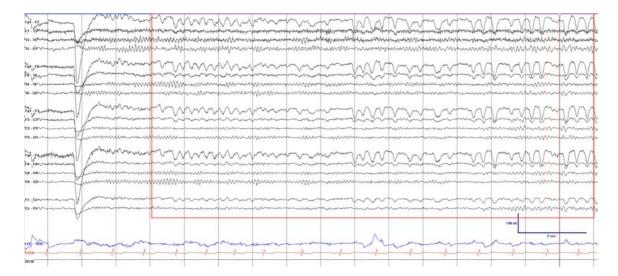
○ Vertex waves

- Generalized epileptiform discharges
- Generalized irregular delta slowing

## **Routine EEG Test**

# 19) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



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AVERAGE	mon	moun	humuh	howman	man	mm	mmun	mm	mm	mm	mon	mon	mun	mmm-	many
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2-AVERAGE	mann	mann	mmm	howman	mmm	mmm	mmm	mm	mound	mon	mon	minun	mon	mon	man
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col -	1	1	A	-	the	the	h	h	-	1	- A	- A	h	1 mm	t-h-

* 26. Please select correct answer.

O Eye fluttering

◯ Generalized seizure

$\bigcirc$	Photic	driving
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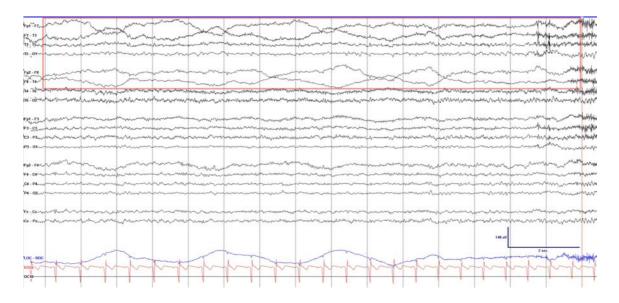
◯ Sweat artifact

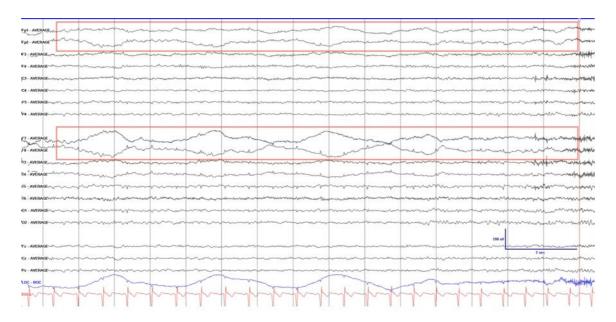
○ Generalized irregular delta slowing

## **Routine EEG Test**

# 20) What finding/pattern is shown on the EEG below/within the red box?

Bipolar





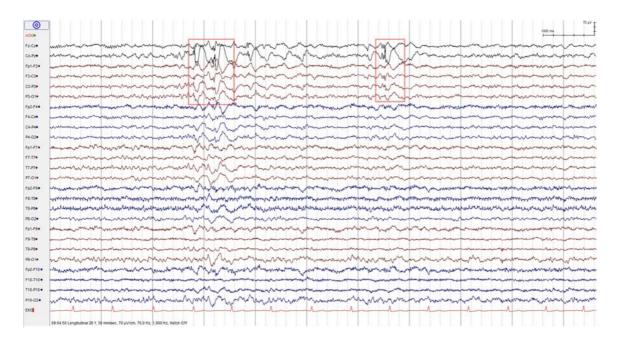
* 27. Please select correct answer.

○ Sweat artifact	O Generalized irregular delta slowing
○ Eye fluttering	○ Eye blinks

O Lateral eye movements

### **Routine EEG Test**

# 21) What finding/pattern is shown on the EEG below/within the red box?



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* 28. Please select correct answer.

○ EKG artifact

○ Focal epileptiform discharges, sharps

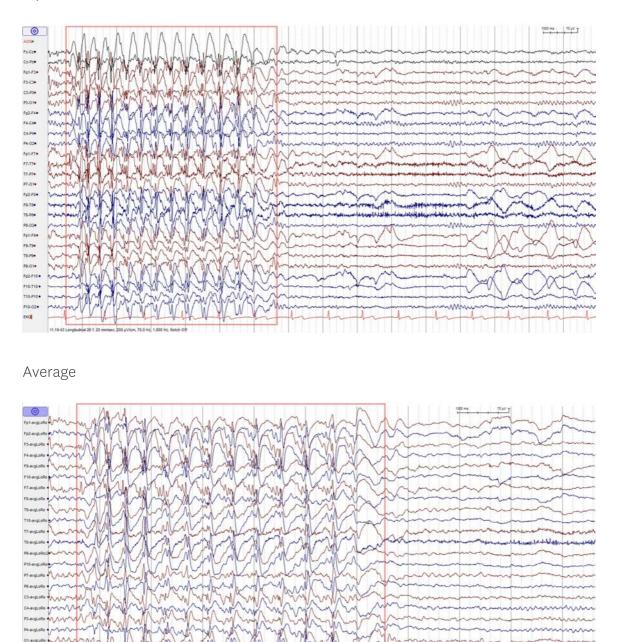
O Eye blinks

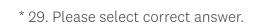
 Focal epileptiform discharges, polyspikes

◯ Wicket spikes

## **Routine EEG Test**

22) What finding/pattern is shown on the EEG below/within the red box?





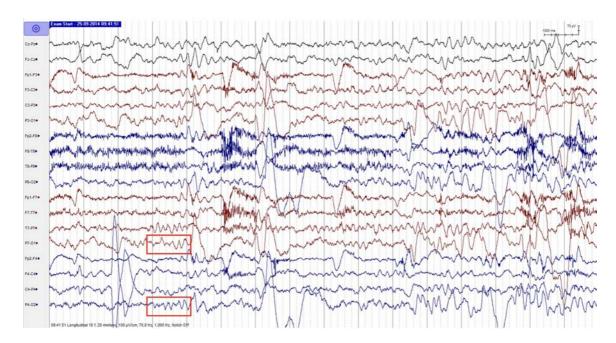
- Generalized regular/rhythmic delta slowing
- Generalized epileptiform discharges, 3
  Hz, polyspike-wave
- Generalized paroxysmal fast activity
- O Eye fluttering
- Generalized epileptiform discharges, 3
  Hz, spike-wave

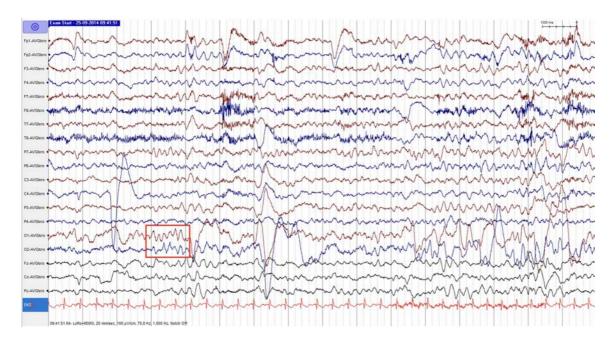
# Routine EEG Test

# 23) What finding/pattern is shown on the EEG below/within the red box?

This is a 6-year-old patient.

#### Bipolar





- * 30. Please select correct answer.
  - Normal posterior dominant rhythm (PDR)

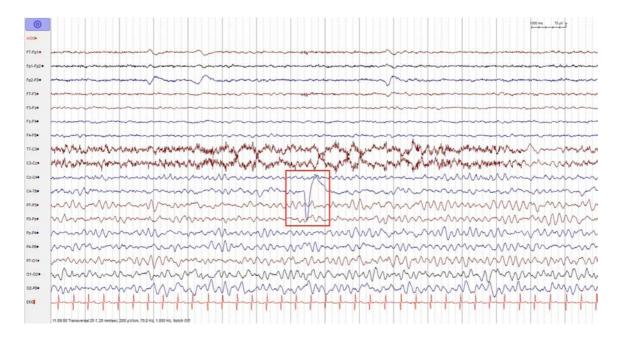
$\bigcirc$	Mu	rhythm
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🔿 Lambda waves

- Generalized irregular theta slowing
- Positive occipital sharp transients of sleep (POSTS)

### **Routine EEG Test**

# 24) What finding/pattern is shown on the EEG below/within the red box?



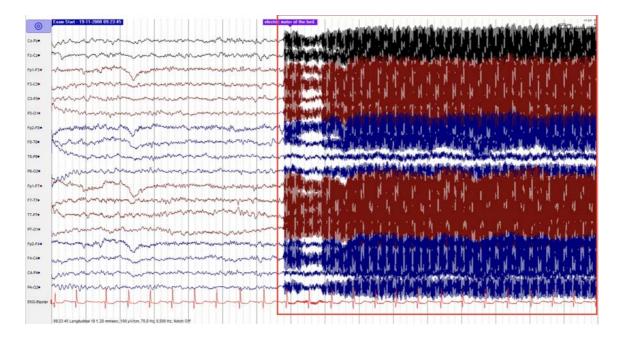
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- * 31. Please select correct answer.
  - $\bigcirc$  Focal irregular delta slowing  $\bigcirc$  Focal epileptiform discharge, sharp
  - Focal epileptiform discharge, polyspike Electrode pop
  - O Focal epileptiform discharge, spike

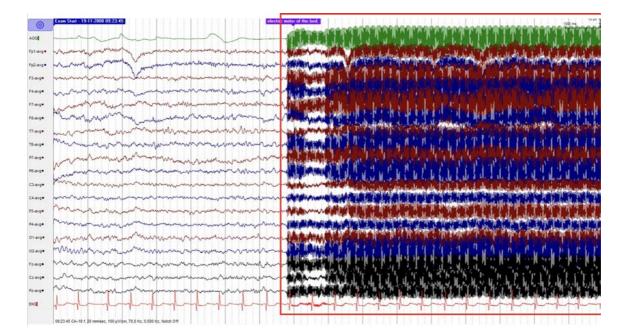
## **Routine EEG Test**

25) What finding/pattern is shown on the EEG below/within the red box?

#### Bipolar



#### Average



* 32. Please select correct answer.

◯ Generalized seizure

🔘 50 Hz artifact

○ Electrode pop

O Musce artifact

○ Focal seizure

### **Routine EEG Test** 26) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



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P5-arg*		and with the second many the factor with
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P2-avg#		
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	09:35:00 CA-19 1, 30 mm/ked, 300 µV/cm, 70,0 Hz, 1,000 Hz, Notch Off	

○ Focal seizure	○ Generalized epileptiform discharges,
○ Generalized epileptiform discharges, 3 Hz	<2.5 Hz
○ Eye fluttering	

# **Routine EEG Test**

# 27) What finding/pattern is shown on the EEG below/within the red box?

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- * 34. Please select correct answer.
- Focal seizure

◯ EKG artifact

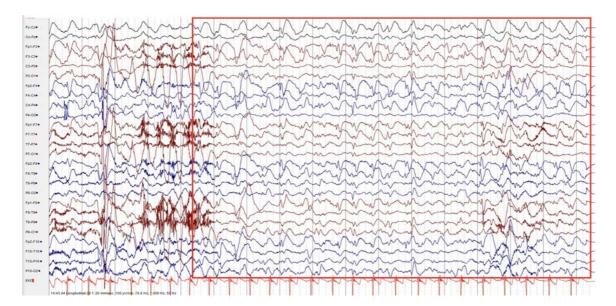
O Breach rhythm

- ◯ Generalized seizure
- O Posterior dominant rhythm (PDR), asymmetric

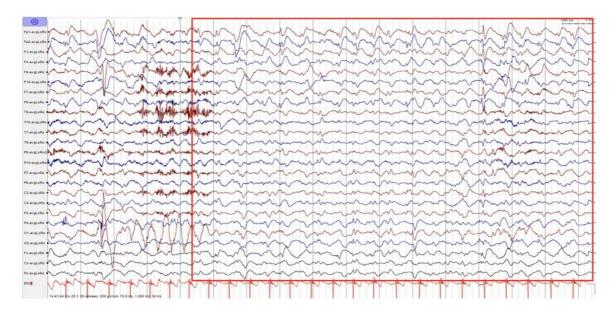
Routine EEG Test

28) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



Average



- * 35. Please select correct answer.
 - Generalized epileptiform discharges, 3-5
 Hz

🔘 Focal seizure

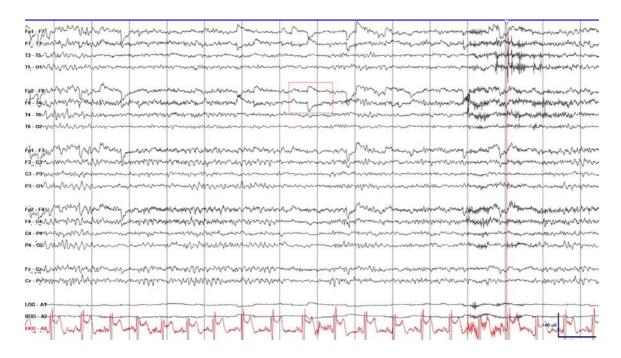
🔘 EKG artifact

- Focal epileptiform discharges, 3-5 Hz
- Generalized epileptiform discharges,
 ≤2.5 Hz

Routine EEG Test

29) What finding/pattern is shown on the EEG below/within the red box?

Bipolar



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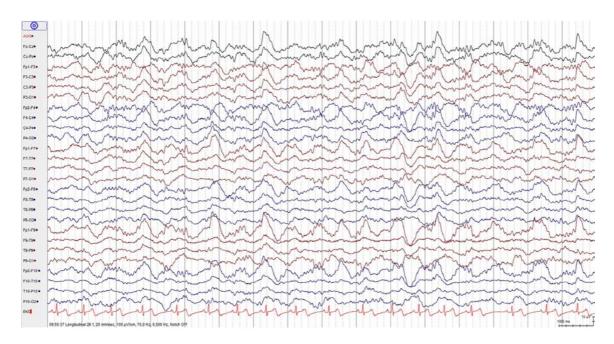
- * 36. Please select correct answer.
- O Electrode pop

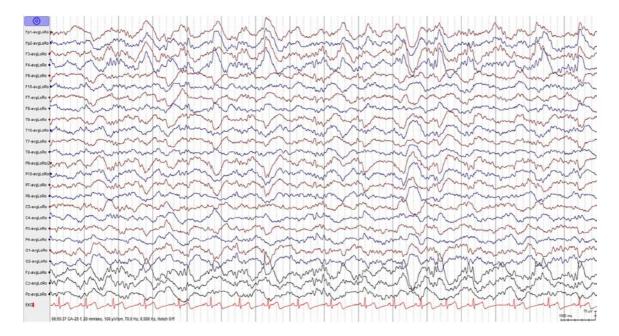
🔘 Lateral rectus spike

◯ EKG artifact

- Focal epileptiform discharge, spike
- Focal epileptiform discharge, sharp

Routine EEG Test 30) What finding/pattern is shown on the EEG below?





- * 37. Please select correct answer.
 - ◯ Generalized seizure
 - ◯ Sweat artifact
 - Stage 3 sleep (NREM)

- Generalized regular/rhythmic delta slowing
- Focal regular/rhythmic delta slowing