

Problem

1. When starting the recording, virtually the entire screen appears obscured by dark lines. (Figure A)

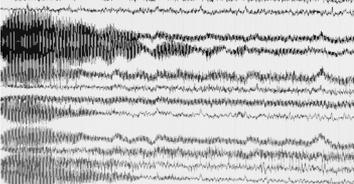
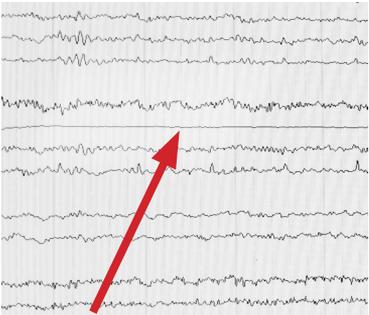


Figure A

2. Sensor pops return or sensor impedance (measure of scalp electrical contact) is high enough to cause poor signal quality with very high amplitude dark lines in one or more recording channel lines.



Flatline

Figure B

3. If a **totally** flat line appears in a channel line on the screen, the two sensors forming that channel line may have too much fluid in-between them. (Figure B)

Solution

1. Make sure the Notch 60 Hz filter at the top of the recording screen tool bar is seen in the small box, indicating it is **on** not off. Some systems require clicking on. Tense, agitated patients may be clinching their jaws causing dark looking muscle artifact on much of the screen - ask the patient to keep their mouth open somewhat and relax.

2. Sensor pops and high impedance sensors often occur because the sensors are not in firm contact with the scalp.

Do the following in sequence:

1. Unwrap the cap. Make sure the cap is pulled down snugly on the head and the chin strap is on tightly.
2. Then make sure the sensors are not tilted.
3. Slowly add refill solution to the sensor until fluid is seen near the top of the refill port hole. This wets the scalp to lower impedance and reduce pops.
4. Push down on the sensor while wiggling it side to side for 5 seconds or until its impedance drops while running the impedance test.

For the stick-on Fp1 and Fp2 sensors, make sure they are firmly stuck directly to the forehead. Lower impedances by peeling back the sticky pad attached to the outside of the cap to reveal the grey metal disk. Use the syringe to put several drops of refill solution on the metal disk. Press sensors back in place.

Re-wrap the cap without tilting sensors. With the 60 Hz notch filter in, our recessed sensors often still record well with impedances as high as around 60K. Use a low filter (LF) of 1.

3. Find the location of the two sensors in that channel line using the head diagram. Remove the cap and dry the scalp there thoroughly with a towel. Replace the cap as before.

Problem

4. The patient has a scalp bandage or drain blocking a part of the scalp.

Hair weaves that can't be removed or very high corn rows may make it impossible to get good electrode contact with the scalp in those areas. Note the location of such obstructions in the EEG history and recording.

Solution

4. Cut off the outer edges of the bandage or scalp tape as much as allowed by the MD or nurse. Get help and together open the cap above the head as if it were going on. Visualize what area needs to be removed to avoid the bandage or drain and use scissors to cut this portion out along with its sensors and lead wires. If at all possible do not cut the small elastic band circling the bottom of the cap which maintains the cap's fit on the scalp. Cutting out the reference or ground leads in the central back area (see head lead diagram) will make recording impossible. With help, fully stretch the cap above the patient's head and make sure you have cut the correct amount out.

With help, carefully lower the cap down over the head with the red arrow positioned over the nose avoiding any bandages or drains. Put on snugly as before.

Make sure to note the location of the removed leads by typing this information into the recording itself and in the history window at the end of the recording. The neurologist reading the EEG must know this.



Recording Tips

As you do more EEG tests there are some simple things you can do that the neurologist reading the test will greatly appreciate!

A relaxed patient produces better EEG recordings because the jaw has a muscle that runs all the way back to above the ears. A tense patient will tend to clench his jaw and cause muscle artifact in the frontal-temporal areas. This makes seeing brainwaves in these areas more difficult. Ask every patient to relax their jaw and open their mouth slightly to reduce muscle artifact. Explain to them that this test does not hurt and puts nothing into them. Encourage them to relax, keep their head still and even take a nap.

EEG signals are much smaller in amplitude than EKG signal and are more prone to artifacts such as head and eye movements which can obscure them. Use a towel roll under the neck on top of the patient's pillow to reduce artifact from head movements. This keeps posterior EEG leads from bouncing around from contact with the bed when the patient moves.

EKG signals often intrude on the smaller EEG signals and produce artifact. Your EEG department should leave you a set of long EKG leads already attached into the EEG amplifier head box. Attach standard sticky EKG patches to these and place below each clavicle. This will

allow the neurologist to distinguish between EKG and EEG signals.

A routine EEG always contains initial eye opening and closing which needs to be notated on the record (by typing it on the keyboard and hitting enter). This allows the neurologist to know when that was done in the record. If the patient is unable to open and close their eyes on command, pull up on their eyelids to open and then close their eyes for them. Note on the keyboard near where this is done in the recording.

The rest of the EEG is best recorded with the patient's eyes closed to reduce high amplitude potentials from open eye movements. Place a washcloth over their eyes if they have difficulty keeping them closed.

It is very important near the end of the recording, to document the patient's most alert state possible. If able, have the patient count aloud to 40 with his eyes still closed. Type "counting aloud" on the key board and type "stop" when done. If the patient is comatose or semi-comatose call his name loudly and stimulate him by a shoulder pinch or foot scratch to allow the neurologist to see if he and his brainwaves can arouse somewhat. Mark this using the keyboard.

Establish a good working relationship with EEG lab/techs. They will be happy not to have to come in at night to do stat EEGs and will likely be willing to help you and answer questions.

