

# Polly Want a Somnogram? Activity 3E

## Objectives:

Students will be able to:

- ◆ Analyze a polysomnogram to identify what each line is measuring, i.e. **EEG**, **EEK** etc.
- ◆ Observe a polysomnogram and identify the stage of sleep and/or specific wave patterns, sleep disorders, etc.
- ◆ Compare (labeled) polysomnograms of patients with unknown (unlabeled) patient polysomnograms to infer the stage of sleep and/or specific wave patterns and sleep disorders found in the unknowns.

## Activity Description:

Students will investigate polysomnogram printouts (used by sleep diagnostic centers) that include multiple measurements such as the **EEG** (brain waves), **EMG** (leg movement) and **EOG** (eye movements) along with other measurements taken while a patient sleeps. Since many different bodily function measurements are recorded on the printout, students will learn to identify each line of a polysomnogram. In activity 3F, they will use their newly found skills to examine several labeled (known) polysomnograms and compare them to unlabeled (unknown) samples in order to complete their analysis.

## Activity Background:

During a sleep study, electrodes are placed on the body to collect information about the way our body functions during sleep (See *Figure 1 Electrode Placement*). All of this information is important in understanding what is happening to our bodies during sleep because all of the major organ systems are affected by sleep.



**Figure 1 –  
Electrode Placement**

When all of these measurements are taken during a sleep study, there is a *lot* of information that needs to be analyzed. It is much easier to keep track of all information if it is placed on *one* report. The printout that has all of this information in one place is called a **polysomnogram**.

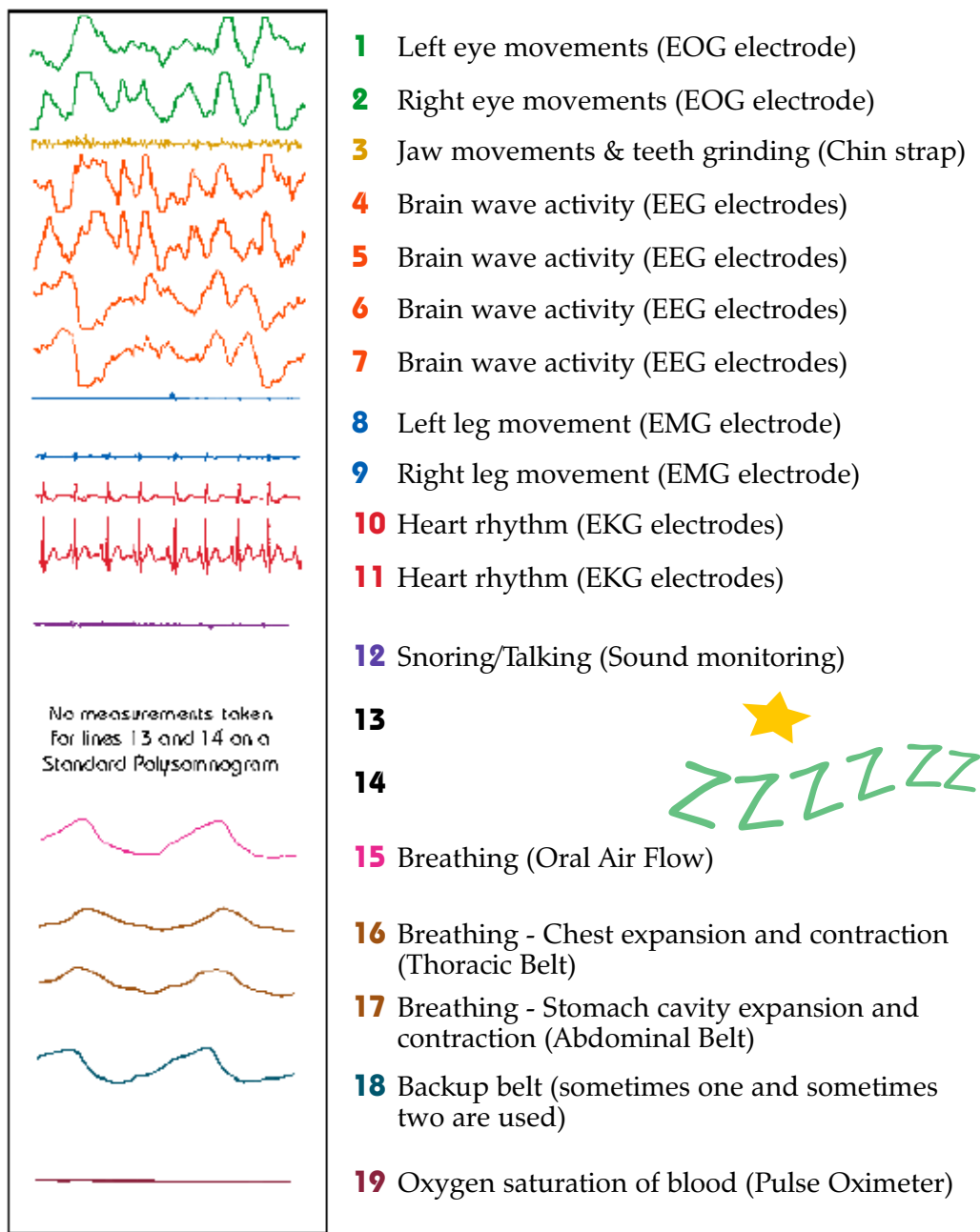


# Activity Overview



Explain to students that this looks like a complicated word, but is really made from three simple root words. *Poly-* means many, *somn-* means sleep and *-gram* means graph, record or picture. When put together, these root words mean, loosely, “a printout showing many graphs about sleep”. More precisely, it is a printout gathered to test sleep cycles and stages through the use of continuous recordings of eye movement, electrical activity of muscles, brain waves, heart rhythm, snoring and/or talking, air flow during breathing, breathing rate, blood pressure and blood oxygen and direct observation of the person during sleep. *Figure 2, Standard Polysomnogram* below is an example of a standard polysomnogram. Notice each section has information about a specific body function. Once trained to read these waves, a sleep specialist can provide detailed report about what is happening to a person during sleep.

**Figure 2 – Standard Polysomnogram**



# Activity Overview Continued



## Activity Materials: (Per Student)

- Colored Map Pencils or Markers
- 1 Copy of Standard Polysomnogram Page
- 1 Copy of Visual Polysomnogram Page



## Activity Management Suggestions:

### Modifications:



### Extensions:

## Activity References Used:

Geyer, JD; Payne; TA, Carney; Aldrich, MS. (2000). *Atlas of digital polysomnography*. Philadelphia. Lippincott Williams & Wilkin

## Useful Websites:

[www.sleepnet.com](http://www.sleepnet.com)

<http://www.nhlbi.nih.gov/about/ncsdr/index.htm>

(National Center on Sleep Disorders Research)

[www.sleepfoundation.org](http://www.sleepfoundation.org)

(National sleep foundation)

<http://faculty.washington.edu/chudler/sleep.html>

(Neuroscience for kids)



# Activity Overview Continued



LESSON 3  
ACTIVITY 3E

ZZZZZ World