Name of Policy:	**Calibrations**	
Policy Number:	3364-171-01-04	THE UNIVERSITY OF TOLEDO **MEDICAL CENTER**
Department:	Sleep Disorders	
Approving Officer:	Senior Hospital Administrator	
Responsible Agent:	Director, Sleep Disorders	
Scope:	The University of Toledo Medical Center Pulmonary Services Department	**Effective Date: 3/17/2023** Initial Effective Date: 3/17/2023

X	New policy proposal		Minor/technical revision of existing policy
	Major revision of existing policy		Reaffirmation of existing policy

(A) Policy Statement

All qualified and trained Polysomnographic Technologists will be able to perform machine and patient calibrations

(B) Purpose of Policy

Calibration of equipment is an important step in collection of a polysomnogram (PSG). Machine calibration ensures the signal is within guidelines and reassures the reviewer of correct function of the equipment. Checking impedance values for each electrode is one step to ensuring quality signals for interpretation. Bio-calibrations or patient calibrations verify that the monitoring equipment, electrodes, and sensors are working properly. For the reviewer, noting the patient's EEG, EOG, and EMG pattern of eyes-open and eyes-closed stage W can help with recognition of this sleep stage during the recording and during scoring of sleep.

(C) Procedure

1. Impedance check:
    a. Prior to beginning acquisition, connect the jack box to the amplifier to check electrode attachment to the skin,
    NOTE: Less than 5000 (k) ohms is desired per American Academy of Sleep Medicine (AASM).
    b. If impedances are too high re-prep the area.
    c. All channel impedances will be displayed on the screen.
2. Machine Calibration:
    a. After lights off perform machine calibration
    b. This will mark as a 30 second calibration stamp, of all channels, as a part of the patient's sleep record.
3. Bio-Calibrations
    a. These should be performed after lights out and after lights on.
    b. These should include the following commands
        i. Open your eyes for 30 seconds.
        ii. Close your eyes for 30 seconds.
            a) This establishes if the patient has alpha activity and what it looks like.
        iii. Open your eyes.
        iv. With your eyes only and without moving your head, look up, look down (×5).
        v. With your eyes only and without moving your head, look left, look right (×5).
        vi. Blink your eyes 10 times.
        vii. Swallow.

viii. Grit your teeth or clench your jaw for 5 seconds. Or chew 5 times. *(May repeat this step if necessary. See immediately below.)*
    a. Adjust the **chin EMG** sensitivity to allow adequate display while the patient is awake. This is an **important signal** for differentiating wake and stage 1 from R so **make sure the amplitude is at least 1-2 mm**. Chin EMG should at least double with the chewing or teeth gritting maneuvers.
    b. Check the masseter EMG signals if being used.
ix. If using neck leads for monitoring rhythmic movement disorder:
    a. Bend your neck forward, bend your neck backward (×5).
    b. Turn your head to the left, turn your head to the right (×5).
    c. Bend your neck to the left toward your left shoulder, bend your neck to the right toward your right shoulder (×5).
x. Make a snoring sound or hum for 5 seconds.
    a) This tests the ability of the snore sensor to detect sound.
xi. Breathe normally.
    a) Make sure the signals for chest and abdomen move synchronously. If not, check belt placement.
xii. Take a deep breath and hold it for 10 seconds.
xiii. Breathe normally.
xiv. Hold your breath and move your stomach in and out.
xv. Breathe normally.
xvi. Take a deep breath in.
    a) Check polarity and mark the record IN.
xvii. Breathe out.
    a) Check polarity and mark the record OUT.
xviii. Breathe through your nose only for 10 seconds.
    a) This checks the functioning of the nasal pressure transducer.
xix. Breathe through your mouth only for 10 seconds.
    a) This checks the functioning of the thermal sensor.
xx. Take a deep breath and exhale slowly for 10 seconds. (Prolonged expiration – 10 seconds.)
xxi. Flex your left foot and raise your toes (on your left foot) 5 times.
xxii. Flex your right foot and raise your toes (on your right foot) 5 times.
xxiii. If using arm leads (in this case, recording the flexor digitorum superficialis):
    a) With your left hand and without moving your wrist, flex your fingers at the base 5 times while keeping your fingers straight (i.e., avoid bending at the distal two joints, opening/closing the hand, or making a fist).
    b) With your right hand and without moving your wrist, flex your fingers at the base 5 times while keeping your fingers straight (i.e., avoid bending at the distal two joints, opening/closing the hand, or making a fist).
xxiv. Check the polarity and amplitude of the ECG signal, making sure the R wave has an upward deflection.
xxv. Compare heart rate (HR) to ECG signal (heart rate is collected from pulse oximetry) to assure HR accuracy. Make sure that the heart rate signal matches that from the ECG signal.

Approved by:		Review/Revision Date: 3/23
/s/ _____ Michael Taylor Director, Pulmonary Services	3/20/2023 Date	
/s/ _____ Andre Aguillon, M.D. Medical Director	3/19/2023 Date	
/s/ _____ Russell Smith Senior Hospital Administrator	3/20/2023 Date	
Review/Revision Completed By: *Director, Sleep Disorders Center*		**Next Review Date: 3/26**
Policies Superseded by This Policy:		

It is the responsibility of the reader to verify with the responsible agent that this is the most current version of the policy.