Providence HEALTH CARE	**RESPIRATORY SERVICES**	DATE CREATED: September 2016 DATE REVIEWED/REVISED:
POLICY & PROCEDURE	TITLE: MED/SURG – Overnight Oximetry Study Using Masimo Radical 7 Oximeter & Profox Download Software (Respiratory Therapy) NUMBER: B-00-12-12086	RELATED DOCUMENTS:

SITE APPLICABILITY:

ST. PAUL'S HOSPITAL
MOUNT SAINT JOSEPH HOSPITAL

POLICY STATEMENT:

Any physician may order overnight oximetry study however a Respirologist must provide the interpretation of the study data. The Respirologist must also provide an order for any change or intervention required as a result of the interpretation. See ***SPECIAL CONSIDERATIONS*** for additional details.

GENERAL INFORMATION:

Nocturnal (overnight) oximetry is used both for the screening of obstructive sleep apnea and for assessing the effectiveness of therapy once initiated. It may also be useful for the determination of nocturnal oxygen requirements upon discharge.

EXHIBITS:

A. Overnight Oximetry Study Data Sheet
B. Overnight Oximetry for Outpatient Hemodialysis Patients
C. Radical-7 Operators Manual

SPECIAL CONSIDERATIONS:

If the patient's room air oxygen saturation is **less than 88%**, the test will **NOT** be performed on Room Air without an order from Respirology.

NOTE: Some patients with pulmonary arterial hypertension (intracardiac shunt) associated with congenital heart disease may benefit symptomatically from nocturnal oxygen therapy. These patients often present with chronic hypoxemia that is not otherwise considered for oxygen therapy. **For patients with pulmonary arterial hypertension and a room air SpO_2 less than 88%, consult the Cardiologist to determine if an overnight oximetry study can be done, and if so, at what SpO_2 oxygen therapy should be initiated.**

If the patient's oxygen saturation drops **below 80%** during the overnight oximetry study, oxygen therapy should be initiated to maintain SpO_2 greater than 88%. Complete the study while on oxygen and clearly document the intervention in the patient record as well as on the Overnight Oximetry Study Data Sheet.

REQUIRED SUPPLIES & EQUIPMENT:

- Masimo Radical-7 pulse oximeter (handheld device attached to a docking station)
- Disposable M-LNCS oximetry finger sensor
- Computer and printer with Profox software
- Data download cable
- Overnight Oximetry Study Data Sheet

PROCEDURE FOR STUDY SETUP (dayshift):

1. Verify physician order and ensure the therapy for the study is specified (i.e. on RA, CPAP).
2. Perform a resting pulse oximetry measurement on room air.
3. Assemble equipment and explain procedure to the patient.
4. Plug in the oximeter and ensure that the **AC Power** indicator on the docking station is illuminated. 

   NOTE: The oximeter must be plugged in to maintain the battery charge for the duration of the test. Ensure the power cable is securely connected to the oximeter.
5. Ensure that the handheld device is properly interfaced to the docking station by verifying that the **Docking** indicator is illuminated on the docking station. 
6. Connect the disposable oximetry sensor to the oximeter.
7. Turn the oximeter on by pressing and holding the **POWER** button. 
8. Check that the date and time on the oximeter is correct by pressing the time that is displayed on the top right hand corner of the Radical-7 monitor. If the date or time is not correct, use the touch screen feature to scroll down to the date and time parameters and change the desired setting by touching and selecting the parameter that you would like to set.
9. Turn the oximeter off by pressing and holding the **POWER** button until you hear two beeps.  A message will appear indicating the monitor is powering off.
10. Affix a patient identification label to the Overnight Oximetry Study Data Sheet and fill out the relevant information. Refer to Exhibit A – Overnight Oximetry Study Data Sheet. The Data Sheet should remain with the patient/oximeter for the duration of the test.
11. Check with the patient to determine the anticipated hour for going to sleep.

PROCEDURE FOR PERFORMING THE STUDY (night shift):

1. Turn on the oximeter by pressing the **POWER** button. 
2. Ensure that **ADULT** is displayed on the top left hand corner of the Radical-7screen (this will ensure that alarms are set wide). If **ADULT** is not displayed, please press the **PROFILE SETTING** that appears at the top left hand side of the screen (Adult, Pediatric, Neonate) and change **PATIENT TYPE** to **ADULT.** Select **OK** to confirm.
3. Place the oximetry sensor on the patient's finger.
4. Indicate the Start Time on the Overnight Oximetry Study Data Sheet. Document start time and relevant information in the Multidisciplinary Progress Notes of the Patient Record.

   NOTE: If oxygen is initiated at any point during the study it must be noted on the Study Data Sheet, including the

time and flow. Oxygen should only be considered if the room air saturation drops below 80%.

PROCEDURE FOR DOWNLOAD AND DATA RETRIEVAL USING PROFOX (nightshift):

1. Retrieve the oximeter and completed data sheet from the patient's bedside prior to the next shift's arrival.

2. Wipe the surface of the machine using Cavi-wipes. Place the disposable sensor in the sensor recycling collection bin.

3. Retrieve oximetry data by downloading it using the Profox software located in the 8B swing office (8436) at SPH at SPH and the RT office (G135) at MSJ.

4. Open the Profox Oximetry application on the computer desktop by double clicking the **PROFOX** icon.

5. The **MAIN MENU** will now be displayed. Click **NEW PATIENT** once and enter the patient data as prompted:

    a. **FULL NAME**: Surname, then first name.
    b. **IDENTIFICATION NUMBER**: Use the MSP number (10 digits).
    c. **REQ. PHYSICIAN**: Enter the ordering physician name.
    d. **REPORT COMMENTS**: Enter the patient history, study conditions, reason for study, relevant events during the study, oxygen delivery/Room Air, or CPAP/BiPAP settings.

6. When patient data entry is complete, click **SAVE**. The program will return to the **MAIN MENU**. Click **OXIMETRY DATA (TRANSFER)**.

7. A new screen appears for selecting the **MANUFACTURER** (**MASIMO**) and **OXIMETER MODEL** (**RADICAL-7**).

8. Connect the serial cable from the computer to the serial output connector on the back of the oximeter. Plug the oximeter in and turn it on. Select **DOWNLOAD USING ASCII PROTOCOL**.

9. Once the download is complete, the program will prompt **PLEASE SELECT THE RECORDING…**Select the period with the most recent data and click **OK**. A 12-hour graph of the SpO_2 and pulse will be displayed. Click **SAVE THIS TEST**.

10. The next prompt will ask **DOES THIS TEST BELONG TO…**(automatically recalls the last patient data entered). If this is correct, select **YES**.

11. The screen with the patient information will appear. Review and confirm if the information is correct by pressing **OK**. The program will now return to the **MAIN MENU**.

12. *Confirm that the date on the downloaded test is accurate.* From the **MAIN MENU** select **UTILITIES**, and then select **CHANGE THE DATE AND TIME OF CURRENT TEST**. If the date and time of the current test is incorrect, make the necessary changes and continue.

13. The option to **PREVIEW** or **PRINT REPORTS** will be displayed. Choose **PRINT REPORTS**. The print settings have been configured to print the following format:

    a. One page of *8 hour graphs*
    b. One page of *Scoring and Analysis Summary*
    c. One page of *% Time at each Saturation* (graphic)

14. Print **TWO** copies of the report.

    a. One copy is to be marked **PRELIMINARY REPORT** and placed in the **LAB REPORTS** section of the patient record. In the Interdisciplinary Progress Notes document that the oximetry was performed and include any significant events during the study. Indicate that the study is located in the Laboratory section of the patient record. Ensure all relevant and significant events are included on the report.
    b. At SPH, a second copy is to be placed in the file folder labeled **NOCTURNAL OXIMETRY** located in Room 8436 on 8B. Respirology will then formally interpret the results.

c. At MSJH, a second copy is to be placed on the desk in the PF Laboratory.

15. Once the data has been retrieved and verified, the trend information in the oximeter memory must be cleared.
    a. From **MAIN MENU** select the **Trends** icon and then the **TRENDS SETTINGS** icon
    b. From the **TRENDS SETTINGS** screen, press **CLEAR** and then **OK** to clear all stored data

16. Turn off the oximeter by pressing and holding the **POWER** button for two seconds.

17. Return the oximeter to the storage area for future use. Ensure the unit remains plugged in when not in use.

PROCEDURE FOR OUTPATIENT HEMODIALYSIS PATIENTS:

Patients undergoing outpatient hemodialysis have to make frequent visits to the facility, and they often have limitations to their mobility requiring special transportation arrangements. Having to return to the hospital to pick-up and/or drop off an overnight oximeter can be a significant hardship. Therefore the following process should be used for this population group.

PROCESS	RESPONSIBLITY	ACTIONS
Patient requires overnight oximetry study (NOTE: a physician order is required)	Renal Program	• Complete outpatient PFT requisition (including physician signature) • Ensure patient is identified on requisition as **OUTPATIENT HEMODIALYSIS** • Include dates & times of next dialysis appointments (over a 2 week period) • Fax to PF Lab at SPH
Communicate request to Wards RT	PF Lab	• Post req in 8B Respiratory Report Room • Ensure Wards RT is aware
Determine best dates to drop off & pick up overnight oximeter in hemodialysis area	Wards RT	• Review dialysis appointment schedule & select 2 dates that are occurring over a couple of days (should not send oximeter out with patient for more than 2 nights)
Drop off oximeter with patient on 1st of the two selected dates when patient is in hospital for dialysis	Wards RT	• Drop off oximeter with patient on Renal Unit – provide necessary instruction • Ensure patient is aware of when to return oximeter (should be on next dialysis appointment) • Record pick up date (next dialysis appt) on req & white board in 8B Report Room
Inform RT that patient has returned oximeter	Renal Unit	• Page wards RT (at pager #33718)
Pick up oximeter & download the study; prepare oximeter for subsequent studies	Wards RT	• As per Policy & Procedure RTD5122

EXHIBIT B. *Overnight Oximetry for Outpatient Hemodialysis Patients*

DOCUMENTATION, COMMUNICATION, EDUCATION:

1. Inform the bedside RN of the nocturnal oximetry study taking place, and ask that they disregard the oxygen saturation during the study unless it falls below 80% at which point they should page the RT.
2. Instruct the patient that the oximeter probe must remain attached throughout the night.
3. If called to see the patient, be sure to document your assessment and any intervention provided in the Interdisciplinary Progress Notes section of the chart **AND** on the Overnight Oximetry Data Sheet where applicable.

REFERENCES:

1. Radical-7 Operator Manual. Copyright 2014 Masimo Corporation.
2. Vancouver Coastal Home Oxygen Program Medical Requirements. Available at: http://vchconnect.vch.ca/programs_services/home_oxygen_program/medical_eligibility/page_32949.htm
3. Cordina RL, Celermajer DS. Therapeutic approaches in adults with congenital heart disease-associated pulmonary arterial hypertension. Eur Respir Rev 2010; 19(118): 300-307.
4. Fussell KM, Ayo DS, et al. Assessing need for long-term oxygen therapy: a comparison of conventional evaluation and measures of ambulatory oxygen monitoring. Resp Care Feb 2003; 48(2): 115-119.

DEVELOPED BY:

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AFFIX PATIENT
LABEL HERE

PROVIDENCE HEALTH CARE
RESPIRATORY SERVICES

OVERNIGHT OXIMETRY STUDY DATA SHEET

STUDY DATE: _____ **LOCATION:** _____ **OXIMETER #:** _____

STUDY START TIME: _____ **STUDY END TIME:** _____

SLEEP or STUDY INTERRUPTIONS: **REASON FOR INTERRUPTION:**

FROM: _____TO: _____ DUE TO: _____

FROM: _____TO: _____ DUE TO: _____

FROM: _____TO: _____ DUE TO: _____

FROM: _____TO: _____ DUE TO: _____

CPAP/BiPAP LEVEL (cm H_2O): _____**OXYGEN (L/min):** _____

ORDERING PHYSICIAN: _____**THERAPIST:** _____

REASON FOR STUDY: _____

HISTORY/DIAGNOSIS: _____

MEDICATIONS AFFECTING SLEEP: _____

_____

ADDITIONAL STUDY COMMENTS (include time and description of event):

_____

_____

_____

_____

_____

_____

_____

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EXHIBIT A. OVERNIGHT OXIMETRY STUDY DATA SHEET