

PVDOMICS: Right Heart Catheterization

Cardiovascular Physiology Core
Cleveland Clinic, Cleveland OH
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NHLBI Pulmonary Vascular Disease Phenomics Program

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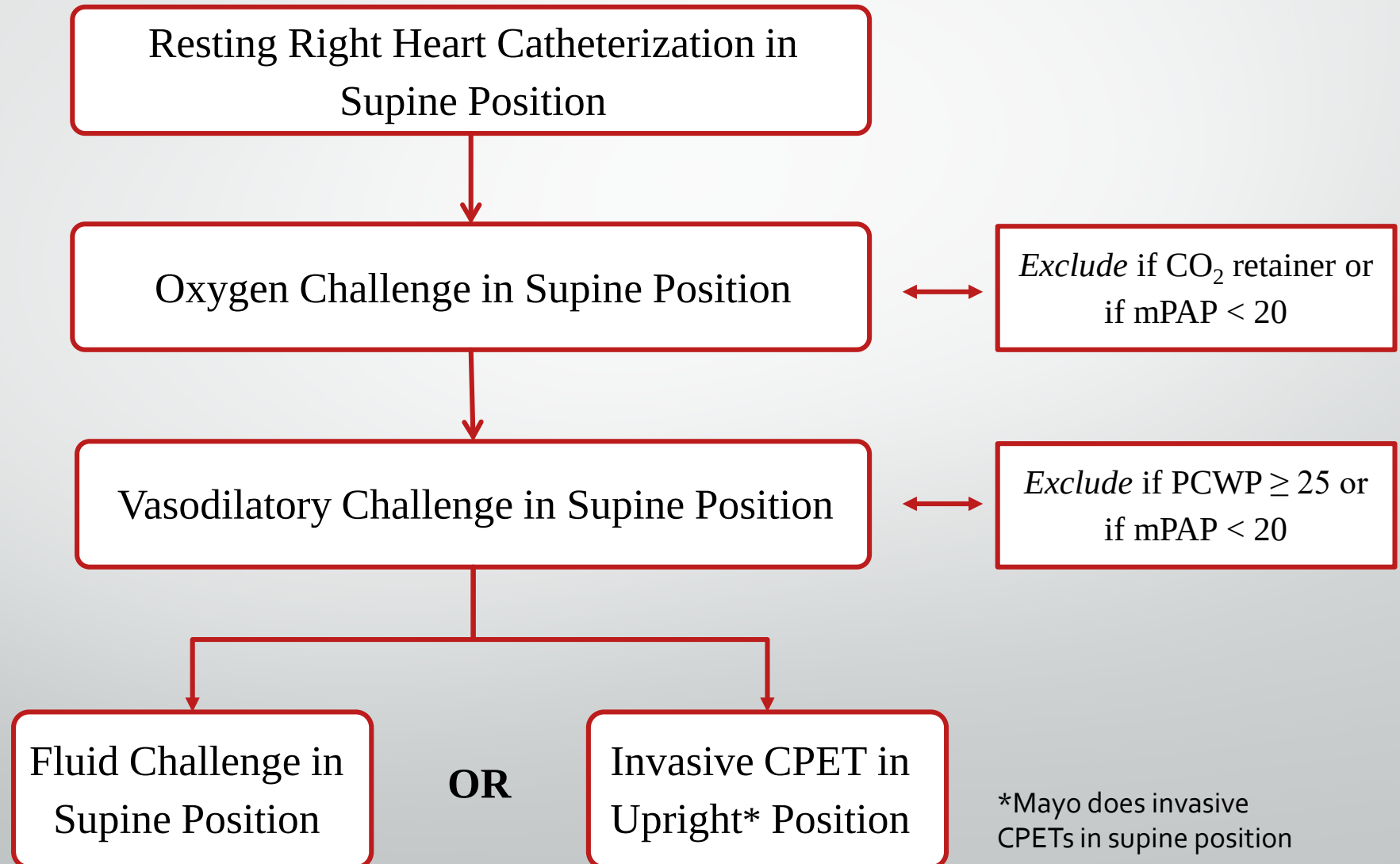
Introduction

This training is intended to serve as a reference document for PVDOMICS study coordinators who will be collecting and transmitting right heart catheterization (RHC) data. It will also include information and training on the blood draw that takes place during the right heart catheterization procedure.

Coordinator Responsibilities

- All right heart catheterizations will be performed by a trained and licensed medical professional.
- Study coordinators are responsible for ensuring that all data is obtained and transmitting that data to the Cardiovascular Physiology Core (CPC)
- Study coordinators may need to supervise the collection of “omics” blood during the RHC and assist in transporting this blood to the lab in a timely fashion.

Order of Procedures





Data To Be Obtained

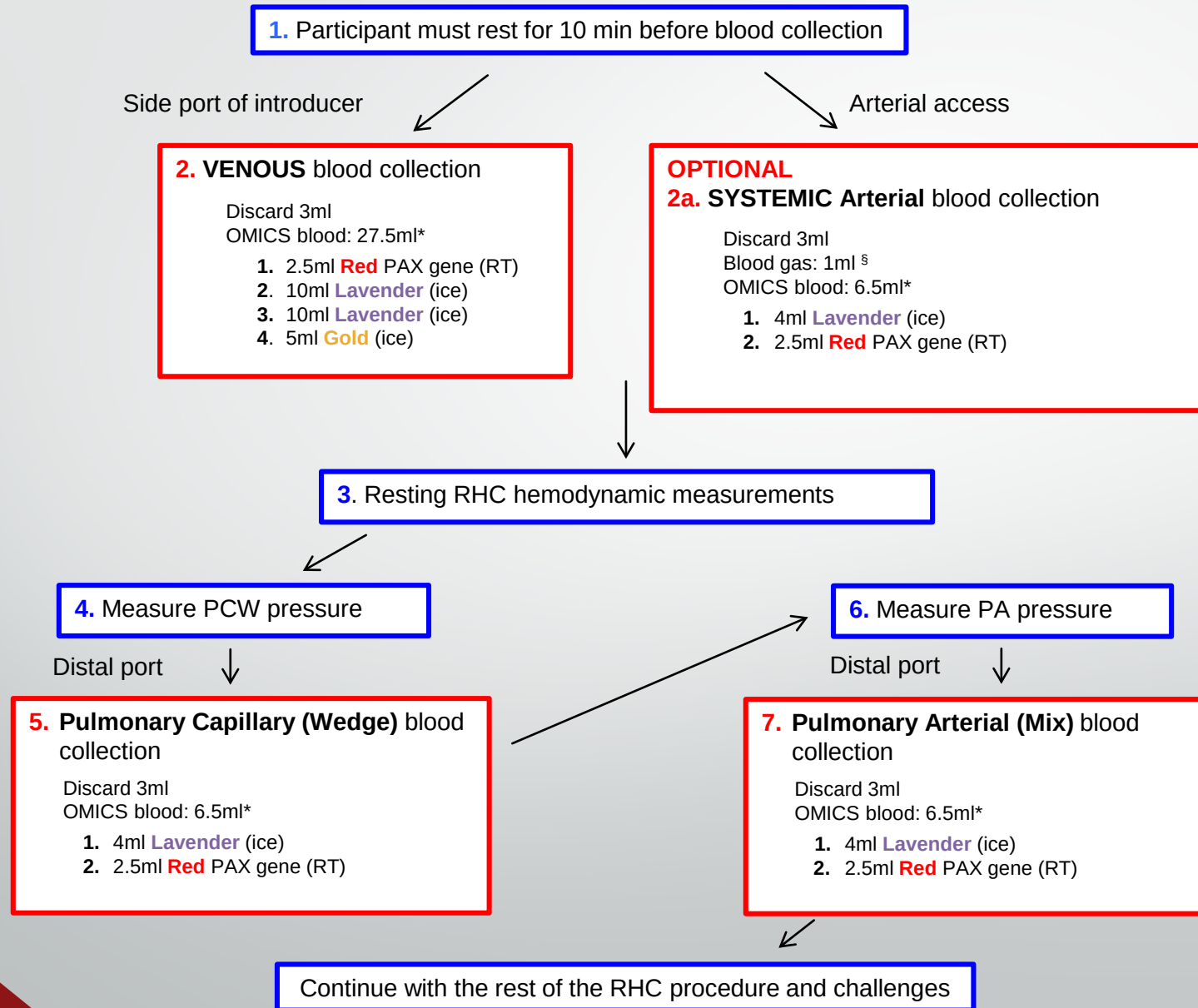
Pressures	Saturations	Outputs
Right Atrial	Superior Vena Cava	Thermodilution
Right Ventricular	Right Atrial	Direct Fick (optional)
Pulmonary Capillary Wedge	Pulmonary Capillary Wedge	
Pulmonary Arterial	Pulmonary Artery	



Data Obtained: Blood Samples

- The following blood samples will be obtained during the resting RHC per the blood protocol.
 - Venous (via introducer, *before* RHC) (27.5mL)
 - Systemic Arterial (optional, *before* RHC) (6.5mL)
 - Pulmonary Capillary (Wedge) (6.5mL)
 - Pulmonary Arterial (Mix) (6.5mL)
- All blood samples must reach the lab within 1 hour of the draw time.

Data Obtained: Blood Samples



- Order of RHC
- Order of OMICS Blood Collection 2

* non-heparinized syringe

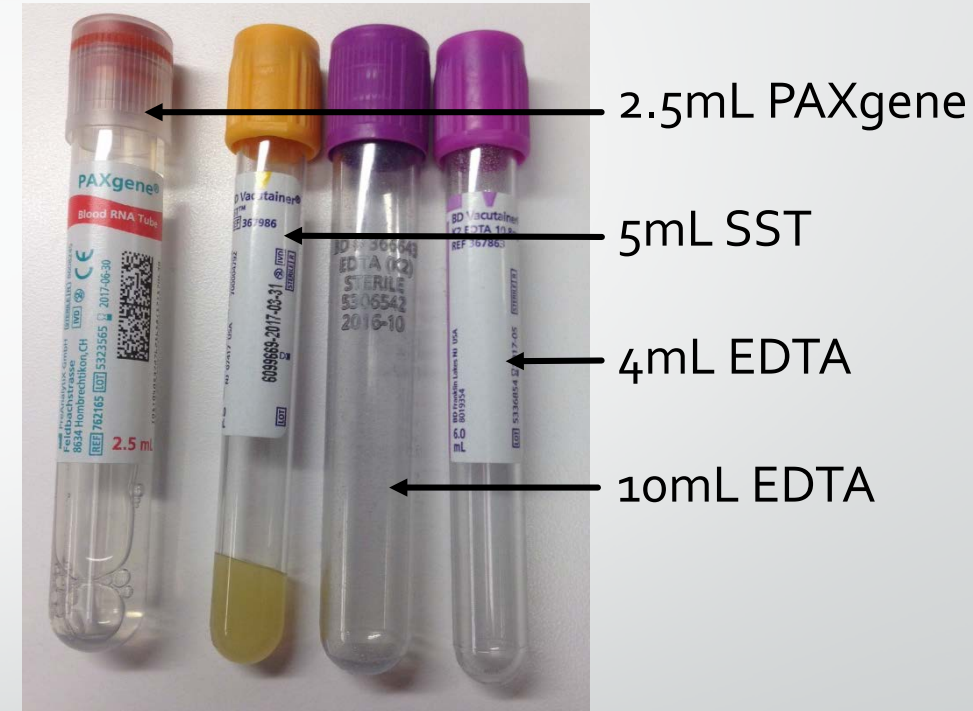
§ heparinized syringe

RT = room temperature

ice = place on wet ice

Blood Collection Supplies

- Vacutainers
 - Four 2.5mL PAXgene (Red)
 - Two 10mL EDTA (Lavender)
 - Three 4mL EDTA (Lavender)
 - One 5mL SST (Gold)
- Blood Transfer Device
 - Allows you to transfer blood from the syringe to the vacutainer tubes



Blood Transfer Device



- Needs to have a **female Luer adapter!**
- Luer adapters and holders are also sold separately



Blood Draw: Venous & Optional Arterial

1. Participant must rest for 10 min before blood collection

Side port of introducer

Arterial access

2. VENOUS blood collection

Discard 3ml

OMICS blood: 27.5ml*

1. 2.5ml **Red** PAX gene (RT)
2. 10ml **Lavender** (ice)
3. 10ml **Lavender** (ice)
4. 5ml **Gold** (ice)

OPTIONAL

2a. SYSTEMIC Arterial blood collection

Discard 3ml

Blood gas: 1ml §

OMICS blood: 6.5ml*

- 1.4ml **Lavender** (ice)
- 2.2.5ml **Red** PAX gene (RT)

3. Resting RHC hemodynamic measurements

□ Order of RHC
□ Order of OMICS Blood Collection 2

* non-heparinized syringe RT = room temperature

§ heparinized syringe ice = place on wet ice



Blood Draw: Venous

Venous “omics” Blood Draw

- Participant has to be **resting for 10 minutes** before drawing the blood.
- After the introducer has been placed, but before any other procedures or measurements are performed, draw the venous blood sample from the SVC through the side port of the sheath.
- Draw back 3mL of blood using a sterile syringe and discard the sample.
- Draw back 27.5mL of blood using a second sterile syringe for “omics” analysis.
- Then fill the tubes from the syringe using a sterile transfer device.

Blood Draw: Pulmonary Capillary (Wedge)

4. Measure PCW pressure



Distal port

5. Pulmonary Capillary (Wedge)
blood collection

Discard 3ml

OMICS blood: 6.5ml*

1. 4ml **Lavender** (ice)
2. 2.5ml **Red** PAX gene (RT)

□ Order of RHC
□ Order of OMICS Blood Collection 2

* non-heparinized syringe RT = room temperature

§ heparinized syringe ice = place on wet ice

Blood Draw: Pulmonary Capillary (Wedge)

- Blood draw must be done after all pressure measurements have been completed.
- Do *not* draw if PCW saturation <90%
- Draw back 3mL of blood using a sterile syringe and discard the sample.
- Then use a second sterile syringe to draw 6.5mL of blood for “omics” analysis.
- Transfer the blood to the appropriate blood collection tubes using a blood transfer device.

Blood Draw: Pulmonary Artery (Mix)

6. Measure PA pressure



Distal port

7. Pulmonary Arterial (Mix) blood collection

Discard 3ml

OMICS blood: 6.5ml*

1.4ml **Lavender** (ice)

2.2.5ml **Red** PAX gene (RT)



Continue with the rest of the RHC
procedure and challenges

□ Order of RHC
□ Order of OMICS Blood Collection 2

* non-heparinized syringe RT = room temperature

§ heparinized syringe ice = place on wet ice



Blood Draw: Pulmonary Artery (Mix)

- Blood draw must be done after all pressure measurements have been completed.
- Draw back 3mL of blood using a sterile syringe and discard the sample.
- Then use a second sterile syringe to draw 6.5mL of blood for “omics” analysis.
- Transfer the blood to the appropriate blood collection tubes using a blood transfer device.



Recording Data: Pressure Tracings

- You should receive paper printouts of pressure tracings.
 - Need 17 printouts (at least)
 - 2 printouts per location (RA, RV, PWCP, PA) for the resting RHC (spontaneous breathing & breath hold)
 - 1 printout per location (RA, PWCP, PA) for the oxygen challenge, nitric oxide challenge, & fluid challenge/iCPET
- All pressure tracings need to have an ECG tracing on them
- Digitized or computer generated “mean line” should be recorded with all tracings.

Condition should be noted

1. Rest:Pressure Calculations

01:04:54 PM+1 s

AXIOM Sensis XP VC11D

ECG tracing



Measurement location must be noted somewhere

PA 100 mmHg B

Mean Line



Summary: 65HR: PA 55/24/34

Study: Coronary^Heart Fail...

Pressure scale and Speed

RHC Transmission to the CPC

1. Label and De-identify the RHC printout (if necessary)
 - a) Verify that each waveform printout has the participant's 6 digit ID #, participant's alphacode and the date of RHC test indicated on it somewhere
 - b) If one of those 3 elements is missing, add the missing element on the RHC printout (handwrite or use a sticker) →

999999_XX_01011900
 - c) Verify that no identifying information exists on the RHC printout
 - d) Cross off or obscure any identifying information that does exist on the printout (e.g. name, date of birth, SSN, MRN, initials)

RHC Transmission to the CPC

2. Scan the de-identified RHC printout into a secure computer and save it as a PDF file.
3. Name the PDF file according to the following convention:

RHC_#####_ac_mmddyyyy.pdf

↑ ↑ ↑ ↑ ↑
Type of Test PVDOMICS ID# Alphacode Date of Test File Type



RHC Transmission to the CPC

4. Submit RHC to DCC.
 - Use the secure WinSCP portal to transmit the pressure tracings and any accompanying report pages
5. Document the date you transmitted the RHC on Form 280.
6. Enter Form 280 into the PVDOMICS Study database.
7. Keep the paper copy of Form 280 and the original waveform printouts in the participant's study file maintained at your site.

For Questions Please Contact

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