Fall 9-1-2018

AHRC 270.01: Respiratory Care Lab IV

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University of Montana, Missoula

The University Of Montana
Missoula College
Respiratory Care Program

AHRC 270 Fall 2018
Respiratory Care Lab IV
(Revised 08/06/2018)

LAB MEETS: in 112 Starting August 27th, 2018

Mondays: 13:00 pm – 16:50 pm

FACULTY:

Amanda Huss, RRT
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(406) 243-7836 (office)
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Office: 308
Office Hours: Tuesday 9AM- 11AM or by appointment

COURSE DESCRIPTION:

This course is designed to supplement AHRC 243 (Peri/Pedi), and to provide hands-on practice in a lab setting for skills needed to successfully complete AHRC 275 (Clinical). Course objectives will be met by classroom lectures, demonstrations, in-services, and hands-on practice opportunities in a lab setting.

PREREQUISITES: AHRC 260 and 265
COREQUISITE: AHRC 243

CREDITS: 2
CONTACT HOURS: 30

REQUIRED TEXTS:

Title: Basic Clinical Lab Competencies for Respiratory Care, 4th Edition
Author: White, et al. Publisher: Delmar

Title: Comprehensive Perinatal and Pediatric Respiratory Care, 4th edition
Author/Publisher: Eberle, Trujillo & Whitaker / Cengage Learning
ISBN: 978-1-4390-5943-2

The following AARC Clinical Practice Guidelines must be read at www.rcjournal.com/cpgs/

Clinical Practice Guidelines:

1. Inhaled NO for the Neonate
2. Surfactant Replacement Therapy
3. Application of CPAP to Neonates Via Nasal Prongs or Nasopharyngeal Tube
4. Transcutaneous Blood Gas Monitoring for Neonatal and Pediatric Patients
5. Capillary Blood Gas Sampling for Neonatal and Pediatric Patients
6. Selection of Aerosol Devices for the Neonatal / Pediatric Patient
7. Selection of O2 Delivery Devices for the Neonatal / Pediatric Patient
8. Care of the Cystic Fibrosis Patient
9. Neonatal Time-Triggered, Pressure-Limited…Mechanical Ventilation

COURSE REQUIREMENTS:

Attendance and Participation: (10%) To maximize your understanding of the subject, you are expected to attend every class. Missing a class can substantially affect your ability to be successful in the course and in the field of Respiratory Therapy. It is expected that you attend the entire duration of the class period. At the beginning and at the end of the class, I regularly note who is in attendance and who participates appropriately.

Assignments and Worksheets: (20%)

Mid-Term Exam and Pop Quizzes: (20%) Exam days will be announced in advance. Make-up exams and lab experiences will be given only under extreme circumstances, and then only if permission is granted *in advance* by the instructor, or with a written medical excuse from a doctor. The burden of proof is on the student. Missed tests must be made up within one week of the original date. The student is responsible for contacting the instructor and the Academic Support Center to schedule the make-up. Failure to do so will result in a zero grade for the missed test. Please also note that Pop Quizzes cannot be made up by those who are not present when the quiz is given.

Final Exam: (30%)

Check-offs / Performance Objectives: (20%) All fifteen (15) of the lab competency check-offs must be completed. The Proficiency Check-off Log Sheet must be signed in the 15 areas by both the instructor and by a peer, then **turned in by Monday, December 2, 2012,** for full credit. This is an all-or-none situation—you either get full credit for doing the 15 and turning the Log Sheet in, or you get no credit. If additional lab time is needed, please contact the instructor for assistance well in advance of the end of the semester.

GRADING SCALE:

A =	4.0	95-100%	C =	2.00	74-76.9%
A- =	3.67	90-94.9%	C- =	1.67	70-73.9%
B+ =	3.33	87-89.9%	D+ =	1.33	67-69.9%
B =	3.00	84-86.9%	D =	1.00	64-66.9%
B- =	2.67	80-83.9%	D- =	.067	60-63.9%
C+ =	2.33	77-79.9%	F =	0.00	<60%

Students in the Respiratory Care Program must have a "B-" (80% or greater) final grade in order to progress within the program or matriculate.

COURSE POLICIES:

Professional Behavior: I expect each student to show professional academic behavior during class time: be on time, be prepared; be awake and attentive; participate in demonstrations and discussions. Above all, I expect each student to be respectful to classmates and to me as the instructor. If you behave in an unprofessional manner during class, I will ask you to meet with me individually. This class, and its co-requisites are good opportunities for students to practice all aspects of academic and medical professionalism at all times. It is important to prepare and read materials/exercises before class begins. Also, students must actively participate with the equipment to get direct, hands-on experience. Please be courteous, as the lab will be crowded and cooperation and sharing of equipment is essential.

Academic Honesty & Integrity: As students of higher education, there is an expectation of high academic integrity. Students are expected to perform to the utmost of their ability in an honest and ethical manner. Academic mis-conduct is subject to an academic penalty by the instructor and/or a disciplinary sanction by The University of Montana. Please refer to the Student Conduct Code in the Respiratory Care Program Student Handbook, along with the University's Student Conduct Code at http://life.umt.edu/vpsa/student_conduct.php.

Recording of Classes: Recording of lectures is not allowed without prior consent of the instructor. Any recorded lectures are not allowed to be re-broadcast in any way. Any material discussed in face-to-face classes or in on-line discussion groups is considered confidential. If a student breaks this policy, it is considered academic mis-conduct.

Disability Accommodation: Eligible students with disabilities will receive appropriate accommodations in this course if requested in a timely manner. I require documentation of any disabling condition prior to providing substantive accommodations (those that involve changes in deadlines, activities, or products) in this course. Students are responsible to arrange for such accommodations with Disability Services for Students (DSS). Please refer to the Disability Services website at http://life.umt.edu/dss. Please note that the instructor reserves the right to modify syllabi and assignments as needed based on faculty, student, and/or environmental circumstances.

Cell Phones & Electronic Devices: Electronic devices (such as cell phones, iPods, mp3s, pagers, etc) **must be turned off and put away before class**. The use of and the noises from such devices are disruptive to the learning environment. However, if your cell phone or pager must be on due to a business or an emergency issue, please inform the instructor prior to class and set it to vibrate. If you must leave class, please do so quietly. If a student is seen breaking the above rules with an electronic device, the device will be taken away until the end of class. During exams, all electronic devices must be off and put away.

Make-up of Quizzes, Worksheets and Tests: There is no make-up for missed quizzes. If the student is planning an absence (e.g. a clinical rotation day) when a worksheet is due, the student must either arrange for a classmate to turn it in on time, or the student should turn it in early. Late worksheets earn a maximum of half-credit. Make-up exams will be given only under extreme circumstances that must be approved by the instructor. Make-up exams must be completed within one week of the original test date. The student is responsible for contacting the Academic Support Center (243-7826) to schedule the make-up. Failure to do so will result in a zero grade for that test.

Internet Access: The student should have internet access and check emails daily. Course material is posted on Moodle (http://umonline.umt.edu). You must have access to this site to complete the requirements of this course. Computers are available in the library if needed. Students are expected to log-on daily to check for email updates, view Moodle assignments, and check links to websites.

FOR FURTHER POLICIES & PROCEDURES, PLEASE REFER TO THE RESPIRATORY CARE PROGRAM STUDENT HANDBOOK AND THE UNIVERSITY OF MONTANA STUDENT CONDUCT CODE ONLINE AT: http://life.umt.edu/vpsa/student_conduct.php.

COURSE OBJECTIVES:

Upon completion of this course, the student should be able to demonstrate neonatal, pediatric and educational compentencies: oxygen and humidity therapy, aerosolized medication delivery, endotracheal and oropharyngeal suctioning, bag-mask ventilation and resuscitation, ventilator set-up, initiation, and monitoring (neonatal, pediatric and HFOV ventilators), make ventilator parameter changes, initiate neonatal CPAP, perform neonatal physical assessment and chest X-ray interpretation, capillary and umbilical artery blood sampling and have an understanding of nitric oxide therapy.

This course will help the student develop psychomotor skills and safe clinical practices in accordance with established Clinical Practice Guidelines (www.rcjournal.com/cpgs/index.cfm) and modern safety initiatives.

Guidance and support will be provided in assembly of an appropriate cover letter and resume for distribution to potential employers. As students are nearing graduation from Respiratory Care program, it will become vital for them to market themsevles in a way that is reflective of their strengths and potential value to employers.

AHRC 270 - SUBJECTS COVERED:

1. Neonatal Physical Assessment
2. Oxygen and Humidity Systems & Enclosures
3. NICU Isolation & Sterile Protocols
4. Oropharyngeal and Endotracheal Suctioning
5. Endotracheal tubes and laryngeal mask airways
6. CPAP (nasal, bubble & SiPAP if available)
7. Manual ventilation and resuscitators
8. NRP Overview
9. Neonatal and Pediatric mechanical ventilation (initiating, monitoring, changing parameters)

MID-TERM EXAM (about October 15)

10. Special mechanical ventilation techniques: HFOV and INO
11. Blood Gas Sampling (Capillary, UAC, Radial)
12. Aerosolized Medications
13. Chest X-ray Interpretation
14. Cover letters, Resume

FINAL EXAM (about November 27)

Proficiency Check-off Log Sheet. These performance evaluations are in this syllabus. Some require clinical check off by a clinical preceptor. Others, as indicated are lab proficiencies only.

Turn this page into the laboratory instructor when completed.

STUDENT NAME: _____

	Title	Peer	Date	Instructor	Date
1	Oxyhood Therapy				
2	Mist Tent Therapy				
3	Endotracheal Suctioning				
4	Oropharyngeal Suctioning				
5	Manual Ventilation (BVM) Neo/Peds				
6	Neonatal Resuscitation				
7	Neo/Peds Physical Assessment				
8	Neo/Peds Chest X-Ray Interpretation				
9	Umbilical Artery Catheter Sampling				
10	Initiate newborn M.V,. Non-HFOV				
11	Monitoring newborn M.V.				
12	Ventilator parameter changes				
13	Nitric Oxide (NO) therapy				
14	Neonatal CPAP				
15	Aerosol Medication Admin. Neo/Peds				
16	**Sensormedics 3100A** HFOV *				
17	**Viasys Avea or PB 840** Ventilator Setup & Monitoring if not done during RES 255*				

STUDENTS must complete 12 of the Performance Evaluations 1-15.

* 16 & 17 are Lab only and optional at instructor's discression. Numbers 16 & 17 do not count toward

the minimum of 12 check-offs in Clinical Class.

OXYGEN HOOD THERAPY NEO/PEDS

Student name: _____ Clinical Preceptor:_____

Date: Lab _____ Clinical: Pass ____ Fail ____

Lab: Pass ____ Fail ____ Clinical site: _____

Lab instructor: _____

PASSING CRITERIA:

Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time or the performance receives a failing grade.

SCORING:

2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
*		**A. Review Chart & need for oxyhood**			
*	1.	Liter flow or F_IO_2			
	2.	Duration of therapy			
		B. Gather equipment			
*	1.	Flowmeter – O2 blender			
*	2.	Humidifier/nebulier and sterile water			
*	3.	Necessary tubing & Appropriate sized hood			
*	4.	Oxygen analyer			
*	5.	Water trap & Oxygen-in-Use signs			
	6.	Wash hands (as appropriate)			
		C. Perform procedure			
*	1.	Connect blender to gas outlets			
*	2.	Set desired F_IO_2			
*	3.	Connect blender flow to humidifier			
	4.	Connect nebulizer to flowmeter			
*	5.	Place hood in incubator/warmer			
*	6.	Connect aerosol tubing to hood and humidifier/nebulizer			
*	7.	Place water trap in tubing as appropriate			
*	8.	Insert thermometer/probe			
*	9.	Set desired flow rate			
*	10.	Add sterile water to humidifier/nebulizer			
*	11.	Turn on humidifier/nebulizer			
*	12.	Place patient in hood			
*	13.	Analyze the FIO2			
*	14.	Check the temperature and adjust			
		D. Assess vital signs			
*	1.	Breath sounds			
*	2.	Pulse rate			
*	3.	Respiratory rate and effort			

*	4.	Color			
*		**E. Post Oxygen-in-Use signs appropriatel**			
*		**F. Document pertinent data in patient chart**			
*		**G. Monitor appropriately**			

SCORE:
Peer: _____points out of (68) _____% Lab: _____points out of (68) _____%
Clinical: _____points out of (68) _____%

MIST TENT THERAPY NEO/PEDS

Student name _____ Clinical preceptor _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procdure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time or the performance receives a failing grade.
SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
		A. Review chart			
*	1.	Document need for tent			
*	2.	Liter flow or F_IO_2			
	3.	Duration of therapy			
*	4.	Orders or indications for isolation			
*		**B. Wash hands**			
		C. Gather equipment			
*	1.	Tent			
*	2.	Supporting frame			
*	3.	Humidifier and sterile water			
*	4.	Necessary tubing			
*	5.	Oxygen analyzer			
*	6.	Oxygen-in-Use signs			
	7.	Wash hands (as appropriate)			
		D. Perform procedure			
*	1.	Set up the tent			
*	2.	Add sterile water to nebulizer			
*	3.	Connect nebulizer to gas outlet			
*	4.	Insert nebulizer hose into tent			
	5.	Place patient in tent			
*	6.	Tuck in tent bottom			
	7.	Raise crib sides (as applicable)			
*	8.	Analyze FIO2			
		E. Assess vital signs			
*	1.	Breath sounds			
*	2.	Pulse rate			
*	3.	Respiratory rate and effort			
*	4.	Color			
*	5.	**F. Post Oxygen-in-Use signs in room &**			

		entrance to room			
*	6.	**G. Document pertinent data in patient chart**			
*	7.	**H. Monitor appropriately**			

SCORE:
Peer: _____ points out of _____ (54) _____%
Lab: _____ points out of _____ (54) _____%, Clinical: _____ points out of _____ (54) _____%

ENDOTRACHEAL SUCTIONING NEO/PEDS

Student name: _____ Clinical preceptor: _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time or the performance receives a failing grade.
SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
		A. Prepare equipment			
*	1.	Select appropriately sized catheter			
*	2.	Determine catheter insertion distance (when suctioning the endotracheal tube)			
*	3.	Adjust vacuum pressure (-50 to –80 mmHg)			
*	4.	Prepare ventilator/manual resuscitation bag			
		B. Prepare patient			
*	1.	Wash hands			
	2.	Auscultate chest and determine breath sounds			
*	3.	Hyperoxygenate as needed			
*	4.	Observe baseline vital signs			
		C. Perform procedure: Endotracheal tube			
*	1.	Place eye protection			
*	2.	Aseptically open suction kit			
*	3.	Aseptically place gloves			
*	4.	Remove catheter from package			
*	5.	Attach catheter to suction tubing			
*	6.	Disconnect patient from ventilator			
*	7.	Instill appropriate amount of sterile saline			
*	8.	Reconnect to ventilator (or manually ventilate) for 4 to 5 breaths			
*	9.	Insert catheter into ET tube without suction and advance to predetermined depth			
*	10.	Apply (intermittent) suction and withdraw catheter (total time should not exceed 10 sec)			
*	11.	Resume ventilation of patient			
*	12.	Observe vital signs and treat appropriately			
	13.	Resuction as needed following the given criteria			

*	14.	Titrate FIO2 as clinically indicated			
*		**D. Document the procedure in patient chart**			
*		**E. Monitor appropriately**			

SCORE:
Peer: _____ points out of _____ (48) _____%
Lab: _____ points out of _____ (48) _____%
Clinical: _____ points out of _____ (48) _____%

OROPHARYNGEAL SUCTIONING NEO/PEDS

Student name _____ Clinical preceptor _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percen or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminaated. The procedure must be performed within the designated time or the performance receives a failing grade.
SCORING:
2 points - Task performed satisfactorily wihtout prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
		A. Prepare equipment			
*	1.	Select appropriately sized catheter			
*	2.	Adjust vacuum pressure (-50 to –80 mmHg)			
*	3.	Prepare ventilator/manual resuscitation bag			
		B. Prepare patient			
*	1.	Wash hands			
	2.	Auscultate chest and determine breath sounds			
*	3.	Hyperoxygenate as needed			
*	4.	Observe baseline vital signs			
		C. Perform procedure			
*	1.	Place eye protection			
*	2.	Open suction kit			
*	3.	Place gloves			
*	4.	Remove catheter from package			
*	5.	Attach catheter to suction tubing			
*	6.	Insert catheter into mouth until the oropharynx is reached			
*	7.	Apply (intermittent) suction and withdraw catheter			
*	8.	Monitor and treat bradycardia and hypoxia			
	9.	Repeat as necessary			
*		**D. Document the procedure and pertinent information in the patient chart**			
*		**E. Monitor appropriately**			

SCORE:
Peer: _____ points out of _____ (36) _____%
Lab: _____ points out of _____ (36) _____%

Clinical: _____ points out of _____ (36) _____%

MANUAL VENTILATION (BVM) NEO/PEDS

Student name _____ Clinical preceptor: _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated.
SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
*		**A. Wash hands**			
		B. Obtain equipment			
*	1.	Resuscitation bag, with reservoir if self-inflating			
*	2.	Pressure manometer and tubing			
*	3.	Properly fitting mask (unless via ETT)			
	4.	Oral airway (if indicated)			
*	5.	Exam gloves			
		C. Check bag for proper function			
*	1.	Occlude bag opening			
*	2.	Fill bag with gas			
*	3.	Compress bag			
*	4.	Check for leaks			
*	5.	Attain 30 to 40 cm H_2O pressure			
	6.	Check function of pop-off valve (if present)			
*		**D. Put on gloves**			
*		**E. Position the patient: neck extended appropriately**			
*		**F. Position the mask on the patient: proper seal on face unless via ETT**			
		G. Ventilate the patient			
*	1.	Watch for chest rise			
*	2.	Rate of 40 to 60 bpm (or as indicated)			
*	3.	Appropriate inspiratory pressure			
*		**H. Insert orogastric tube if ventilations are longer than 2 minutes (as indicated)**			
*		**I. Auscultate lungs**			
*		**J. Monitor and document oxygenation**			

		K. Continue ventilation until:			
*	1.	Spontaneous effort is adequate			
*	2.	Patient is intubated and placed on ventilator			

SCORE:
Peer: _____ points out of _____ (46) _____%
Lab: _____ points out of _____ (46) _____%
Clinical: _____ points out of _____ (46) _____%

NEONATAL RESUSCITATION

Student name _____ Clinical preceptor: _____
Date: Lab _____ Clinical: Pass _____ Fail _____
Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____
Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time of the performance receives a failing grade.
SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
*		**A. Wash hands -&Obtain equipment**			
*	1.	Resuscitation bag and mask			
*	2.	Laryngoscope and blade			
*	3.	Suction equipment			
*	4.	Warm, dry towel			
*	5.	Turn on radiant warmer			
*	6.	Obtain and put on gloves			
		B. Perform initial steps			
*	1.	Place patient on open warmer			
*	2.	Thoroughly dry patient			
*	3.	Suction the mouth, then nose			
*	4.	Intubate and suction trachea if meconium			
*	5.	Stimulate the patient			
		C. Evaluate respirations			
*	1.	If spontaneous, evaluate heart rate			
*	2.	If absent, begin PPV after 15-30 seconds			
		D. Evaluate heart rate (spontaneous breaths)			
*	1.	Greater than 100, evaluate color			
*	2.	Less than 100, begin PPV			
		E. Evaluate heart rate (following PPV)			
*	1.	Less than 60 - start CPR			
*	2.	60-100 and not increasing, continue PPV start compressions if heart rate < 80			
*	3.	60-100 and increasing, continue PPV			
*	4.	Greater than 100, discontinue PPV when spontaneous ventilation returns			
*	5.	Administer medications if heart rate <80 after 30 seconds of PPV with 100% oxygen.			
		F. Evaluate color			
*	1.	If blue, provide oxygen			
*	2.	If pink, or acrocyanosis, observe and monitor			
*		**G. Intubate patient if indicated**			

*		**H. Continue to assess.**			
*		**I. Assign 1-minute and 5-minute Apgar scores**			
*		**J. Transport to incubator when stable**			
*		**K. Record actions & observations in chart**			

SCORE:
Peer: _____ points out of _____ (60) _____%
Lab: _____ points out of _____ (60) _____% Clinical: _____ points out of _____ (60) _____%

PHYSICAL ASSESSMENT NEO/PEDS

Student name _____ Clinical preceptor: _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time of the performance receives a failing grade.

SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
*		**A. Wash hands**			
		B. Visually inspect the neonate			
	1.	Overall			
	2.	Proportions and posture			
	3.	Head			
	4.	Trunk			
	5.	Extremities			
	6.	Lanugo			
		C. Head-to-toe assessment			
	1.	Head			
		a. fontanelles			
*		b. ears			
*		c. nose			
		d. mouth			
		e. neck			
	2.	Thorax			
*		a. skin			
*		b. breasts			
*		c. lungs			
		d. heart			
	3.	Abdomen			
*	4.	Genitalia			
	5.	Extremities			
*		a. sole creases			
*		**D. Determine gestational age from preceding assessment**			
*		**E. Return patient to bed and posistion**			

*		**F. Record results and observations**			

SCORE:
Peer: _____ points out of _____ (46) _____%
Lab: _____ points out of _____ (46) _____%
Clinical: _____ points out of _____ (46) _____%

CHEST X-RAY INTERPRETATION NEO/PEDS

Student name _____ Clinical preceptor: _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time of the performance receives a failing grade.

SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
		A. Systematically examine the x-ray			
*	1.	Check the identification tag			
*	2.	Orient to right and left			
*	3.	Determine exposure			
*	4.	Identify artifact			
*	5.	Determine patient position			
*	6.	Determine if inspiratory or expiratory			
*	7.	Examine the diaphragm			
*	8.	Examine the abdomen			
*	9.	Determine the proper position of the UAC and/or UVC			
*	10.	Examine the cardiac silhouette			
*	11.	Examine the lung hilum			
*	12.	Examine the trachea			
*	13.	Determine the proper position of the endotracheal tube			
*	14.	Examine the bronchus and lung tissue			
*		**B. Determine possible lung pathology present**			
*		**C. Suggest appropriate treatments or changes**			
*		**D. Document appropriate findings in patient chart**			

SCORE:
Peer: _____ points out of _____ (34) _____%
Lab: _____ points out of _____ (34) _____%
Clinical: _____ points out of _____ (34) _____%

UMBILICAL ARTERY CATHETER SAMPLING

Student name _____ Clinical preceptor: _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time of the performance receives a failing grade.

SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

		PEER	LAB	CLINICAL
	A. Obtain equipment			
1.	Two 3 cc syringes			
2.	Blood gas syringe			
3.	Sterile gauze pads			
4.	Heparin flush solution			
5.	Data slip (acquisition slip)			
6.	Two floor exam gloves & Protective eyewear			
	B. Wash hands & Prepare equipment			
1.	Remove syringes from containers			
2.	Fill one 3 cc syringe with 2.0 to 2.5 cc of a heparin flush solution			
3.	Place gauze pads in proper places			
4.	Prepare blood gas syringe			
5.	Fill out the data (acquisition) slip			
6.	Put on gloves and eyewear			
	D. Perform procedure			
1.	Place empty 3 cc syringe on stopcock			
2.	Turn stopcock off to I.V. line			
3.	Slowly withdraw 2 cc of blood			
4.	Turn stopcock back halfway			
5.	Remove syringe and place on sterile gauze			
6.	Place blood gas syringe on stopcock			
7.	Turn stopcock off to I.V. line			
8.	Withdraw small blood sample			
9.	Turn stopcock off to syringe & remove syringe			
10.	Cap the blood gas syringe			
	E. Follow any blood replacement protocol per hospital			
1.	Turn stopcock off to I.V. line			
2	Tap base of "waste blood" syringe with finger			
3.	Remove bubbles, reinject into I.V. line			
4.	Turn stopcock off and remove syringe			
	F. Place syringe with heparin solution on stopcock			
1.	Turn stopcock off to I.V. line			
2.	Tap base of syringe with finger			
3.	Remove any bubbles			
4.	Inject 1 to 1.5 cc of flush into line until clear			

5.	Turn stopcock off to syringe and remove			
6.	Replace stopcock port covering			
	G. Clean up & dispose of materials properly			
	H. Document results in patient chart			

SCORE:
Peer:____points out of ____ (80) ____% Lab:_____points out of ____ (80) ____% Clinical:____ points out of ____ (80) ____%

INITIATION OF NEWBORN MECHANICAL VENTILATION
(Other than HFOV)

Student name _____ Clinical preceptor _____
Date: Lab _____ Clinical: Pass _____ Fail _____
Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____
Lab Instructor: _____ Clinical Site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time of the performance receives a failing grade.

SCORING:
2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

		PEER	**LAB**	**CLINICAL**
1	Verify physician order			
2.	Assesses the patient need: i.e.,signs & symptoms, lab data, CXR, maternal history			
3.	Establishes or verify airway			
4.	Assembles required equipment			
	a. Ventilator - fully assembled & tested			
	c. Resuscitation bag & mask			
	e. Monitors, ECG, SpO2, ETCO2, transcutaneous			
5.	Tests the ventilator before use			
6.	Establishes ordered settings			
	a. Mode			
	b. Inspiratory time			
	c. Peak pressure			
	d. Oxygen concentration			
	e. Rate			
	f. PEEP/CPAP level			
7.	Apply to patient			
8.	Monitors the patient and the ventilator			
	a. Breath sounds			
	b. Chest rise			
	c. Appearance			
	d. Mode			
	e. Ventilator and patient rates			
	f. Inspiratory time			
	g. Peak pressure			
	h. Flow rate			
	i. PEEP/CPAP level			
	j. Oxygen concentration			

	k. Sets all alarms			
9.	Sets up noninvasive monitors			
10.	Cleans up the patient's area			
11.	Records all information in the patient's chart			

SCORE:
Peer: _____ points out of _____ (40) _____%
Lab: _____ points out of _____ (40) _____% Clinical: _____ points out of _____ (40) _____%

MONITORING NEWBORN MECHANICAL VENTILATION

Student name _____ Clinical preceptor: _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date:
_____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated. The procedure must be performed within the designated time of the performance receives a failing grade.
SCORING:
2 points - Satisfactry without prompting.
1 point - Satisfactory with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
*	1.	Verifies the physician's orders			
*	2.	Follows standard precautions; handwashing			
	3.	Explains the procedure to family if present			
*	4.	Assesses the patient			
		a. Breath sounds			
		b. Inspection			
		c. Noninvasive monitoring			
		d. Heart rate and rhythm			
		e. Airway			
		(1) Position			
		(2) Security of connections			
*	5.	Suctions as required			
*	6.	Monitors the ventilator			
		a. Mode			
*		b. Rate			
		(1) Ventilator			
		(2) Patient			
		c. Flow			
		d. Inspiratory time and I:E ratio			
		e. Airway pressure			
		(1) Peak pressure			
		(2) PEEP/CPAP level			
		(3) Mean airway pressure			
		f. Measures the F_IO_2			
		g. Measure the airway temperature			
		h. Fills the humidifier			

		i. Checks all alarm settings			
		j. Checks popoff pressure			
	7.	Cleans up the area			
	8.	Records all data in the chart			

SCORE:

Peer: _____points out of _____ (50) _____%
Lab: ____points out of ____ (50) ____%
Clinical: ____ points out of ____ (50) ____%

VENTILATOR PARAMETER CHANGES NEONATAL/PEDS

Student name _____ Clinical preceptor _____

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA:
Obtain 90 percent or better on the procedure. Tasks indicated by an asterisk (*) must receive at least 1 point or the evaluation is terminated.

SCORING:

2 points - Task performed satisfactorily without prompting.
1 point - Task performed satisfactorily with self-initiated correction.
0 points - Task performed incorrectly or with prompting required.
NA - Task not applicable to the patient care situation.

TASKS:			**PEER**	**LAB**	**CLINICAL**
*	A.	Determine acid-base and oxygenation status from ABG and/or TCM (check TCM & ABG correlation)			
*	B.	Evaluate current vent settings			
*	C.	Determine all possible vent changes to normalize ABG			
*	D.	Select appropriate vent changes: discuss potential complications			
*	E.	Make appropriate vent changes			
*	F.	Follow up the changes on TCM and/or ABG			
*	G.	Document changes in patient chart			

SCORE:

Peer: _____ points out of _____ (16) _____%
Lab: _____ points out of _____ (16) _____%
Clinical: _____ points out of _____ (16) _____%

INHALED NITRIC OXIDE (INO Vent system)

Student Name: _____ **Clinical Preceptor: _____**
Date: Lab _____ Clinical: Pass _____ Fail _____
Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____
Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

Passing Criteria: 90% or Better.
Scoring: 2 point – task or question answered without prompting
1 point – task or question answered with self-correction
0 points – incorrectly performs task or wrong answer given & prompting required.
NA – not applicable to the clinical situation

TASKS:	**PEER**	**LAB**	**CLINICAL**
1. Ensure NO tanks contain adequate gas supply.	_____	_____	_____
2. Check all gas line connections for tight fit.	_____	_____	_____
3. Purge & Calibrate the system.	_____	_____	_____
4. Check competency of O2, NO, & NO2 analyzers.	_____	_____	_____
5. Insert gas analyzer at least 15 cm proximal to Y-piece in inspiratory limb.	_____	_____	_____
6. What is the rationale for 15cm distance in #5?	_____	_____	_____
7. Identify the injector module.	_____	_____	_____
8. Insert injector module into inspiratory limb between Y-piece and humidifier.	_____	_____	_____
9. What is the reasoning for #8?	_____	_____	_____
10. Set high-low alarms for O2, NO, NO2.	_____	_____	_____
11. Name two other alarm systems in place.	_____	_____	_____
12. If a gas sensor fails does the INOvent shut down?	_____	_____	_____
13. If NO becomes greater than 100ppm What fail safe mechanism is in place?	_____	_____	_____
14. How do you clear the "service advisory" alarm?	_____	_____	_____

SCORE:
Peer: _____ points out of _____ (16) _____%
Lab: _____ points out of _____ (16) _____%, Clinical: _____ points out of _____ (16) _____%

NEONATAL CPAP or (NPPV)

Student Name: _____ **Clinical Preceptor: _____**

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

Passing Criteria: 90% or Better.
Scoring: 2 point – task or question answered without prompting
1 point – task or question answered with self-correction
0 points – incorrectly performs task or wrong answer given & prompting required.
NA – not applicable to the clinical situation

TASKS:	**PEER**	**LAB**	**CLINICAL**
1. Verify order: scan chart for pertinent information			
2. Gathers CPAP/NPPV unit – circuit, humidifier, & appropriate patient interface.			
3. Follows precautions, includes hand washing.			
4. Assesses patient: includes vital signs, CXR, auscultation. Suction as indicated.			
5.Assemble – test & troubleshoot CPAP/NPPV unit for proper operation prior to placing on patient.			
6. Assess interface for proper fit.			
7. Set CPAP pressure or NPPV parameters as ordered.			
8. Explain therapy to patient/family as appropriate.			
9. Carefully apply therapy to patient.			
10. Reassess patient. Check vital signs and monitors. ECG, SPO2, etc. for signs of distress or improvement.			
11. Verify CPAP/NPPV ordered settings.			
12. Verify bed rails in place.			
13. Cleans up area.			
14. Perform CPAP/NPPV unit check.			
15. Document procedure & findings in patient chart.			

SCORE:
Peer: _____ points out of _____ (16) _____%
Lab: _____ points out of _____ (16) _____%
Clinical: _____ points out of _____ (16) _____%

MEDICATION ADMINISTRATION – MDI/DPI/SVN – Neo/Peds

Student Name: _____ **Clinical Preceptor: _____**

Date: Lab _____ Clinical: Pass _____ Fail _____

Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____

Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

Passing Criteria: 90% or Better.
Scoring: 2 point – task or question answered without prompting
1 point – task or question answered with self-correction
0 points – incorrectly performs task or wrong answer given & prompting required.
NA – not applicable to the clinical situation

TASKS:	**PEER**	**LAB**	**CLINICAL**
1. Verify physician order & scan chart			
2. Obtain medication and delivery equipment as indicated			
3. Verify correct medication, dosage, delivery route, frequency and correct patient.			
4. Observe precautions and hand washing			
5. Assess patient: Appearance, WOB, auscultation, vital signs, peak flow, SPO2, ETCO2, flow waveforms.			
6. Use aseptic technique to prepare medication per orders or specifications.			
7. Deliver meds by specified route. Coach or encourage patient as appropriate.			
8. Encourage or assist patient to cough. Suction as indicated			
9. Reassess patient for adverse effects or improvement: Appearance, WOB, auscultation, vital signs, peak flow SPO2, ETCO2, flow waveforms.			
10. Clean up and leave a safe patient area.			
11. Record therapy and observations in patient chart.			

SCORE:
Peer: _____ points out of _____ (16) _____%
Lab: _____ points out of _____ (16) _____%
Clinical: _____ points out of _____ (16) _____%

SENSORMEDICS 3100 A – HFOV

Student Name: _____ **Clinical Preceptor: _____**
Date: Lab _____ Clinical: Pass _____ Fail _____
Peer: _____
Peer: Pass _____ Fail _____ Clinical Date: _____
Lab Instructor: _____
Lab: Pass _____ Fail _____ Clinical site: _____

PASSING CRITERIA: Obtain 90% or better on the procedure. Tasks indicated by * must receive at least 1 point or the evaluation is terminated. Procedure must be performed within designated time or the performance receives a failed grade.

SCORING:
2 Points Task performed satisfactorily without prompting.
1 Point Task performed satisfactorily with self-initiated correction.
0 Points Task performed incorrectly or with prompting required.
N/A Task not applicable to the patient care situation

	Tasks	Peer	Lab	Clinical
1	Correctly gathers the equipment			
2	Circuit Calibration			
3	Ventilator Safety Calibration/Performance Check			
4	Set up for baby			
5	Adjusts the ventilator to the following OR ORDERED settings:			
	a. Map 10			
	b. Amplitude 20			
	c. I time 0.33			
	d. Hz 15			
	e. Bias flow to MAP 20 cmH_2O			
	f. Set limit 13 cm H_2O			
	g. Set Paw 10 cm H_2O			
	h. Set alarm hi Paw 12 cm and low Paw 8 cm H_2O			
	i. Center piston			
	j. Initiate ventilation on test lung & perform ventilator check			
6	Adjust the ventilator to the following OR ORDERED settings			
	a. Map 12			
	b. Amplitude 24			
	c. I time .33			
	d. Hz 12			

e. Perform ventilator check now & after each of the following setting changes.

7	Adjust the ventilator to the following OR ORDERED settings			
	a. Map 14			
	b. Amplitude 30			
	c. I time .50			
	d. Hz 10			
8	Adjust the ventilator to the following OR ORDERED settings			
	a. Map 12			
	b. Amplitude 24			
	c. I time .33			
	d. Hz 12			
9	Adjust the ventilator to the following OR ORDERED settings			
	a. Map 9			
	b. Amplitude 15			
	c. I Time .33			
	d. Hz 10			
10	**Performs ventilator check after each setting change**			

SCORE:
Peer: _____ points out of _____ (16) _____%
Lab: _____ points out of _____ (16) _____%, Clinical:_____ points out of _____ (16) _____%

Sensormedics 3100A HFOV
Study Guide and Reference Notes
(excerpted from Utah Valley Regional Medical Center's Certification Review)

TECHNICAL QUESTIONS

1. There are two Paw parameters that will initiate automatic HFOV shutdown. What are those parameters?

   ≥ 50 cmH_20
   ≤ 20% of the high Paw audible alarm

2. What is the purpose of the "Paw Limit Control"?

   Controls the "blue" Paw control valve on the inspiratory side .of the circuit. It is used to adjust the "pop-off" pressure.

3. What changes occur to the ΔP if the driver is allowed to move too far to either the inspiratory or expiratory side of the driver housing?

   The pressure can be dampened.

4. What is the dump valve's function?

   To release circuit Paw pressure to ambient pressure. A protective action.

5. What happens to the Ve when a 3.0 ETT is replaced with a 3.5 ETT? Why?

   It enlarges.
   Less ΔP attenuation because of larger airway lumen

6. What happens to the Paw when the driver is turned off for auscultation? Why?

   It diminishes because the waveform of the oscillations are stopped and they are included in the Paw calculations.

7. A chest X-ray is one tool used to measure lung volume. What is the suggested optimal thoracic (rib) level that one is looking for when using HFOV in a high lung volume strategy?

   T-9 @ the Right Hemidiaphram

8. If ΔP stays the same and chest excursion increases, what could be the cause of the change?

   A) Increased lung compliance.
   B) Removal of airway obstruction (secretions).

9. What HFOV parameter initiates the "oscillator stopped" alarm?

   ΔP less than 7 cmH_20

10. Explain how you mechanically adjust the 3100 A to maintain the driver in centered position.

    The control knob on the HFOV column.

11. An obstructed 3.0 ETT causes what changes to the ΔP readout?

    No change.

12. What is the clinical value of the "Paw" parameter?

Refers to lung volume which relates to PaO_2.

13. As you increase the HFOV bias flow what happens to the mean lung volume? Paw ?

increases

14. What is the reset button's function?

It re-pressurizes the circuit.

15. What part of the patient circuit does the reset button control?

The dump valve (red line).

16. How would you establish your initial bias flow for a patient who is 1000 g with an order for a Paw of 10 cmH_20 and a ΔP of 25 cmH_20? Why?

Set flow between 10-20 l/m then adjust Paw as needed.
Adjust flows during care to meet the spontaneous breathing demands of the pt.

17. The minute ventilation formula (Ve = f x Vt) is used when applying conventional life support systems. What changes occur to this formula when using HFOV?

$V-^2$

18. How can Paw effect the driver position?

Paw changes will move the driver. The greater the Paw the greater the displacement of the driver.

19. What is the purpose of the valve located on the inspiratory arm of the circuit (Blue line)?

Pop-off safety valve

20. Explain the "power" knob function?

Adjusts displacement of the driver resulting in changes in ΔP.

21. How many oscillatory cycles are in one Hertz?

60

22. The "on/off" button controls what function?

Driver on/off

23. If the bias flow disconnects from the HFOV circuit, what will occur with the HFOV operation?

1. *Oscillations stop...*
2. *Paw goes to zero in the circuit.*

24. Where is FiO2 adjusted when using HFOV?

External Blender

25. An increase in HFOV frequency has an inverse effect on minute ventilation and vice versa. Why?

Creates additional or less time for the driver to fulfill its displacement - thus stroke volume is increased or decreased.

26. Proper use of the 3100A demands that the patient circuit not be modified. True or False.

True

27. Match the HFOV parameter on the left to the appropriate answer on the right. (Answers may be used multiple times or not at all)

A.	Bias Flow	3		1.	Hertz
B.	ΔP	2		2.	cm. of H2O
C.	Amplitude	2		3.	l/m
D.	Inspiratory Time	4	4.	%	
E.	Paw	2		5.	mm/sec.
F.	Frequency	1		6.	cc/gm

28. What is the maximum frequency available on the 3100A? Minimum?

3- 15 Hz.

29. Which of the following HFOV parameters are affected when the power knob is increased:

	A.	I/E ratio
x	B.	ΔP
	C .	Hz.
x	D .	Paw
	E .	% lnspiratory Time
	F.	Dump valve limit
	G.	Driver positioning

PATHOPHYSIOLOGY QUESTIONS

1. HMD has recently been re-defined as an injury. Briefly explain the injury sequences that are occurring.

Surfactant, deficiency
Reduced alveolar compliance
Terminal airways more compliant other alveoli
FiO2 and Tidal breathing
Distension of airway = architectual changes
Epithelial injury/mediator release

2. In the HMD scenario, there are two ways to prevent the Pulmonary injury sequence: correction of surfactant deficiency, and elimination of tidal volume respiration. Briefly describe how this prevention changes pulmonary physiology:

A. Surfactant correction:

Increases compliance in alveolus resulting in less terminal airway distention.

B. Elimination of tidal volume breathing:

Decrease tension injury to the terminal airway.

3. How can proper use of HFOV potentially prevent or interrupt the HMD pulmonary injury sequence?

Decrease airway injury by decreasing tidal volume distention. This results in less FIO_2 needs.

Both actions result in less mediator release. All lead to less pulmonary injury.

4. What are some possible reasons why exogenous surfactant replacement does not always resolve the atelectatic tendencies of the surfactant deficient lung?

    1. Uneven distribution.
    2. Inactivation by mediator contact.

5. In a pre-term infant where is the most common anatomical site for air leak? Why?

    Terminal airway because it is more distensible than the alveolus in a surfactant deficient lung. Thus over distention can occur.

6. Why is conventional tidal breathing a greater risk for air leak barotrauma than the properly used HFOV?

    Distending pressures @ the terminal airway is significantly less than with tidal breathing.

7. In the terminal airway, what differences occur between a proximal airway. pressure from a pressure ventilator CPAP system of 5 cmH_20 and a 3100A Paw of 5 cmH_20?

    None.

8. In the terminal airway, what important differences occur between a proximal airway pressure from a Sechrist PIP of 30 cmH_20 and a 3100A ΔP of 30 cmH_20?

    ΔP will be significantly reduced, PIP will not.

9. Oxygenation during HFOV in the presence of diffuse alveolar disease is significantly impacted by which of the following:

    x A. Mean Airway Pressure
    x B. Mean Lung Volume
    C. Minute Ventilation
    D. ΔP

10. List at least four clinical indicators/tests that can be used to help determine optimal lung volume when using the HFOV in a diffuse lung disease scenario.

    CVP
    ECHO
    Chest x-ray
    PaO_2

11. Why will the PaO2 drop at a certain lung volume and continue to drop as that lung volume increases?

    Overdistention can result in capillary compression = V/Q shunt increases

STRATEGY QUESTIONS

1. Explain the difference between an "optimal lung volume strategy" and a "low volume strategy."

    1. Optimal lung strategy = optimizing lung volume to optimize V/Q.
    2. Low volume strategy = a reduced lung volume leading

to imposed atelectasis.

2. Minute ventilation adjustments for C02 management can be controlled through what controls on the HFOV?

   Power knob
   Rate Control
   Inspiratory Time Control

3. True or False? Air leaks do not occur during HFOV.

   False

4. At a set proximal ΔP and power, when a change of the ETT from a 3.0 to a 2.5 occurs what will happen to the pressure waveform in the trachea?

   Dampened ΔP is reduced.

5. While using HFOV, what is the most important bedside clinical feature used to assess adequate Vt delivery?

   Chest rise

6. What two ventilatory parameters are the most important for effecting oxygenation in a diffuse alveolar disease scenario?

   Paw
   $Fi0_2$

7. What clinical indicator is used first to show a positive response by the patient to the applied Paw?

   Pao2

8. List two possible clinical expressions that reflect a negative response to the Paw delivered.

   1. *Increased Capillary Refill Time*
   2. *Cyanosis*
   3. *Tachypnea*
   4. *Drop in PaO_2*
   5. *Increase in CVP*
   6. *Tachycardia*

9. Explain the clinical HFOV strategy that is used when the patient changes from an HMD scenario to an air leak scenario**.**

   Reduction in lung volume will decrease air leak.

10. Can ineffective and late weaning of Paw increase risk of IVH? Why?

    Yes,
    As lung compliance improves, capillary compression can occur resulting in a decrease in venous return and an increased cerebral blood pressure.

11. What is the present UVRMC policy on the technique used when administering exogenous surfactant to a patient that is on HFOV?

    Surfactant is given per recommendations of the manufacturer.
    Conventional ventilation is used to distribute the surfactant.

12. What is the present policy on suctioning while on HFOV:

A.	PRN after 24hrs	E.	Q6 PRN
B.	Q2 PRN	F.	By MD order only
C.	PRN	G.	Q4 after 24hrs
D.	Q4 PRN	H.	Q4 after 48hrs

Q4 after 48 hrs

13. Name three disease states that do not respond well to HFOV.

1. BPD
2. Copious secretion production
3. Untreated hypovolemia

14. A patient with a diffuse alveolar disease scenario is on a conventional ventilator with a Paw of 12 cmH_20. What would be the approximate initial Paw that would be set up if the patient was placed on HFOV?

14 cmH_20

15. At what stage in the disease process of a meconium aspiration does the HFOV perform best? The worst?

Best – uniform homogenous pulmonary disease.
Worst – obstructive particulate in airway.

16. What is a commonly used HFOV frequency and inspiratory time?

10 Hz
33% I.T.

17. Explain why more vascular volume expansion therapy is needed on HFOV than on conventional ventilation.

A constant high lung volume results in resistance to blood flow through the pulmonary capillary bed. Additional volume is needed to compensate for the compromise.
5