Milestones—CARDIOTHORACIC SURGERY TECHNICAL SKILLS—PART I

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____
EVALUATOR_____**initials**_____

Level	Novice	Advanced Beginner	Intermediate	Competent
1. Ischemic Heart Disease	1 **Demonstrates** basic surgical skills (sim or OR)	2 **Assesses**/harvests conduits (e.g., vein mapping) **Performs** surgical opening and closing **Provides** basic intraop assist **Performs** proximal anastomosis	3 **Institutes**/weans from CPB **Performs** routine CABG	4 **Manages** complex CAD (e.g., redo CABG, VSD, ischemic MR, off-pump CABG
Additional Comments:				
2. Cardiopulmonary Bypass	1 **Demonstrates** basic surgical skills (sim or OR)	2 **Performs** axillary, femoral, arterial, or venous cannulation **Performs** peripheral vasc access **Performs** surgical opening and closing **Assists** perfusionist w/ CPB setup and pump run	3 **Cannulates,** institutes CPB, incl myocardial protection in routine cases **Manages** CPB and myocardial protection in routine cases **Weans** and decannulates from CPB for routine cases **Recognizes**/manages common acute cx (e.g., coagulopathy. pump failure)	4 **Cannulates,** institutes CPB, incl myocardial protection in complex cases **Manages** CPB and myocardial protection in complex cases **Weans** and decannulates from CPB for complex cases **Institutes** temp circ support for cardiogenic shock (e.g., IABP, ECMO, short-term LV assist **Recognizes**/manages unusual cx (e.g., aortic dissection)
Additional Comments:				
3. Valve Disease	1 **Demonstrates** basic surgical skills (sim or OR)	2 **Identifies** surgical approach for each valve **Performs** surgical opening and closing **Provides** basic intraop assist	3 **Institutes**/weans from CPB **Performs** optimal myocardial protection **Performs** routine valve replacement	4 **Performs** complex valve replacement **Performs** valve repair
Additional Comments:				
4. Great Vessel Disease	1 **Demonstrates** basic surgical skills (sim or OR)	2 **Identifies** surgical approach **Performs** surgical opening, closing, vascular access **Provides** basic intraop assist	3 **Institutes**/weans from CPB **Performs** optimal perfusion and myocardial/neuro protection **Performs** routine aortic replacement **Performs** simple vasc anastomosis	4 **Performs** complex great replacement **Performs** aortic repair **Participates** in endovasc aortic surgery
Additional Comments:				

Milestones—CARDIOTHORACIC SURGERY TECHNICAL SKILLS—PART II

RESIDENT NAME_____ **YR OF TRAINING**_____ **DATE**_____
EVALUATOR_____ **initials**_____

Level	Novice	Advanced Beginner	Intermediate	Competent
5. Esophagus	1 **Demonstrates** basic surgical skills (sim or OR)	2 **Demonstrates** basic endoscopic skills **Demonstrates** basic min. invasive skills (FLS) **Provides** basic intraop assistance **Performs** basic hand-sewn and stapled anastomosis	3 **Demonstrates** advanced endoscopic skills (endo-mucosal resection (EMR), EUS, stenting) **Performs** routine open and minimally invasive motility operations	4 **Performs** routine esophageal resections **Operatively** manages esophageal perforation/ trauma
Additional Comments:				
6. Lung and Airway	1 **Demonstrates** basic surgical skills (sim or OR)(e.g., positioning patient, suturing)	2 **Demonstrates** basic endoscopic skills (e.g., ports, running videoscope) **Demonstrates** basic min. invasive skills (FLS) **Provides** basic op assist **Performs** common bed-side procedures (e.g, trach, tube, central lines)	3 **Demonstrates** advanced endoscopic skills (e.g., EBUS, stenting, proper port placement **Performs** routine open lung resection **Performs** basic VATS procedures	4 **Performs** complex open lung resection (e.g., Pancoast, sleeve) **Performs** VATS lobectomies
Additional Comments:				
7. Chest wall/Pleura/ Mediastinum	1 Demonstrates basic surgical skills (sim or OR)(e.g., knot-tying, suturing) **Performs** common bedside procedures (e.g., chest drain/tube, thoracentesis, pleurodesis	2 Demonstrates basic endoscopic and U/S guidance skills (e.g., handling video scope) **Demonstrates** basic min. invasive skills **Provides** basic intraop assistance	3 Demonstrates advanced endoscopic skills (e.g., uncomplicated EBUS or mediastinoscopy) **Performs** open and VATS procedures for uncomplica-ted pleural/mediastinal dz (e.g., VATS bx, open Stage I/II thymectomy **Performs** simple chest wall resection (e.g., resect small lateral chondrosarc (<3cm))	4 **Performs** open and VATS procedures for complex dz (e.g., open decort for complex loculated pleural effusion, thymectomy for Stage III thymoma) **Performs** complex chest wall resection/reconstruction (e.g., large chest wall lesion w/ reconstruction)
Additional Comments:				
8. Critical Care	1 **Demonstrates** basic ICU surg skills (sim or bedside), incl. IV, art. line, Foley, NG tube	2 **Performs** cardioversion **Demonstrates** advanced ICU surg skills (sim or bed-side), incl. central line, PA cath, chest tube **Demonstrates** routine ventilator management **Manages** temp. pacemaker	3 **Demonstrates** complex ventilator management **Performs** open chest resuscitation **Performs** emergency pericardiocentesis	4 **Troubleshoots** assist devices
Additional Comments:				

GENERAL SESSION

ISCHEMIC HEART DISEASE—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Anatomy	0 No knowledge	1 Basic anatomy and pathology (e.g., angiogram)	2 Common variations anatomy/pathology (e.g., left dominant)	3 Complex integrate anatomy/pathology (e.g., anomalous CA)	4 Complex variations anatomy/pathology (e.g., reoperative)
Additional Comments:					
2. Physiology	0 No knowledge	1 Basic cellular and vascular physiology	2 Changes with IHD (e.g., ischemia, reperfusion, infarction)	3 Role of treatment on physiology IHD	4 Adapts treatment based on complications (e.g., VSD, MR)
Additional Comments:					
3. Clinical manifestations	0 No knowledge	1 List manifestations (e.g., angina, MI)	2 Differential diagnosis of similar manifestations (e.g., esophageal, aortic)	3 Common variants of IHD (e.g., unstable angina, acute MI)	4 Complex clinical manifestations and and complications
Additional Comments:					
4. Diagnostic tools	0 No knowledge	1 List diagnostic tools for IHD	2 Advantages and disadvantages of tools (e.g., EKG, echo, angio)	3 Interprets normal and common abnormalities (e.g., angio, complex EKG)	4 Interprets/integrates complex abnormalities
Additional Comments:					
5. Treatment plan	0 No knowledge	1 List treatment options (e.g., CABG, PCI)	2 Advantages and disadvantages of treatment of treatment options	3 Appropriate treatment for routine IHD	4 Appropriate treatment complex IHD (e.g., hybrid CABG)
Additional Comments:					
6. Complications/outcomes	0 No knowledge	1 Basic complications	2 Risk, benefits, complications	3 ACC/STS/AATS guidelines, basic outcome data (e.g., SYNTAX)	4 Outcomes of all treatment modalities and complications, database (STS)/trials
Additional Comments:					

CARDIOPULMONARY BYPASS, MYOCARDIAL PROTECTION, TEMPORARY CIRCULATORY SUPPORT

CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Components/Circuit	0 No knowledge	1 List basic CPB components (e.g., oxygenator, pump heads, heat exchanger)	2 Cannulation techniques and options (e.g., single bicaval, aortic, peripheral, cold, full or partial)	3 Cardioplegia soln and delivery modes (e.g., crystalloid, blood, antegrade, retrograde)	4 Advanced CPB support (e.g., circ arrest or ECMO)
Additional Comments:					
2. Physiology/pharmacology	0 No knowledge	1 Pulsatile vs. non-pulsatile	2 IABP physiology (e.g., diastolic augment, presystolic dip)	3 Pharmaco..management postcardiotomy hemodynamics (e.g., inotrope, vasodilator)	4 Postcardiotomy shock syndrome (e.g., inotropes, IABP, mechanical support)
Additional Comments:					
3. Myocardial protection	0 No knowledge	1 Basic (e.g., O_2 requirement, O_2 delivery, myocardial relaxation)	2 Options for myocardial protection (e.g., cardioplegia vs. beating heart)	3 Advantages/disadvantages of different myocardial protection strategies	4
Additional Comments:					
4. Coagulation/acid-base	0 No knowledge	1 Coagulation (e.g., instrinsic vs. extrinsic pathway)	2 Coagulation cascade inhibitors (e.g., heparin, argatroban)	3 Acid-base, anticoagulation management on CPB (e.g., pH or alpha stat)	4
Additional Comments:					
5. Complications of CPB	0 No knowledge	1 List complications of CPB (e.g., bleeding, renal failure, pulmonary dysfunction)	2 Understands complications of CPB	3 List management routine complications (e.g., air in heart, inadequate drainage, incomplete arrest)	4 Manage complex complications of CPB (e.g., aortic dissection, air embolism)
Additional Comments:					
6. Trauma/postoperative	0 No knowledge	1	2 List treatment of cardiac injury w/o CPB, trauma	3 Postop sequelae of CPB (e.g., low output, coagulopathy, arrhythmia, HIT)	4 Treatment of postop sequelae of CPB (e.g., low cardiac output, coagulopathy, arrhythmia, HIT)
Additional Comments:					

VALVULAR DISEASE—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Anatomy	0 No knowledge	1 Basic anatomy and pathology	2 Common variations anatomy/pathology (e.g., type of MR)	3 Complex integrate anatomy/pathology (e.g., bicuspid AS, functional MR)	4 Complex variations anatomy/pathology (e.g., CAD and MR, bicuspid AV and ascending aneurysm)
Additional Comments:					
2. Physiology	0 No knowledge	1 Basic valve physiology	2 Changes with valve dis (e.g., pulm HTN)	3 Role of treatment on physiology valve dis (e.g., A fib treatment)	4 Adapts treatment based on physiology (e.g., MR and TR in AS or CAD)
Additional Comments:					
3. Clinical manifestations	0 No knowledge	1 List manifestations (e.g., dyspnea, angina, syncope)	2 Differential diagnosis of similar manifestations (e.g., CAD, emphysema)	3 Common variants of valve disease (e.g., fatigue, exercise intolerance)	4 Complex clinical manifestations and and complications (e.g., staging CHF)
Additional Comments:					
4. Diagnostic tools	0 No knowledge	1 List diagnostic tools for valve disease	2 Advantages and disadvantages of tools (e.g., TTE vs. TEE)	3 Interprets normal and common abnormalities (e.g., intraop TEE)	4 Interprets/integrates complex abnormalities (e.g., IHSS)
Additional Comments:					
5. Treatment plan	0 No knowledge	1 List treatment options for valve disease	2 Advantages and disadvantages of treatment options	3 Appropriate treatment for routine valve disease	4 Appropriate treatment for complex valve dis (e.g., combined CABG, aortic aneurysm, root enlargement)
Additional Comments:					
6. Complications/outcomes	0 No knowledge	1 Basic complications (e.g., periop AVR)	2 Risk, benefits, complications (e.g., frequency of common complications)	3 ACC/STS/AATS guidelines, basic outcome data (e.g., valve durability)	4 Outcomes of all treatment modalities and complications, database/trials
Additional Comments:					

GREAT VESSEL DISEASE—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Anatomy Additional Comments:	0 No knowledge	1 Basic anatomy and pathology (e.g., aortic dissection, spinal cord, CVA)	2 Common variations anatomy/pathology, acquired or traumatic (e.g., desc aortic tear from trauma)	3 Complex integrate anatomy/pathology, acquired, congenital, traumatic (e.g., PAU aortic dissection)	4 Complex variations anatomy/pathology. acquired, congenital, traumatic (e.g., congenital arch)
2. Clinical manifestations Additional Comments:	0 No knowledge	1 List manifestations, acquired/trauma (e.g, chest pain)	2 Differential diagnosis of similar manifestations (e.g., MI, esoph spasm)	3 Common variants, acquired, congenital, traumatic (e.g., bowel ischemia, renal dysfxn)	4 Complex clinical manifestations and complications (e.g., MI vs. acute dissection)
3. Diagnostic tools Additional Comments:	0 No knowledge	1 List diagnostic tools for great disease	2 Advantages and disadvantages of tools (e.g., CT vs. MRI vs.echo vs. angio)	3 Interprets normal and common abnormalities (e.g., sensitivity, specificity, accuracy)	4 Interprets/integrates complex abnormalities (e.g., aneurysm, dissection, PAU)
4. Treatment plan Additional Comments:	0 No knowledge	1 List treatment options for great vessel dz	2 Advantages and disadvantages of treatment options (endovasc vs. open)	3 Appropriate/adjunct treatment for routine great vessel disease (neuro-protection, spinal cord and renal protection)	4 Appropriate treatment for complex great vessel dz (e.g., CPB techniques)
5. Complications/outcomes Additional Comments:	0 No knowledge	1 Basic complications (e.g., natural history)	2 Risk, benefits, complications	3 Basic outcome literature	4 Outcomes of all treatment modalities and complications, database/trials

END STAGE CARDIOPULMONARY DISEASE—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____
EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Anatomy	0 No knowledge	1 Basic cardiac thoracic anatomy	2 Basic pathology relating to cardiac and pulmonary failure (e.g., pneumonia, ARDS, end-stage lung dz, MI, cardiomyopathy)	3 Common variations in anatomy/pathology (e.g., adv valve dis, pulm fibrosis, sarcoid)	4 Complex integrate anatomy/pathology (e.g., adult congenital)
Additional Comments:					
2. Physiology	0 No knowledge	1 Basic normal respiratory and CV physiology	2 Changes with cardiac and pulmonary failure (e.g., work of breathing, hypoxemia, hypercarbia, lactate, tachycardia, hypotension, decr CO)	3 Role of treatment on physiology of cardiac/pulmonary failure (e.g., medical tx vs. IABP vs mech support, med tx vs. mech ventilation)	4 Adapts treatment based on physiology of cardiac/pulmonary failure (e.g., VAD, mechanical ventilation)
Additional Comments:					
3. Clinical manifestations	0 No knowledge	1 List clinical manifestations cardiac/pulm failure (e.g., dyspnea, fatigue, periph and pulm edema)	2 Differential diagnosis of causes of cardiac/ pulmonary failure (e.g., cardiomyopathy, CAD, interstitial lung dz, trauma)	3 Common variants of manifestations of cardiac/pulmonary failure (e.g., ischemic, post-viral, post-partum, idiopathic; lung injury/ ARDS, infectious)	4 Complex clinical manifestations and complications of cardiac and pulmonary failure (e.g., adult congenital, mechanical cx of MI)
Additional Comments:					
4. Diagnostic tools	0 No knowledge	1 List diagnostic tools for cardiac/ pulm failure (e.g., ABG, CXR, PA line, echo)	2 Advantages and disadvantages of tools in cardiac/pulm failure (e.g., PA cath, echo, cath, MRI; transbronch bx vs. open bx, pulm stress test)	3 Interprets normal and common abnormalities with cardiac/pulm failure (e.g., types of shock; bx, acute vs. chronic failure)	4 Interprets/integrates complex abnormalities with cardiac/pulm failure (e.g., RV vs. LV vs. bivent failure)
Additional Comments:					
5. Treatment plan	0 No knowledge	1 Understand natural history of cardiac/pulm failure (e.g., emphysema)	2 List treatment options for cardiac/pulmonary failure (e.g., med vs surgical)	3 Advantages and disadvantages of various treatment cardiac/pulm failure	4 Appropriate treatment cardiac/pulmonary failure, indications for tx or MCS (e.g., selection criteria for transplant
Additional Comments:					
6. Complications/outcomes	0 No knowledge	1	2 Signs of decompensation, need for intervention	3 Risk, benefits, and complications of treatment	4 Basic outcome for cardiac/pulm failure, knows limits of mech support (risk/benefit)
Additional Comments:					

ESOPHAGUS—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Anatomy	0 No knowledge	1 Basic anatomy and pathology (e.g., GI , innervation, blood supply)	2 Common variations anatomy/pathology (e.g., lymphatic)	3 Complex integrate anatomy/pathology (e.g., fascial planes in mediastinitis)	4 Complex variations anatomy/pathology, congenital (e.g., esoph atresia)
Additional Comments:					
2. Physiology	0 No knowledge	1 Basic foregut physiology (e.g., motility)	2 Changes with malignancy and motility disorders (e.g., achalasia, reflux. esoph spasm)	3 Role of treatment on physiology (e.g., postop esophagectomy cx (e.g., dumping)	4 Adapts treatment based on physiology (e.g., partial vs. total fundoplication)
Additional Comments:					
3. Clinical manifestations	0 No knowledge	1 List manifestations (e.g., heartburn, chest pain, dysphagia)	2 Differential diagnosis of similar manifestations (e.g., achalasia vs. pseudo-achalasia, coronary synd, vs. esoph spasm)	3 Common variants of esoph disease (e.g., benigh vs. malignant stricture)	4 Complex clinical manifestations and and complications (e.g., Type IV hernia, TEF)
Additional Comments:					
4. Diagnostic tools	0 No knowledge	1 List diagnostic tools for esoph dz (e.g., mano-metry, pH testing, EUS)	2 Advantages and disadvantages of tools (e.g., endoscopy vs. EUS vs. barium swallow)	3 Interprets normal and common abnormalities (e.g., EUS, motility tracings)	4 Interprets/integrates complex abnormalities (e.g., short esoph, achalasia with sigmoid esophagus)
Additional Comments:					
5. Treatment plan	0 No knowledge	1 List treatment options for esoph dz (e.g., surg vs. chemo/ XRT alone)	2 Advantages and disadvantages of treatment, staging (e.g., for cancer, dilation vs. myotomy for achalasia)	3 Appropriate treatment for routine esoph dz (e.g., high grade dysplasia—EMR vs. esophagectomy)	4 Appropriate treatment for complex esoph dz (e.g., primary vs. redo Nissen, redo myotomy v esophagectomy)
Additional Comments:					
6. Complications/outcomes	0 No knowledge	1 Basic complications (e.g., perforation, recurrent reflux, pulm. aspiration)	2 Risk, benefits, complications (e.g., slipped Nissen, anast. leak))	3 Basic outcomes and literature (benign and malignant)	4 Outcomes of all treatment modalities and complications, database/trials
Additional Comments:					

LUNG AND AIRWAY—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Anatomy	0 No knowledge	1 Basic anatomy and pathology (e.g., segmental anatomy, types of lung CA)	2 Common variations anatomy/pathology (e.g., azygous lobe, mixed lung CA histo)	3	4 Complex variations anatomy/pathology and congenital (e.g., cystic adenomatoid, AV malformation, TEF, pulm sequest, adenoCA)
Additional Comments:					
2. Physiology	0 No knowledge	1 Basic pulmonary physiology (e.g., A-a gradient, PFTs, V/Q scan and mismatch,)	2 Changes with pulm dz (e.g., pulm shunt, tension Ptx, 2° pulm HT w/ COPD, PVR)	3 Role of treatment on physiology pulm dz (e.g., pneumonectolmy incr. pulm pressure and RV strain)	4 Adapts treatment based on physiology (e.g., changes w/ lung volume reduction)
Additional Comments:					
3. Clinical manifestations	0 No knowledge	1 List manifestations (e.g., COPD, s/s adv. metast. CA, traumatic injury, gas exchange)	2 Differential diagnosis of similar manifestations (e.g., lung nodules, airway tumors, hemoptysis w/u)	3 Common variants of pulm dz (e.g., various bronchial adenomas, traumatic trach-bronch injuries)	4 Complex clinical manifestations and and complications (e.g., post-pneumonect. BPF, TEF, traumatic disrupt mainstem bronchi)
Additional Comments:					
4. Diagnostic tools	0 No knowledge	1 List diagnostic tools for pulm dz (e.g., CXR,CT,PET, EBUS, PFTs, mediastinoscopy, flex/rigid bronch)	2 Advantages and disadvantages of tools (e.g., CXR vs. CT, EBUS vs. mediastinoscopy, CT vs. angiogram)	3 Interprets normal and common abnormalities (e.g.,PET, EBUS, PFTs, acid-base)	4 Interprets/integrates complex abnormalities (e.g., quant V/Q, mVO_2. max for lung resection)
Additional Comments:					
5. Treatment plan	0 No knowledge	1 List treatment options (e.g, lobectomy, hemothorax)	2 Advantages and disadvantages of treatment options, impact of staging (e.g., induction therapy, airway stents)	3 Appropriate treatment for routine pulm dz (e.g., medical Rx for pulm fibrosis,<lobect. for poor lung fxn, sublobar resection)	4 Appropriate treatment for complex pulm dz (e.g., RFA for high risk, lung reduct. surgery, stents for AVM, trach disorders)
Additional Comments:					
6. Complications/outcomes	0 No knowledge	1 Basic outcomes (e.g., morbidity and mortality for lobectomy)	2 Risk, benefits, complications (e.g., morbidity and mortality for VATS and open lobectomy)	3 Basic outcome (e.g., IASLC survival data, survival for COPD and IPF)	4 Outcomes of all treatments and cx, database/trials (e.g., NETT, induction for Stage IIIa disease)
Additional Comments:					

CHEST WALL/PLEURA/MEDIASTINUM—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Anatomy	0 No knowledge	1 Basic CW/P/Med anatomy and pathology (e.g., CT scan)	2 Common variations in anatomy/pathology (e.g., cervical rib, replaced R subclav artery)	3 Complex integrate anatomy/pathology (e.g., TOS, Pancoast,, dumbbell neurogenic)	4 Complex variations anatomy/pathology (e.g., chest wall tumors multimodality therapy)
Additional Comments:					
2. Physiology	0 No knowledge	1 Basic normal CW/P physiology (e.g., chest tube drainage, pleural pressures)	2 Changes with benign, malig., trauma (e.g., post lung resection, flail chest, physiology w/ pleural effusion)	3 Role of treatment on physiology (e.g., changes with chest wall resection)	4 Compare treatment based on physiology (e.g., resect vs. resect and reconstruct for CW, drainage large effusion)
Additional Comments:					
3. Clinical manifestations	0 No knowledge	1 List clinical manifestations (e.g., cough, SOB w/ effusion, or painless mass w/ CW tumor)	2 Differential diagnosis w/ similar manifestations (e.g., diff. dx of chest wall masses) CAD, interstitial lung dz, trauma)	3 Common variants of manifestations (e.g., neurogenic vs. vascular symptoms for TOS, types of effusions)	4 Complex clinical manifestations of benign, malig., traumatic; treatment of disorders (e.g., infected chest wall reconstruction)
Additional Comments:					
4. Diagnostic tools	0 No knowledge	1 List diagnostic tools (e.g., CT,CXR, MRI,PET, US, FNA, EBUS, mediastinoscopy, EUS)	2 Advantages and disadvantages of tools (e.g., difficult to dx mesothelioma, options for dx mediastinal tumors)	3 Interprets normal and common abnormalities (e.g., radiographic features of CW tumors, mediastinal masses)	4 Interprets/integrates complex abnormalities (e.g., MRI use for TOS, lymphoma vs. Hodgkin's vs. thymoma)
Additional Comments:					
5. Treatment plan	0 No knowledge	1 List treatment (e.g., med vs. surg CW tumors, treat pleural effusion)	2 Advantages and disadvantages of options, impact of staging (e.g., thoracentesis vs. tube drainage vs. thoracoscopy)	3 Appropriate treatment for routine pts w/ benign, malig, trauma	4 Appropriate treatment for complex pts w/ benign, malig, trauma
Additional Comments:					
6. Complications/outcomes	0 No knowledge	1 Basic complications (e.g., bleeding, wound infection, empyema, ptx)	2 Risks, benefits, complications of treatment (e.g., complications of chest wall infection)	3 Basic outcome literature (e.g.,survival and local recurrence after chest wall tumor resection)	4 Outcomes of all treatment and complications incl. database and trials (e.g., pleurectomy vs extrapleural pneumonectomy for mesothelioma
Additional Comments:					

CRITICAL CARE—CLINICAL INTERACTION OR MOCK ORAL EXAMINATION

RESIDENT NAME_____**YR OF TRAINING**_____ **DATE**_____

EVALUATOR_____**initials**_____

Level	No knowledge	Novice	Advanced Beginner	Intermediate	Competent
1. Physiology	0 No knowledge	1 Basic normal cardiopulmonary physiology	2 Pathophysiologic changes (e.g., Frank-Starling)	3 Role of treatment on pathophysiology (e.g., CO, LAP, bp)	4 Adapts treatment based on pathophysiology (e.g, inotropes for CO, bp)
Additional Comments:					
2. Clinical manifestations	0 No knowledge	1 List manifestations (e.g., chest pain, dyspnea,	2 Differential diagnosis of critically-ill, (e.g, chest pain-MI, angina, pericarditis, HOCM,	3 Common variants (e.g., differential dx postop CT surg w/ chest pain)	4 Complex clinical (e.g., low CO from RV failure, low CO w/ elevated R-sided filling pressures & low L-sided filling pressures)
Additional Comments:					
3. Diagnostic tools	0 No knowledge	1 List diagnostic tools (e.g., S-G catheter, ECG, angio, cath, echo	2 Advantages and disadvantages of tools	3 Interprets normal and common abnormalities (e.g., echo-systolic or diastolic dysfxn)	4 Interprets/integrates complex abnormalities
Additional Comments:					
4. Treatment plan	0 No knowledge	1 List treatment options (e.g., inotropic and vasodilator drugs, IABP, circ assist)	2 Advantages and disadvantages of options (e.g., indications inotropes, IABP, VADs)	3 Appropriate treatment for routine (e.g., postop arrhythmias, nutrition, ventilation modes)	4 Appropriate treatment for complex disease (e.g., wall motion abnl post CABG, dialysis options)
Additional Comments:					
5. Complications/outcomes	0 No knowledge	1	2	3 Manage postop low cardiac output, knows basic outcome literature	4 Understands risk adjustment and outcome databases (e.g., scoring systems)
Additional Comments:					