

**Pulmonary Evaluation**

Patient Name

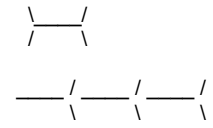
Patient DOB

<b>Date</b>	<b>Chief complaint/Reason for consult</b>	<b>Referring MD</b>
<b>Start time</b> <b>Stop time</b>		
<b>Medications</b>	<b>History of Present Illness</b> <input type="checkbox"/> Patient is Nonverbal. History obtained from <input type="checkbox"/> Family <input type="checkbox"/> Medical records	
<input type="checkbox"/> Medications reviewed <input type="checkbox"/> Medications reconciled with Nursing Home or Hospital discharge Information ★46 <b>Changes as follows</b>  <b>Allergies</b> <input type="checkbox"/> Allergy List reviewed <input type="checkbox"/> No drug allergies <input type="checkbox"/> No food allergies	www.e-medtools.com  www.e-medtools.com	
<b>Social History</b>	<b>Review of Systems</b>	
<input type="checkbox"/> Never Smoker <input type="checkbox"/> Tobacco ___ # Packs X ___ # Yrs <input type="checkbox"/> Quit <input type="checkbox"/> Patient is unwilling to quit <input type="checkbox"/> Patient willing to consider quitting <input type="checkbox"/> Patient quit, but resumed smoking <input type="checkbox"/> Patient willing to quit within 1 month <b>Patient has tried</b> <input type="checkbox"/> Nicotine replacement <input type="checkbox"/> Bupropion or nortriptyline <input type="checkbox"/> Nicotine receptor blockade <i>Daily, occasional and ex-smokers are more likely to be hazardous drinkers</i> <input type="checkbox"/> Alcohol use ___ Drinks per ___ day ___ week <b>Hazardous drinking</b> <b>NIAAA (National Institute on Alcoholism and Alcohol Abuse guidelines)</b> Men > 14 drinks per week OR > 4 drinks per day Women > 7 drinks per week OR > 3 drinks per day <input type="checkbox"/> Recreational drug use <input type="checkbox"/> Inhalational <input type="checkbox"/> Injectable <input type="checkbox"/> Ingestible <input type="checkbox"/> Drug dependence <input type="checkbox"/> Narcotics <input type="checkbox"/> Benzodiazepines	WNL www.e-medtools.com <input type="checkbox"/> <b>Constitutional</b> <input type="checkbox"/> Fatigue <input type="checkbox"/> Malaise <input type="checkbox"/> Fever/chills <input type="checkbox"/> Change in appetite <input type="checkbox"/> Weight changes <input type="checkbox"/> <b>Eyes</b> <input type="checkbox"/> Vision changes <input type="checkbox"/> New pain <input type="checkbox"/> Scotomas <input type="checkbox"/> Discharge <input type="checkbox"/> Dryness <input type="checkbox"/> Gritty sensation <input type="checkbox"/> <b>ENT/mouth</b> <input type="checkbox"/> Nose bleeds <input type="checkbox"/> Dental caries <input type="checkbox"/> Dental abscesses <input type="checkbox"/> Jaw pain <input type="checkbox"/> <b>Resp</b> <input type="checkbox"/> Dyspnea <input type="checkbox"/> Cough <input type="checkbox"/> Phlegm <input type="checkbox"/> Hemoptysis <input type="checkbox"/> Wheeze <input type="checkbox"/> Chest tightness <input type="checkbox"/> <b>CV</b> <input type="checkbox"/> Chest pain <input type="checkbox"/> Diaphoresis <input type="checkbox"/> Ankle edema <input type="checkbox"/> PND <input type="checkbox"/> Syncope <input type="checkbox"/> <b>GI</b> <input type="checkbox"/> Nausea <input type="checkbox"/> Vomiting <input type="checkbox"/> Constipation <input type="checkbox"/> Diarrhea <input type="checkbox"/> Abdominal pain <input type="checkbox"/> <b>GU</b> <input type="checkbox"/> Change in urinary habits <input type="checkbox"/> Hematuria <input type="checkbox"/> Dysuria <input type="checkbox"/> <b>Musc</b> <input type="checkbox"/> Myalgias <input type="checkbox"/> Recent trauma <input type="checkbox"/> Bony fractures <input type="checkbox"/> Arthralgias <input type="checkbox"/> Joint swelling <input type="checkbox"/> <b>Skin/breasts</b> <input type="checkbox"/> Rashes <input type="checkbox"/> Masses or skin lesions <input type="checkbox"/> Increased sensitivity to sun <input type="checkbox"/> <b>Neuro</b> <input type="checkbox"/> Seizures <input type="checkbox"/> Episodic or chronic muscle weakness <input type="checkbox"/> Headaches <input type="checkbox"/> <b>Endo</b> <input type="checkbox"/> Hair loss <input type="checkbox"/> Polydipsia <input type="checkbox"/> Tremors <input type="checkbox"/> Neck pain <input type="checkbox"/> Hirsutism <input type="checkbox"/> <b>Heme/lymph</b> <input type="checkbox"/> Bleeding gums <input type="checkbox"/> Unusual bruising <input type="checkbox"/> Swollen lymph nodes <input type="checkbox"/> <b>Allergy/Immun</b> <input type="checkbox"/> Sinus probs <input type="checkbox"/> Recurrent infections <input type="checkbox"/> <b>Psych</b> <input type="checkbox"/> Mood changes <input type="checkbox"/> Agitation <input type="checkbox"/> Psychosis <input type="checkbox"/> Delirium <input type="checkbox"/> Dementia <b>Occupational and Exposure History</b> <input type="checkbox"/> Inorganic dusts i.e., quarries, sandblasting, cement, stone carving, welding, plumbing, shipyard work, firefighter <input type="checkbox"/> Organic dusts i.e., farming, building inspection, woodworking, remodeling, handling vegetable matter or animals <input type="checkbox"/> Noxious fumes i.e., spray painting, auto/body work, working with dyes or glues, manufacturing plastic <input type="checkbox"/> Hot tub or Jacuzzi <input type="checkbox"/> High Pressure washings <input type="checkbox"/> Pets or feathers <input type="checkbox"/> Chemicals or fires	
<b>Family Medical History</b>	<b>Past Medical and Surgical History</b>	
<input type="checkbox"/> Asthma <input type="checkbox"/> Congestive Heart Failure <input type="checkbox"/> COPD <input type="checkbox"/> Coronary Artery Disease <input type="checkbox"/> Premature Onset <input type="checkbox"/> Malignancy <input type="checkbox"/> Pancreatitis <input type="checkbox"/> Peripheral Artery Disease <input type="checkbox"/> Renal Dysfunction <input type="checkbox"/> Thrombotic disorder <input type="checkbox"/> Thyroid Disease	<input type="checkbox"/> Asthma <input type="checkbox"/> Cerebral Artery Disease <input type="checkbox"/> Neuromuscular weakness <input type="checkbox"/> Chemotherapy <b>Surgeries</b> <input type="checkbox"/> Bronchiectasis <input type="checkbox"/> Congestive Heart Failure <input type="checkbox"/> Occupational exposures <input type="checkbox"/> Colonoscopy <input type="checkbox"/> COPD <input type="checkbox"/> Coronary Artery Disease <input type="checkbox"/> Pancreatitis <input type="checkbox"/> ECHO/Stress Test <input type="checkbox"/> COP (BOOP) <input type="checkbox"/> Diabetes <input type="checkbox"/> Peripheral Artery Disease <input type="checkbox"/> Mammogram <input type="checkbox"/> Cystic Fibrosis <input type="checkbox"/> GERD <input type="checkbox"/> Scleroderma <input type="checkbox"/> PFTs <input type="checkbox"/> Histiocytosis <input type="checkbox"/> Hepatic Dysfunction <input type="checkbox"/> Seizure Disorder <input type="checkbox"/> PapSmear <input type="checkbox"/> Tuberculosis <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Sjogren <input type="checkbox"/> Prior Intubations <input type="checkbox"/> PAH <input type="checkbox"/> Hypertension <input type="checkbox"/> Renal Dysfunction <input type="checkbox"/> Radiation exposure <input type="checkbox"/> Sarcoidosis <input type="checkbox"/> Inflamm bowel disease <input type="checkbox"/> Rheumatoid arthritis <input type="checkbox"/> Sleep Study <input type="checkbox"/> Tuberculosis <input type="checkbox"/> Malignancy <input type="checkbox"/> Thrombotic Disease <input type="checkbox"/> Steroid use <input type="checkbox"/> Wegener's <input type="checkbox"/> Thyroid Disease <input type="checkbox"/> Obstructive Sleep Apnea <input type="checkbox"/> CPAP <input type="checkbox"/> BiPAP <b>Vaccines</b> <input type="checkbox"/> Flu <input type="checkbox"/> Pneumo <input type="checkbox"/> BCG <input type="checkbox"/> Tetanus <input type="checkbox"/> Pertussis <input type="checkbox"/> Varicella	

## Pulmonary Evaluation

Patient Name \_\_\_\_\_

Patient DOB \_\_\_\_\_

IV Medications & Labs	Exam																																																																																																																																																
<input type="checkbox"/> Pressors <input type="checkbox"/> Diuretics <input type="checkbox"/> Heparin <input type="checkbox"/> Thrombolytic <input type="checkbox"/> Insulin <input type="checkbox"/> Sedation <input type="checkbox"/> Steroids <input type="checkbox"/> Antibiotics <input type="checkbox"/> TPN <input type="checkbox"/> Narcotics <input type="checkbox"/> Antiarrhythmics <input type="checkbox"/> Antihypertensives  	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th style="width: 20%;">Ventilator Settings</th> <th style="width: 10%;">Mode</th> <th style="width: 10%;">Rate</th> <th style="width: 10%;">Tidal Vol</th> <th style="width: 10%;">PEEP</th> <th style="width: 10%;">PS</th> <th style="width: 10%;">FIO2</th> <th style="width: 10%;">PO2/FIO2</th> <th style="width: 10%;">Plateau Pressure</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>NonInvasive Ventilator (CPAP, BiPAP) Settings</b></td> </tr> <tr 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**Definitions**

**Sepsis**

- Positive blood culture AND
- Heart rate  $\geq$  90
- Temp  $\leq$  36 C or  $\geq$  38 C
- Resp rate  $\geq$  20 OR
- PCO2  $\leq$  32 on ABG
- WBC  $\leq$  4000 OR
- $\geq$  12000 OR
- $\geq$  10% Bands

Without a positive blood culture, the above findings are consistent with Systemic Inflammatory Response Syndrome (SIRS)

**Severe Sepsis**

- The patient must meet the above criteria AND have hypotension, hypoperfusion or organ dysfunction.
- Hypotension is defined as
- SBP < 90
- MAP  $\leq$  70 mmHg
- OR drop of  $\geq$  40 mmHg

**Septic Shock**

- The patient must meet the above criteria AND
- have refractory shock (hypotension not responsive to fluid resuscitation).
- Systolic BP  $\leq$  90, or MAP  $\leq$  70

**Acute Lung Injury**

- Bilateral infiltrates on radiograph
- PO2/FiO2 201-300 regardless of PEEP
- No evidence of elevated left atrial pressure OR PCWP < 18 mmHg

**Acute Respiratory Distress Syndrome (ARDS)**

PO2/FiO2  $\leq$  200

**Sepsis Treatment Goals**

- Institute for Healthcare Improvement (www.ihl.org)
- 1. Blood cultures before administration of broad spectrum antibiotics
- 2. Broad spectrum antibiotics given in  $\leq$  1 hr (ICU admit) In  $\leq$  3 hr (ED admit)
- 3. CVP of 8-12mmHg in  $\leq$  6 hours
- 4. ScvO2  $\geq$  70% OR SvO2  $\geq$  65% in  $\leq$  6 hours
- 5. Low dose steroids, if applicable
- 6. Drotrecogin Alfa administrations in  $\leq$  24 hours, if applicable
- 7. Glycemic control with median blood glucose of < 150 within 24 hours
- 8. Inspiratory plateau pressure of < 30cm H2O With a tidal volume of 6 ml/kg (based on Ideal Body Weight)

**Ventilator Strategies** (www.ihl.org)

- 1. Head of bed elevated by  $\geq$  30 degrees
- 2. Daily sedation vacation AND assessment of ability to wean from ventilator
- 3. Stress ulcer prophylaxis
- 4. Deep Venous Thrombosis prophylaxis

**Oxygen Coverage**

- PO2  $\leq$  55 OR Sats  $\leq$  90%
- PO2 56-59 OR Sats 89% WITH
- CHF
- Cor pulmonale
- P wave  $\geq$  2mm lead III, III or AVF
- Hct  $\geq$  56%
- Sats  $\leq$  88% for  $\geq$  5 minutes during sleep

**NOT COVERED**

PO2  $\geq$  59 OR Sats  $\geq$  89%

**APACHE II Score - To be obtained within first 24 hours of ICU Admission**

APACHE II: a severity of disease classification system Crit Care Med 1985 13(10):818-29  
 An evaluation of outcome from intensive care in major medical centers Ann Intern Med 1986 104(3):410  
 Prediction of outcome from intensive care: a prospective cohort study comparing Acute Physiology and Chronic Health Evaluation II and III prognostic systems in a United Kingdom intensive care unit Crit Care Med 1997 25(1):9-15

Physiologic Variable	0	1	2	3	4
Temperature	96.8-101.2	101.3-102.1 93.2-96.7	89.6-93.1	102.2-105.7	>105.7
Heart Rate	70-109	n/a	110-139 55-69	140-179 40-54	>161 < 50
MAP (2 x DBP + SBP)/3	70-109	n/a	110-129 50-69	130-159	>181 <40
Resp Rate	12-24	25-34 10-11	6-9	35-49	>49 < 6
Oxygenation					
If FiO2 > 49%, A-a	< 200		200-349	350-499	>500
If FiO2 < 50%, PO2	>70	61-70		55-60	<54
Serum Na+	130-139	150-154	155-159 120-129	160-179 111-119	>179 < 111
Serum K+	3.5-5.4	5.5-5.9 3.0-3.4	2.5-2.9	6.0-6.9	>7.1 < 2.5
Serum Creatinine (Double if in ARF)	0.6-1.4	n/a	1.5-1.9 <0.6	2.0-3.4	>3.4
Arterial pH	7.33-7.49	7.50-7.59	7.25-7.32	7.60-7.69 7.15-7.24	>7.69 <7.15
WBC	3.0-14.9	15-19.9	20-39.9 1.0-2.9	n/a	>39 <1.0
Hematocrit	30-45.9	46-49.9	50-59.9 20-29.9	n/a	>59 <20
GCS Score = 15 - GCS Score (Eye + Motor + Verbal)					
Physiology Score					

**Total APACHE II Score = Acute Physiology Score + Chronic Health Points + Age Points**

**Chronic Health Points for APACHE II**  
 Non-operative, or emergency post-op & any conditions below 5  
 Elective operation & any conditions below 2

*Cirrhosis with portal hypertension OR encephalopathy; class IV angina; chronic hypoxia; hypercarbia or polycythemia; chronic dialysis; immunocompromised*

**Age Points for APACHE II**  
 <45 = 0  
 45-54 = 2  
 55-64 = 3  
 65-74 = 5  
 >74 = 6

**Stages of chronic kidney disease**

Stage	GFR (mL/min/1.73m <sup>2</sup> )	Action
1	>89	Diagnosis and treatment. Treat comorbid conditions. Slow progression.
2	60-89	Estimate progression
3	38-59	Evaluate and treat complications
4	15-29	Prepare for kidney replacement therapy
5	<15	Replacement (if uremia is present)

The National Kidney Foundation recommends estimating GFR by use of the Cockcroft-Gault or MDRD equations

**General Acid-Base Rules**

	Acidosis	Alkalosis
<b>Acute Resp</b>	$\Delta pH = -0.008 \times \Delta PCO2$ $\Delta HCO3 = 0.1 \times \Delta PCO2 (+/-3)$	$\Delta pH = 0.008 \times \Delta PCO2$ $\Delta HCO3 = -0.2 \times \Delta PCO2$ (usually not to less than 18 mEq/L)
<b>Chronic Resp</b>	$PCO2 = 2.4(HCO3) - 22$ $\Delta HCO3 = 0.35 \times \Delta PCO2 (+/-4)$	$\Delta HCO3 = -0.4 \times \Delta PCO2$ (usually not to less than 18 mEq/L)
<b>Metabolic</b>	$PCO2 = 1.5(HCO3) + 8 +/-2$ $PCO2 \sim \text{last 2 digits pH}$ $\Delta PCO2 = 1.2 \times \Delta HCO3$	$PCO2 = 0.9(HCO3) + 9 +/-2$ $\Delta PCO2 = 0.6 \times \Delta HCO3$

**Physiologic Score**

Temp \_\_\_\_\_

HR \_\_\_\_\_

MAP \_\_\_\_\_

RR \_\_\_\_\_

Oxygenation \_\_\_\_\_

Serum Na \_\_\_\_\_

Serum K \_\_\_\_\_

Serum Creatinine \_\_\_\_\_

Art pH \_\_\_\_\_

WBC \_\_\_\_\_

Hct \_\_\_\_\_

GCS \_\_\_\_\_

15 - GCS Score (Eye + Motor + Verbal)

Physiology Score \_\_\_\_\_

Glasgow Coma Score \_\_\_\_\_

Eye response \_\_\_\_\_

- 1 - None
- 2 - Eyes open to pain
- 3 - Opens to verbal command
- 4 - Open spontaneously

Verbal response \_\_\_\_\_

- 1 - None
- 2 - Incomprehensible sounds
- 3 - Inappropriate words
- 4 - Confused
- 5 - Oriented

Motor Response \_\_\_\_\_

- 1 - None
- 2 - Extension to pain
- 3 - Flexion to pain
- 4 - Withdrawal from pain
- 5 - Localizes pain
- 6 - Obeys commands

Total Score < 9 indicates severe brain injury LANCET (ii) 81-83, 1974.

**Predicted Mortality Based on APACHE II Score**

Score	Interpretation
0-4	~4% death rate
5-9	~8% death rate
10-14	~15% death rate
15-19	~25% death rate
20-24	~40% death rate
25-29	~55% death rate
30-34	~75% death rate
over 34	~85% death rate

## *The Multiple Organ Dysfunction Score*

Marshall et al. Toronto 1995

The only ICU scale currently available that can describe outcome over time.

Organ System	Score				
	0	1	2	3	4
Respiratory (PO <sub>2</sub> /FIO <sub>2</sub> )	> 300	226-300	151-225	76-150	< 75
Renal (serum creatinine)	< 1.13	1.14-2.26	2.27-3.96	3.97-5.65	> 5.66
Hepatic (serum bilirubin)	< 1.17	1.18-3.5	3.6-7	7-14	> 14
Cardiovascular (PAR)*	< 10.0	10.1-15.0	15.1-20.0	20.1-30.0	> 30.0
Hematologic (platelet) x 10 <sup>3</sup>	> 120	81-120	51-80	21-50	< 20
Neurological (Coma scale)	15	13-14	10-12	7-9	< 6

\* PAR: pressure-adjusted heart rate, = HR x CVP/mean BP

Score of individual organ system more than 4 means significant organ dysfunction with ICU mortality rate of > 50%. The total MODS is given by the sum of score of six major organ systems.

Mortality Prediction by MODS	
MODS	ICU mortality
9-12	25%
13-16	50%
17-20	75%
> 20	100%