**Online Supplement 1. Case patient electronic medical record: vitals, laboratory data, off-service progress note, and radiologist chest x-ray interpretation.**

3Flowsheet Print Request
Patient: JEFFERSON, MARY
MRN: 100004025
Date Range: 2/d-1/2014 12:00 AM-2/d/2014 08:00 AM
Printed by: SCHEUNEMANN, LESLIE P
Printed on: 2/d/2014 08:00 AM

| Vitals | 12/d/2014 2:32 AM | 12/d/2014 4:47 AM | 12/d/2014 5:54 AM | 12/d/2014 6:13 AM | 12/d/2014 7:52 AM |
|---|---|---|---|---|---|
| Vital Signs | | | | | |
| Temperature Conversion (C) | | | | 37.3 | |
| Temperature (F) | | | | 99.1 | |
| Heart Rate | 76 | 68 | 73 | 82 | 86 |
| Pulse Location | Monitor | Monitor | Monitor | Monitor | Monitor |
| Pulse Character | Regular | Regular | Regular | Regular | Regular |
| Respiratory Rate | 24 | 24 | 25 | 26 | 24 |
| Respiratory Pattern | Assisted | Assisted | Assisted | Assisted | Assisted |
| Ventilator Rate | 24 | 24 | 24 | 24 | 24 |
| Systolic / Diastolic BP | 106/46 | 114/50 | 116/50 | 119/60 | 104/49 |
| Mean Blood Pressure | 62 | 72 | 72 | 83 | 69 |
| SpO2 | 91 | 94 | 93 | 95 | 91 |
| Oxygen % (FiO2) | 60 | 60 | 60 | 60 | 60 |
| Respiratory Devices/Method | Endotracheal Tube | Endotracheal Tube | Endotracheal Tube | Endotracheal Tube | Endotracheal Tube |

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| Laboratory | 12/d/2014 4:00 AM |
|---|---|
| Blood Gases | |
| pHa | 7.34 |
| PaCO2 | 57 |
| PaO2 | 74 |
| HCO3a | 28 |
| Base Excess, Arterial | 3 |
| SaO2 | 91 |
| Common Chem | |
| Na | 132 |
| K | 3.5 |
| Cl | 98 |
| CO2 | 28 |
| Anion Gap | 10 |
| BUN | 28 |
| Cr | 1.6 |
| Glucose | 142 |
| Ca (adjusted) | 7.7 |
| Mg | 1.9 |
| Phos | 1.8 |
| Albumin | 1.9 |
| Total Protein | 4.6 |
| Bili, Total | 1.8 |
| Bili, Direct | 0.5 |
| ALT/SGPT | 15 |
| AST/SGOT | 26 |
| Alk Phos | 133 |
| Hematology | |
| WBC | 13.8 |
| RBC | 2.72 |
| Hgb | 8.7 |
| Hct | 26.4 |
| MCV | 92.8 |
| MCH | 30.2 |
| MCHC | 32.5 |
| RDW | 16.4 |
| MPV | 9.4 |
| Platelets | 246 |
| Neutrophils | 75 |
| Lymphs | 11 |
| Monocytes | 13 |
| Eosinophils | 1 |
| Basophils | 0 |
| PT | 14.8 |
| INR | 1.3 |
| PTT | 31.5 |

Result type: IP-Progress
Performed Date: December d-1, 2014
Result Status: Final
Result Title: PACCM Progress Note
Performed By: SCHEUNEMANN, LESLIE on December d-1, 2014 10:16 AM
Verified By: SCHEUNEMANN, LESLIE on December d-1, 2014 10:16 AM
Encounter info: 007395720372, UPMCPUH, Inpatient, 12/d-12/2014 –

# * Final Report *
# Document Has Been Updated And Contains Addenda

**Addendum by MCVERRY, BRYAN on December d-1, 2014 6:27 PM (Verified)**
I have evaluated this patient with the fellow and clinical team and agree with the exam and plan documented.

78 yo woman admitted 11 days ago with pneumonia and ARDS complicated by septic shock and acute kidney injury. Initially required paralytics and pressors to maintain oxygenation and mean arterial pressure, respectively, although these agents have now been weaned off. Although she has stabilized from a respiratory standpoint, she is weaning slowly. Will continue low tidal volume strategy with daily sedation interruption and pressure support trials as tolerated. Will also attempt to minimize sedation/deliriogenic medications and begin mobilization.

Her prognosis remains guarded, with approximately 30% expected in-hospital mortality. She will most likely require long-term trach/PEG, with ~50% chance of liberation from mechanical ventilation. Additionally, she is likely to have ongoing physical dysfunction, and possibly also cognitive dysfunction, with associated need assistance for basic daily activities. Plan for family discussion tomorrow.

**PACCM Progress Note**
**University of Pittsburgh Medical Center**

Patient: **JEFFERSON, MARY** **MRN: 100004025** **FIN: 007395720372**
Age: **78 years** Sex: **Female** DOB: **10/14/1935**
Associated Diagnoses: **None**
Author: **SCHEUNEMANN, LESLIE**

**History of Present Illness**

78y.o. woman with h/o severe COPD (baseline FEV1 48% predicted) who called EMS the afternoon of Dec 4 for respiratory distress secondary to pneumonia. They intubated her or room air SaO2 in the 70's, at which time they found her to have copious purulent secretions. Upon arrival at the UPMC Cranberry ED, she still had marginal SaO2 (high 80's) on 100% FiO2 and was hypotensive (bp's 70's/40's). She received zosyn, azithro, and vanc for community acquired pneumonia and norepi for hypotension. Sats remained tenuous despite increased PEEP, so she was transferred to Presby for further management. Upon arrival, she was agitated and dyssynchronous with the vent with sats in the low 80's on 100% FiO2 and 18 of PEEP and has required intermittent boluses of paralytics to maintain SaO2>88%. CXR is consistent with ARDS, with increased consolidation in the RLL suggesting pneumonia as the inciting cause.

## Histories

**PMH**:

- COPD (baseline FEV1 48% predicted, temporarily on home O2 after an exacerbation last year)
- Hypertension
- Hyperlipidemia
- Osteoporosis
- Arthritis

**PSH**:

s/p hysterectomy 1962

**SH**: Former smoker (45+ pack years), quit 12 years ago. Social alcohol (~2-3 drinks/month). No illicits. Lives independently in Cranberry. Daughter Angela lives close by.

**FH**: Father died of a heart attack in his 80's. Mother died of "old age." No significant sick contacts. No family history of cancer.

## Health Status

### Allergies

NKDA

### Inpatient Medications

#### Scheduled Medications

albuterol-ipratropium (Combivent 103 mcg-18 mcg/inh aerosol with adapter) 4Puff(s) Inhalation Q4H
aspirin 81mg By Mouth Daily
atorvastatin (Lipitor) 20mg By Mouth Daily
chlorhexidine topical 0.12% (chlorhexidine topical 0.12% liquid) 15mL SwishSpit BID
docusate (Colace) 100mg NG Tube BID
heparin 5,000Unit(s) subQ Q8H
lansoprazole (Prevacid SoluTab) 30mg NG Tube Daily
olanzapine (ZyPREXA Zydis) 5mg NG Tube BID
senna 10mL By Mouth AtBedtime

#### PRN Medications

albuterol 0.083% (albuterol 0.083% inhalation soln) 2.5mg Aerosol Q4H
lorazepam 2mg IV Q2H
olanzapine (ZyPREXA Zydis) 5mg NG Tube Daily

#### Recently Discontinued Medications

norepinephrine 16 mg [0.1 mcg/kg/min] + Base solution 250 mL (Norepinephrine 16 mg/NS 250 ... 250mL 6.09mL/hr IV

**Continuous Infusions**

fentanyl 2,500 mcg [50 mcg/hr] + Base solution 100 mL  Initial Rate= 2mL/hr IV

**Review of Systems**

Unable to obtain 2/2 respiratory failure/sedation

**Interval History**

Overnight events: Mild agitation overnight resolved with prn Zyprexa. Desaturates 2/2 dyssynchrony when agitated. Otherwise stable.

**Physical Examination**

## Vital Signs *(Last 7 in past 36 hours)*

| Vitals | TempC | BP | Pulse | RR | SaO2 | FiO2 |
|---|---|---|---|---|---|---|
| 12/14 08:14 | 37.6 | 98/54 | 90 | 25 | 94 | 60% |
| 12/14 10:56 | | 105/52 | 88 | | 93 | 60% |
| 12/15 12:04 | | 95/51 | 90 | | 91 | 60% |
| 12/15 02:46 | 36.6 | 92/51 | 91 | 24 | 94 | 60% |
| 12/15 04:12 | | 102/59 | 88 | | 93 | 60% |
| 12/15 06:57 | | 119/58 | 94 | | 91 | 60% |
| 12/15 08:23 | | | | | | |

**24 Hr Max Temp:** 37.7 at 12/14 15:45  **Dosing Wt:** 64kg
**36 Hr Max Temp:** 37.7 at 12/14 15:45  **BMI:** No data found

**General**: Restless and agitation at night and during daily sedation interruptions. Ramsay sedation scale: Level 4 patient asleep, brisk response to loud auditory stimulus or light glabellar tap.
**Eye**: Pupils are equal, round and reactive to light, Normal conjunctiva.
**HENT**: Normocephalic, Dry oral mucosa, Orally intubated.
**Neck**: Supple, No carotid bruit, ~10cm JVD.
**Respiratory**: Breath sounds are equal, Coarse breath sounds throughout with occasional expiratory wheezing. Synchronous with the ventilator, small amount of thin white secretions.
**Cardiovascular**: Normal rate. Regular rhythm, No murmur, No gallop. Thready pulses with sluggish capillary refill.
**Gastrointestinal**: Soft, Non-tender, Non-distended, Normal bowel sounds.
**Lymphatics**: No lymphadenopathy.
**Integumentary**: Warm, Dry, Pink.
**Neurologic**: Gag reflex normal, Intubated, sedated. Weakness and difficulty raising arms off bed noted (upper and lower extremity strength 3/5) during sedation interruption.
**Cognition and Speech**: Intubated, sedated.

**Impression and Plan**

78y.o. woman with severe COPD presenting 11 days ago with pneumonia and bilateral airspace infiltrates with P/F ratio <200 consistent with ARDS. Initially required paralytics to manage ventilator dyssynchrony/breath stacking and hypoxemia.

NEUROLOGIC: Intermittently agitated and delirious. Unclear if her weakness is a consequence of critical illness myoneuropathy (especially with steroid and paralytic use earlier in her ICU stay) or simple deconditioning.
- Continue sedation with fentanyl
- Delirium management with scheduled and prn zyprexa
- Prn haldol in case agitation results in dyssnchrony/desaturation; reserve lorazepam only in case agitation does not respond to haldol
- MICU mobility protocol

PULMONARY: Has course of antiobiotics and steroids for pneumonia/COPD exacerbation and now has minimal secretions. Appears to be entering the fibrotic phase of ARDS, with stabilizing SaO2. However, she is weaning slowly and is unlikely to be liberated from the ventilator soon, especially given her severe underlying COPD.
- Continue low tidal volume ventilation (6mg/kg)
- wean oxygen as tolerated to maintain SaO2 >88%
- combivent, prn albuterol to manage obstruction
- will discuss tracheostomy with daughter before consulting surgery

CARDIOVASCULAR: Initially had severe sepsis (alterered mentation, reduce UOP, lactic acidosis), possibly also with a component of pulmonary hypertension (elevated JVP, large RV on bedside US, rapidly worsening hypotension with auto-PEEP). Now off pressors and maintaining adequate MAP.
- continue home ASA, statin

RENAL: Creatinine is somewhat elevated but improving, as is her UOP. Expect she will avoid dialysis this hospitalization.
- Strict I/O
- Renally dose medications and avoid nephrotoxins

GI: Has duotube (see below)
- Colace, senna while on fentanyl gtt
- Tube feeds at goal

ACCESS: RIJ TLC (placed 12/4)
TUBES: Foley, duotube
PROPHYLAXIS: Prevacid, SC heparin
CODE STATUS: Full code. Advance directive on chart.
DISPO: Family meeting scheduled for tomorrow morning to discuss trach/PEG. Prognosis for long-term recovery is guarded; she is progressing towards chronic critical illness. Given her weakness and delirium, she has a low (probably <5%) chance of being functional enough to live with her daughter at 6 months, and would still require assistance for walking/transfers, bathing, and dressing. Most likely will require long-term care at a skilled nursing facility. Have updated daughter, Angela, nearly every day, but because she has been so unstable, most of our decision-making has focused on acute issues like the possible need for dialysis, and we have not addressed more long-term goals of care.

Diagnosis: Acute respiratory distress syndrome (ICD9 518.52, Final, Diagnosis), Septic Shock (ICD9 785.52, Final, Diagnosis), CAP (community acquired pneumonia) (ICD9 486, Final, Diagnosis), COPD, severe (ICD9 496, Final, Diagnosis).

**Professional Services**

**Visit Information:** Patient seen on 12/d-1/2014
**Credentials:** MD.
**Title:** Fellow.
**Supervising MD:** MCVERRY, BRYAN
**Critical Care time**: I spent 39 minutes personally attending to this patient's critical care needs. This critical care time is exclusive of any time for separately billable procedures.

Result type: Chest Anterior Xray
Performed Date: December d, 2014 4:23 AM
Result Status: Final
Result Title: XRAY CHEST FRONTAL VIEW
Encounter info: 007395720372, UPMCPUH, Inpatient, 12/d-12/2014 –

# * Final Report *

**XRCH1V**
CLINICAL HISTORY:
Respiratory failure, ARDS

COMPARISON:
Yesterday.

TECHNIQUE:
Portable AP projection of the chest

FINDINGS:
Diffuse bilateral patchy opacities are grossly unchanged and are consistent with slowly resolving acute respiratory distress syndrome.

The endotracheal tube remains in good position, as does the right internal jugular central venous catheter with the tip in the distal SVC. Feeding tube courses below the diaphragm and appears unchanged from yesterday.

IMPRESSION:
1. Diffuse alveolar infiltrates in all lobes of both lungs, likely representing ARDS
2. Unchanged tubes and lines

END OF IMPRESSION:

Dictated by: LOUISA PEREZ
Signed by: LOUISA PEREZ
Signed on: 12/d/2014 at 6:12 AM

**Online Supplement 2. Exemplars of correct responses and errors according to the case rules**

| Type of Statement | Exemplar | Explanation of Case Rule/Violation |
|---|---|---|
| Values & preferences | | |
| Answered correctly | ***Physician***: And was she like an independent person, or what was she like?<br>***Case daughter***: Oh, [chuckles] fiercely independent. | The case daughter was supposed to talk about the patient's values and preferences in response to all physician questions about them. |
| Volunteered | ***Physician***: OK. And so you've been taking time from work to come here?<br>***Case daughter***: Um, I have a certain amount of flexibility. So yeah, and I also want to say, I mean, we had – talking to my mom about if there ever came a time when it was too rough for her to live by herself that – how she would feel about living with us. And she welcomed that idea, she wasn't resistant to it. | The case daughter was never supposed to talk about the case patient's values and preferences without the physician asking. Here, she volunteers the patient's values related to living independently. |
| Didn't share | ***Physician***: Now I did want to kind of look at the big picture with you and kind of get a sense of what she's expressed to you in the past about long-term support like that, right, because if we did a tracheostomy, that would be a long term commitment to being on the ventilator essentially.<br>***Case daughter***: Um, you, you – so once you do that you can't ever come off that, is that what you're saying? | Whenever the physician asked about the patient's values and preferences, the case daughter should talk about them. Here, she changed the subject to talk about treatment options. |
| Answered incorrectly | ***Physician:*** Maybe you can tell me a little bit about where things are with your mom now, what you're hearing from the doctors, how you're looking at things.<br>***Case daughter***: Yeah, um, well, you know, she's been in here about 12 days now.<br>***Phyisician:*** Yeah.<br>***Case daughter:*** A long time. And, uh, this is very unexpected by all of us. And I know she's on antibiotics for the pneumonia and for the sepsis that she seemed to develop, but that's under | The case provided details about the medical history. The case daughter was supposed to adhere to them. This was incorrect because the case patient did not have a urinary tract infection or acute kidney injury/any indication for dialysis. |

| | | |
|---|---|---|
| | control. And it was good news to hear that she didn't have to go on dialysis.<br>***Physician***: Yeah. Yep, yep.<br>***Case daughter***: Right? And they might have cleared up a sort of kidney infection along the way and that's good. | |
| Treatment plans | | |
| Answered correctly | ***Physician***: And you mentioned that you had had some conversations with her about critical care and what she would want. What kind of things had she said?<br>***Case daughter***: Well, she said that like after what my dad had gone through, she said that like having a feeding tube for the rest of her life would not be something that she would want to have done. | The case daughter was required to directly answer a question about what the patient would want by saying she didn't know, or that the patient would not want a tracheostomy/feeding tube. |
| Volunteered | ***Physician:*** But because of her kidneys being a little bit hurt in the process – most of the medicines are filtered through the kidneys, and some patients like her take a little bit longer to wake up. So it's expected that she will take a little longer than a younger person, and a little longer than someone with normal kidney function.<br>***Case daughter***: Yeah, it would be really um, great to be able to talk to her about all this.<br>***Physician***: Right.<br>***Case daughter***: Um, I'm not exactly sure how… how she would feel about [sighs lightly] some of these things we were talking about. | The case daughter was only supposed to talk about what the patient might want if the physician asked. Here, she volunteered that she didn't know how her mom would feel, which violates the rule. |
| Didn't share | ***Physician***: And what you're telling me about what she said about your dad and watching your dad's illness, it sounds like that's not really an OK alternative or choice for her. So then the question is, what do we do if we know that this option is not OK with her, it's not an OK quality of life? Does that make sense?<br>***Case daughter***: I guess I just wanna ask again, I | The case daughter was required to directly answer a question about what the patient would want by saying she didn't know, or that the patient would not want a tracheostomy/feeding tube. Here, she changed the subject to ask about prognosis and express emotions. |

| | | |
|---|---|---|
| | mean, is there any ounce of hope…we wouldn't have to go that route? | |
| Answered incorrectly | ***Physician:*** Do you have any thoughts on whether we should go forward with the tracheostomy at this point?<br>***Case daughter***: At this point… if there's a chance, I would think that my mom would say, "there's a chance, do it, then see what happens." | The case daughter was required to directly answer a question about what the patient would want by saying she didn't know, or that the patient would not want a tracheostomy/feeding tube. She could never say the patient would want a tracheostomy. She violated that rule here. |