Updates in Hospital Medicine

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Disclosure of Financial Relationships

Charles M. Watson, Ph.D., D.O.

Has no financial relationships with any entity: producing, marketing, reselling, or distributing health care goods or services consumed by, or used on, patients.
## By The Numbers

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions (thousands)</th>
<th>Average LOS (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>38,892</td>
<td>10</td>
</tr>
<tr>
<td>1990</td>
<td>33,774</td>
<td>9.1</td>
</tr>
<tr>
<td>2000</td>
<td>34,891</td>
<td>6.8</td>
</tr>
<tr>
<td>2010</td>
<td>36,915</td>
<td>6.2</td>
</tr>
<tr>
<td>2013</td>
<td>35,416</td>
<td>6.1</td>
</tr>
</tbody>
</table>

- Between 1990 and 2010 approximately 18% of people over the age of 65 spent at least one night in the hospital.

Source: www.cdc.gov/nchs/data/hus

By The Numbers

Inpatient Admissions per 1000 Persons, 1994-2014

By The Numbers

Elderly Population Projection 2010 to 2050

By The Numbers

Adult Population Projection 2010 to 2050

Case #1

You are admitting a 70 year old woman with acute diverticulitis. She meets sepsis criteria with a fever, tachycardia and leukocytosis. She has left lower quadrant abdominal pain without rebound or guarding. Her other labs are unremarkable.

Her medical history is significant for: osteoarthritis and hypothyroidism. At baseline: she does not use an assistive walking device. She goes shopping in town at least a couple of times per week.
You place an order to have the patient ambulated twice daily. The nurse, picking up the patient, states she believes that her patient will likely fall if the order is followed. You reply:

a) You’re right; we should wait for physical therapy to ambulate the patient.
b) Maybe; but, twice daily exercise will improve the patient’s community mobility after discharge without increased risk of inpatient falls.
c) You’re right: thanks for reminding me about her fall risk and let’s cancel that order.
d) Maybe; but, twice daily ambulation will preserve the patient’s community mobility despite increased risk of inpatient falls.
Background: Hazards of Bed Rest and Hospitalization

Background: Older Hospitalized Patients

- Experience markedly decreased mobility.
- Suffer from impaired function and mobility after they are discharged.

In the 1980s and 90s mobility assessments were created for nursing home residents and community dwelling residents.

Life Space Assessments (LSA) are divided and are derived from mobility into 5 zones.

LSA scores are made by interview with scores determined from zone excursions, assistance and frequency.

Study: Inpatient Mobility Program

What is the effect of an inpatient mobility program on post hospitalization function and community mobility among a cohort of hospitalized older adults?

Design: Randomized, single blinded, controlled trial.

Setting: Birmingham Alabama VA Medical Center

Included: 65 years and older, admitted to general medical floors

Excluded: Cognitively impaired
Non-ambulatory 2 weeks prior to admission
Limited life expectancy

Study: Inpatient Mobility Program

**Intervention:** Standardized Hospital Mobility
  Up to twice daily 15 – 20 minute visits
  Behavioral intervention
  Completed by graduate students with basic training.

**Control:** Twice daily social visits.

**Measured:**
  Activities of Daily Living (ADLs)
  Life Space Assessment

**Study:** Inpatient Mobility Program

**Implementation:**
- 51% completion of potential walks.
- 80% completion of behavioral intervention
- 83% completion of social visits in control group.

**Results:**
- No difference in ADLs
- Life Space Assessment
  - Intervention: 52.6
  - Control: 41.8

**Safety:** No increase in hospital falls in the mobility group.

You place an order to have the patient ambulated twice daily. The nurse, picking up the patient, states that she believes that her patient will likely fall if the order is followed. You reply:

a) You’re right; we should wait for physical therapy to ambulate the patient.

b) Maybe; but, twice daily exercise will improve patient’s community mobility after discharge without increased risk of inpatient falls.

c) You’re right: thanks for reminding me about her fall risk and let’s cancel that order.

d) Maybe; but, twice daily ambulation will preserve patient’s community mobility despite increased risk of inpatient falls.
Take Home Points: Inpatient Mobility Program

- Fear of falls should not prevent progress in improving hospital mobility.

- Small, intentional mobilization interventions lead to clinically important activity preservation.

Quick Hitter #1: MRSA Swab

- A nasal swab PCR test for MRSA has a 99.2% negative predictive value in the evaluation of Healthcare Associated Pneumonia (HCAP).

- Review of clinical cases of pneumonia (not just HCAP) with MRSA PCR nasal swab and additional culture (blood, sputum, bronchial lavage).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive PCR, Positive Culture</td>
<td>22</td>
</tr>
<tr>
<td>Positive PCR, Negative Culture</td>
<td>40</td>
</tr>
<tr>
<td>Negative PCR, Negative Culture</td>
<td>370</td>
</tr>
<tr>
<td>Negative PCR, Positive Culture</td>
<td>3</td>
</tr>
</tbody>
</table>

- Useful in the de-escalation of empiric antibiotics for HCAP.
- No correlation to other infectious processes (e.g. cellulitis).

Case #2

You are admitting a 70 year old man with a COPD exacerbation. He does not meet sepsis criteria; but his creatinine is 1.4 mg/dL and he is in atrial fibrillation.

His medical history is significant for: CAD, CHF, HTN.

He is on 11 different medications.

An echocardiogram reveals no significant valve abnormalities.

His CHADS2-VASC score is 4.

He reports no history of falls, syncope or trauma.

You plan to initiate anticoagulation for stroke prevention.
Question #2

When considering the efficacy (stroke prevention) versus the safety (major bleeding) of warfarin versus apixaban (Eliquis), which of the following is true for patients with polypharmacy (>9 total medications)?

a) Warfarin is more effective and Apixaban is safer.
b) Warfarin is more effective and safer than Apixaban.
c) Apixaban is more effective and Warfarin is safer.
d) Apixaban is more effective and safer then Warfarin.
Background: Atrial Fibrillation / Polypharmacy

- Atrial Fibrillation affects approximately 2.3 million Americans: most over the age of 65. (2.5 million per Dr. Musco)

- 7% of all adults older than 65 take 5 or more medications. The percentage is much higher for those regularly engaged with the healthcare system.

- Warfarin has many, well documented, complicating, drug interactions.
  - 156 different drug-drug interactions listed with warfarin (Up To Date)
  - 36 different drug-drug interactions listed with apixaban (Up To Date)

Ganz LI. Atrial Fibrillation; *Up To Date*. June 21, 2017.
**Study: Apixaban vs. Warfarin**

What is the relative effectiveness and safety of Apixaban (Eliquis) compared with Warfarin in patients with polypharmacy?

**Design:** Post-hoc analysis of Randomized Controlled Trials.

**Setting:** 1034 clinical sites in 39 countries

**Included:** Non-valvar Atrial Fibrillation

**Excluded:** Mitral Stenosis
- High dose aspirin; aspirin + clopidogrel (Plavix)
- Creatinine > 2.5 mg/dL (or creatinine clearance < 25 ml/min)
- Stoke within past 7 days.

Study: Apixaban vs. Warfarin

Primary Exposure: Tertiles of Medications
- No polypharmacy (0 to 5 medications)
- Polypharmacy (6 to 9 medications)
- Excessive polypharmacy (>9 medications)

Assessments:
- Effectiveness: Strokes or systemic embolism
- Safety: Major Bleeding

Finding: 76.5% of patients had polypharmacy at baseline.

Study: Apixaban vs. Warfarin Effectiveness

Stroke or Systemic Embolism

![Graph showing effectiveness of Apixaban vs. Warfarin]

Adjusted hazard ratio (95% CI)

- Apixaban: 0.86 (0.83 to 1.17)
- Warfarin: 0.76 (0.57 to 1.03)

P_interaction = 0.82

Study: Apixaban vs. Warfarin Safety

Major Bleeding

Study: Apixaban vs. Warfarin Safety

All Cause Death

Question #2  Review

When considering the efficacy (stroke prevention) versus the safety (major bleeding) of warfarin versus apixaban (Eliquis), which of the following is true for patients with polypharmacy (>9 total medications)?

a) Warfarin is more effective and Apixaban is safer.
b) Warfarin is more effective and safer than Apixaban.
c) Apixaban is more effective and Warfarin is safer.
d) Apixaban is more effective and safer then Warfarin.
Take Home Points: Apixaban vs. Warfarin

In patients with non-valvar Atrial Fibrillation:

- Apixaban is more effective than Warfarin.

- Apixaban is safer than Warfarin.

- The relative safety benefits of Apixaban decrease as the degree of polypharmacy increases.

Quick Hitter #2: Anticoagulation Reversal

- Prothrombin Complex Concentrate (PCC), K-centra in the USA, was effective in establishing hemostasis in approximately 70% of patients with major bleeding after being on apixaban (Eliquis) or rivaroxaban (Xarelto).
  - Observational study of 84 patients: 70% ICH, 16% GIB
  - PCC given as 1500 IU IVP for patients < 65 kg and 2000 IU for > 65 kg
  - 15 deaths, mostly in patients with ICH
  - 3 suspected thrombotic events
  - Up To Date dosing for this cohort is 50 IU/kg and maybe repeat dosing at 25 IU/kg. These are higher doses than in this trial.
  - PCC is composed of coagulation factors: II, VII, IX, X

- Idarucizumab (Praxbind): reversal agent of choice for dabigatran (Pradaxa)
  - 2.5g IVP given twice with in 15 minutes (for a total of 5g).
  - Coagulation parameters (aPTT) normalized within 30 minutes
  - 5% thrombosis rate: most after 3 days and no continuation of any DVT Ppx.

Case #3

You are treating a 75 year old woman who was admitted with community acquired pneumonia 3 days ago. She had been treated with levofloxacin. She has been afebrile for the past 48 hours and her current vital signs are normal.
Blood cultures drawn at admission are negative.
Her BMP today in unremarkable.

Her medical history is significant for: osteoarthritis and hypertension.

She states she feels pretty good and asks when she can go home.
Question #3

As you prepare her discharge orders, which of the following prescriptions do you submit to the patient’s pharmacy?

a) No further antibiotics are required at this time.
b) Levofloxacin 750 mg PO daily for 4 more days.
c) Levofloxacin 750 mg PO daily for 7 more days.
d) Levofloxacin 750 mg PO daily for 2 more days.
Background: Community Acquired Pneumonia (CAP)

The Infectious Diseases Society of America (IDSA) guidelines, for CAP, recommend a minimum of 5 days of antibiotic treatment for patients achieving clinical stability and have been afebrile in the final 48 hours of treatment. (Level II Evidence)
Study: CAP Treatment

What is the comparative effectiveness of IDSA guideline therapy versus physician directed therapy for CAP?

**Design:** Randomized Controlled Non-inferiority Trial

**Setting:** 4 teaching hospitals in Spain

**Included:** Adults with Community Acquired Pneumonia

**Excluded:** Chronic immunosuppression
Nursing home residents
Acute care within previous 14 days
Atypical Organism
Extra pulmonary complications

Study: CAP Treatment

Randomization: Randomized at 5 days of treatment for CAP.

Intervention: Antibiotics strictly as per IDSA guidelines
Antibiotic stopped if no fever for 48 hours; AND
≤ 1 CAP-associated sign of clinical instability (Table 10, ISDA guidelines)

Control: Antibiotic duration at physicians discretion

Measured: Resolution or improvement in CAP symptoms
32 Point CAP symptom questionnaire completed at days 10 and 30.
X-ray at day 30.
Duration of antibiotic use

# Study: CAP Treatment Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Control (n=150)</th>
<th>Intervention (n=162)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Success</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 10</td>
<td>67</td>
<td>86</td>
<td>0.12</td>
</tr>
<tr>
<td>Day 30</td>
<td>126</td>
<td>136</td>
<td>0.54</td>
</tr>
<tr>
<td>Time, median (days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibiotics</td>
<td>10 (10-11)</td>
<td>5 (5-6.5)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Clinical improvement</td>
<td>12 (8-18)</td>
<td>12 (7-15)</td>
<td>0.41</td>
</tr>
<tr>
<td>Normal Activity</td>
<td>18 (9-25)</td>
<td>15 (10-21)</td>
<td>0.36</td>
</tr>
<tr>
<td>30 Day Follow-up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-ray resolution</td>
<td>93</td>
<td>112</td>
<td>0.12</td>
</tr>
<tr>
<td>Readmission</td>
<td>9</td>
<td>2</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Question #3  Review

As you prepare her discharge orders, which of the following prescriptions do you submit to the patient’s pharmacy?

a) No further antibiotics are required at this time.
b) Levofloxacin 750 mg PO daily for 4 more days.
c) Levofloxacin 750 mg PO daily for 7 more days.
d) Levofloxacin 750 mg PO daily for 2 more days.
Take Home Points: CAP Treatment

- ISDA Guidelines are validated by this study.

- Does not apply to immunocompromised patients or patients with other significant medical complications.

- Supports nationwide antibiotic stewardship efforts.

Quick Hitter #3: NPPV for COPD

Noninvasive Positive Pressure Ventilation (NPPV) is recommended for patients with Chronic Obstructive Pulmonary Disease (COPD) exacerbations with associated acute hypercapnic respiratory failure. Cochrane review from 17 randomized controlled trials in which NPPV was compared with no NPPV as additional treatment in COPD exacerbations.

NPPV led to the following significant outcome improvements:

- In-hospital mortality: 10% with NPPV vs. 18% without NPPV.
  - Patients with presenting pH < 7.3: 11% vs. 20%
  - Patients with presenting pH 7.3 – 7.35: 8% vs. 17%

- Intubation: 12% with NPPV vs. 34% without NPPV.
  - Patients with presenting pH < 7.3: 13% vs. 44%
  - Patients with presenting pH 7.3 – 7.35: 11% vs. 25%

- Length of stay (mean): 14.1 days with NPPV vs. 17.5 without NPPV.

Case #4:

You are getting ready to discharge a 53-year-old woman who was admitted last night with chest pain that was associated with diaphoresis. She has had negative troponins X3, unchanging EKGs X2 and a negative cardiac stress echocardiogram.

Her medical history is significant for: hypertension, hyperlipidemia and GERD. She had recently been suffering from significant debilitating day and nighttime hot flashes and irritability. She has tried venlafaxine and gabapentin without success for these symptoms. She quit smoking more than 1 years ago.

She does not know the medical history of her biological relatives; but, both her adoptive parents has strokes in their sixties.

She states that she is worried about strokes and heart attacks; but, do you think hormone replacement therapy (HRT) would be okay for her and her postmenopausal symptoms?
Question #4

You tell that patient that you would not initiate any therapy for her postmenopausal symptoms; but, she and her doctor could consider which of the following?

a) Transdermal estrogen with oral progesterone
b) Oral estrogen
c) Oral medroxyprogesterone (Provera)
d) Transdermal estrogen with oral nomegestrol (Lutynl)
## Background: Hormone Replacement Therapy (HRT)

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces hot flashes and improves sleep</td>
<td>Venous thromboembolism</td>
</tr>
<tr>
<td>Reduces osteoporotic fractures</td>
<td>CAD</td>
</tr>
<tr>
<td>Reduces new onset diabetes and colon cancer</td>
<td>Ischemic stroke</td>
</tr>
<tr>
<td>Improves urogenital symptoms</td>
<td>Breast cancer</td>
</tr>
<tr>
<td>Mood stabilization</td>
<td>Dementia</td>
</tr>
</tbody>
</table>

For more information, visit [www.menopause.org](http://www.menopause.org).
Background: The Hormones

### Background: Hormones of HRT

<table>
<thead>
<tr>
<th>Estrogens</th>
<th>Progestagens</th>
<th>Androgens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estrogen (Premarin)</td>
<td>Medroxyprogesterone</td>
<td>Norethindrone (Aygestin)</td>
</tr>
<tr>
<td></td>
<td>(Provera)</td>
<td></td>
</tr>
<tr>
<td>Estradiol (Estrace)</td>
<td>Progesterone</td>
<td>Levonorgestrel (Plan B)</td>
</tr>
<tr>
<td></td>
<td>(Prometrium)</td>
<td></td>
</tr>
<tr>
<td>Estropipate</td>
<td>Nomegestrol (Lutrenyl)</td>
<td></td>
</tr>
<tr>
<td>(Ortho-Est)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Megestrol (Megace)</td>
<td></td>
</tr>
</tbody>
</table>

Treatment of menopausal symptoms with hormone therapy. Martin, KA, et al *Up To Date*, 2017, April.
Study: HRT and Risk of Stroke

What is the stroke risk for women as a function of type and mode of administration of hormone replacement therapy?

Design: Nested Case Controlled Trial, 3 Year Analysis

Setting: France: National Health Insurance (97%) Database
Women ages 51-62 between 01/01/2009 and 12/31/2011 (n = 5,532,341)

Included: Women with first ischemic stroke in time period (n = 3,144)

Excluded: Hemorrhagic Stroke, SAH, non ischemic/non hemorrhagic strokes (6,173)
Contraindication to HRT (3,301)
Using anticoagulation / antiplatelet therapy prior to stroke (2,355)

Cohort: Random: case by case matched by age and zip code (n = 12,158)
No hospitalizations, CVD, gynecologic CA, other exclusion criteria

Study: Oral vs Transdermal Estrogen

Odds Ratios of Ischemic Stroke according to Estrogen Dose and Route

<table>
<thead>
<tr>
<th>Estrogens</th>
<th>Oral estrogens use (A)</th>
<th>Transdermal estrogens use (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>dose</td>
<td>Cases</td>
<td>Controls</td>
</tr>
<tr>
<td>Non-use</td>
<td>2950</td>
<td>11331</td>
</tr>
<tr>
<td>Low dose</td>
<td>46</td>
<td>146</td>
</tr>
<tr>
<td>Intermediate dose</td>
<td>17</td>
<td>47</td>
</tr>
<tr>
<td>High dose</td>
<td>27</td>
<td>50</td>
</tr>
</tbody>
</table>

$p$ for linear trend $< 0.01$

$p$ for linear trend NS

Dotted lines represent overall OR for current users of oral (A) and transdermal (B) estrogens as compared to non-users

Study: Oral vs Transdermal Estrogen and Progestagen

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cases (n = 3,144)</th>
<th>Controls (n = 12,158)</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No HRT</td>
<td>2,950</td>
<td>11,331</td>
<td>1 (reference)</td>
</tr>
<tr>
<td>Oral Estrogen</td>
<td>90</td>
<td>243</td>
<td>1.35 (0.89 – 2.01)</td>
</tr>
<tr>
<td>Transdermal Estrogen</td>
<td>104</td>
<td>584</td>
<td>0.73 (0.5 – 1.06)</td>
</tr>
<tr>
<td>No Progestagen</td>
<td>42</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Progesterone</td>
<td>60</td>
<td>380</td>
<td>0.79 (0.50 – 1.24)</td>
</tr>
<tr>
<td>Medroxyprogesterone</td>
<td>58</td>
<td>197</td>
<td>0.98 (0.61 – 1.58)</td>
</tr>
<tr>
<td>Norethindrone</td>
<td>17</td>
<td>46</td>
<td>1.22 (0.62 – 2.39)</td>
</tr>
<tr>
<td>Nomegestrol*</td>
<td>17</td>
<td>27</td>
<td>2.72 (1.34 – 5.49)</td>
</tr>
</tbody>
</table>

You tell that patient that you would not initiate any therapy for her postmenopausal symptoms; but, she and her doctor could consider which of the following?

a) Transdermal estrogen with oral progesterone
b) Oral estrogen
c) Oral medroxyprogesterone (Provera)
d) Transdermal estrogen with oral nomegesterol (Lutenyl)
Take Home Points: Hormone Replacement Therapy

- This is only one factor or HRT.
- Estrogen delivery route has significant impact on stroke risk.
- Type of progestagen has significant impact on stroke risk.

Quick Hitter #4:  MONA yes or MONA no

Supplemental oxygen provides no benefit and maybe harm when treating patients with ACS and normal oxygen saturations on ambient air.

Oxygen (8L/min) with STEMI in patients with Pox > 94% on Room Air:
Australian RCT with 638 out or hospital STEMI patients randomized 441 with catheter proven STEMI and evaluated on Intention to Treat basis.
- In-hospital recurrent MI: 5.5% w/ O2 vs. 0.9% w/o O2
- Infarction size by MRI at 6 months: 20.3g w/ O2 vs. 13.1g w/o O2

Oxygen (6L/min) with NSTEMI in patients with Pox > 90% on Room Air:
Swedish RCT with 6629 patients with Pox > 90% and ACS findings Randomized to 6L O2 for 6 or 12 hours or no supplemental O2.
- Death at 30 days: 2.2% w/ O2 vs. 2.0% w/o O2
- All cause mortality at 1 year: 5.0% w/ O2 vs. 5.1% w/o O2
- Recurrent MI within 30 days: 1.4% w/ O2 vs. 0.9% w/o O2
- Recurrent MI within 1 year: 3.8% w/ O2 vs. 3.3% w/o O2

Case #5:

You are caring for a 72 year old woman receiving inpatient hospice services for metastatic adenocarcinoma of the breast and failing to manage her pain at home. The patient’s nurse pages you in the morning to inform you that last night she had a positive delirium screen; with a score of 1 on the Richmond Agitation Sedation Scale and a report of hallucinations.

Her other medical history is significant for: hypertension, hyperlipidemia and GERD.

Her admission labs, urinalysis, chest x-ray, from the ED 2 days ago were essentially normal except for a creatinine of 1.49.
Question #5

Which of the following treatments would lead to the greatest reduction of delirium symptoms over the next 3 days?

a) Ativan (much maligned benzo)
b) Haloperidol (Vitamin H)
c) Non-pharmacologic treatment (walk and talk)
d) Risperidone (newer drug)
Average prevalence of patients who experience delirium in the hospital is 20%.

Background: Delirium

Nursing Delirium Screening Scale (NuDESC)

Disorientation*

Inappropriate Behavior
   0 = Calm   1 = Restless   2 = Agitated

Inappropriate Communication
   0 = Appropriate   1 = Unclear thinking   2 = Nonsensical

Illusions / Hallucinations
   0 = None   1 = Fears   2 = Hallucinations

Psychomotor Retardation*
   Score 0 – 10

Study: Delirium

Do antipsychotic medications compared to placebo improve delirium symptoms in patients receiving inpatient hospice care?

**Design:** Randomized double-blinded, trial

**Setting:** 11 Australian inpatient hospice services

**Included:** Incurable disease, delirium

**Excluded:** Use of antipsychotics in the 48 hours prior to the delirium
Contraindication to antipsychotics
Non-English speaking patients

Study: Delirium

**Intervention:**  
1) Risperidone (n = 82)  
2) Haloperidol (n = 81)  
   - PRN midazolam for modified NuDESC > 2  
   - Non-pharmacological interventions

**Control:**  
3) Placebo (n = 84)  
   - PRN midazolam for modified NuDESC > 2  
   - Non-pharmacological interventions

**Measured:**  
Delirium symptom score (Modified NuDESC) 0 – 6  
- Inappropriate Behavior  
  0 – 2  
- Inappropriate Communication  
  0 – 2  
- Illusions / Hallucinations  
  0 – 2  
Measured over three days of study

Study: Delirium

Impact of Risperidone, Haloperidol or Placebo in Changing Delirium

Question #5  Review

Which of the following treatments would lead to the greatest reduction of delirium symptoms over the next 3 days?

a) Ativan
b) Haloperidol
c) Non-pharmacologic treatment
d) Risperidone
Study: Delirium

What about Bob (Benzodiazepine)?

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percentage of Patients Receiving Midazolam</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 1</td>
</tr>
<tr>
<td>Risperidone / Haloperidol</td>
<td>34.7</td>
</tr>
<tr>
<td>Placebo</td>
<td>17.3</td>
</tr>
<tr>
<td>P value</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Take Home Points: Delirium

- Small, select, severely ill population: can it be extrapolated?
- Placebo was more effective in reducing delirium.
- Antipsychotic medications may have worsened delirium as evidenced by higher percentage needing midazolam.

There is no specific “end time” for completion of the 30 mL/kg fluid bolus in cases of severe sepsis and septic shock. The bolus must be started within the three hour window; but, no specified time when it must be completed.

Sepsis for the Rest of Us

Inpatient Quality Reporting (IQR) Program

Support Contractor

SEP-1 Early Management Bundle, Severe Sepsis/Septic Shock: v5.2 Measure Updates

Questions & Answers

Moderator

Candace Jackson, RN
Project Lead, Hospital IQR Program
Hospital Inpatient Value, Incentives, and Quality Reporting (VIQR) Outreach and Education Support Contractor (SC)
Sepsis for the Rest of Us

Slide 28: In order to say “Yes” to Crystalloid Fluid Administration, is 30 mls per kilogram required to be infused within three hours of sepsis presentation time?

In this situation, what we are looking at for crystalloid fluid administration is that the 30 mls per kilogram are started within the three hours.

So, the time that you are entering for a crystalloid fluid administration would be the time that the 30 mls per kilogram is started. And, there is guidance within the specifications manual about different scenarios: where it may be ordered as individual boluses, and each of those individual boluses started after each order, or ordered the full 30 mls per kilogram, is ordered in a single order, but had to be given via numerous boluses.

But, the essence of it is, the requirement for the algorithm calculation is that it would be started within the three hours; it does not need to be completely infused within the three hours.
Sepsis for the Rest of Us

So you are saying?

Are you saying there is no time limit for the fluids to be complete?

Yes, there is only a time limit for when they have to be initiated by.

That’s All Folks

Thank You