

Platform Presentations

Comparison of zolpidem to other drugs associated with falls in hospitalized patients

Ed Rainville, MSPHarm.

Special Acknowledgment to Daniel Ricci, PharmD.
for his work on this project

March 28, 2014

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Conflict of Interest Statement:

The speaker has no conflict of interest in relation to this presentation.

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Objective of Study

- Indicate the risk of falls in hospitalized patients associated with the use of zolpidem as compared with other medications commonly associated with this risk.

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Background



- Reference: Lawyersandsettlement.com. November 20, 2012. Available from: URL: <http://www.lawyersandsettlements.com/blog/mayo-clinic-phasing-out-ambien-after-slip-and-fall-study-010966.html>

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Background

- "Zolpidem is independently associated with increased risk of inpatient falls."
 - 41,947 adult admissions
 - 16,320 prescribed zolpidem
 - Comparison: 4,962 received zolpidem vs. 11,358 control group (patients who were prescribed zolpidem but did not receive it)
 - Fall rate: 1.42/100 zolpidem patients vs. 0.71/100 control group
- Reference: Kola BP, Lovely JK, Mansukhani MP, Morgenthaler TI. Zolpidem is independently associated with increased risk of inpatient falls. *J Hosp Med.* 2013;8:1-6.

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Background

- Further analyses of fall risk:
 - Age ($p=0.07$)
 - Antidepressant (NS)
 - Antipsychotic (NS)
 - Antihistamine (NS)
 - Sedative antidepressant (NS)
 - Benzodiazepine (NS)
 - Opioid (NS)

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Background

Authors Conclusion:

“Zolpidem thus appears to increase the risk of falling beyond that attributable to other medications in hospitalized patients.”

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Study Method

- Retrospective chart review from October 2012 to January 2013 (4 months)
- Patients identified through electronic reporting system for inpatient falls.
- This study had the requisite institutional review board approval

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Study Method

- Patient data:
 - Age
 - Gender
 - Select medications taken within 24 hours prior to fall:
 - Zolpidem
 - Sedative antidepressants (trazodone, mirtazapine)
 - Other antidepressants
 - Antipsychotics
 - Antihistamines
 - Benzodiazepines
 - Opioid analgesics

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Study Method

- Exclusions
 - Pediatrics (less than 18 years old)
 - Falls occurring in the Emergency Department

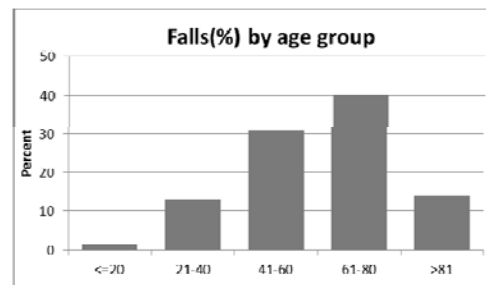
ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Results

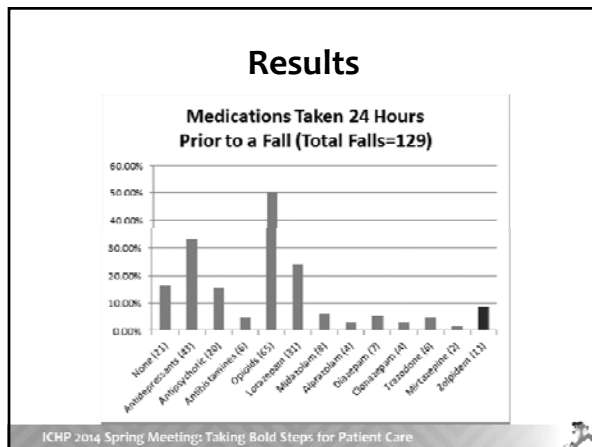
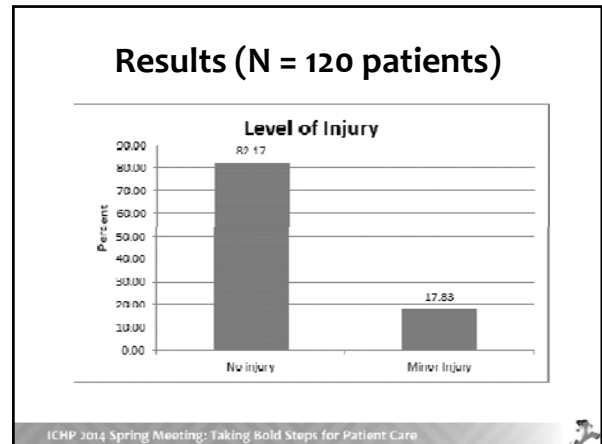
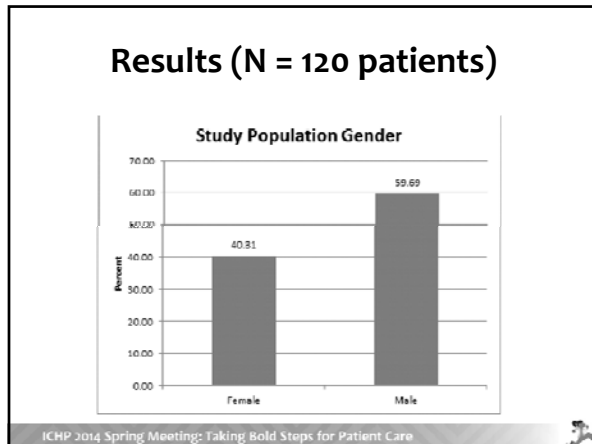
- 152 Falls Reported in 4 months
- 23 Falls excluded (14 – ED, 9 – Peds)
- 8 Patients with multiple falls
 - 7 patients with 2 falls, 1 patient with 3 falls
- 129 Falls (120 patients) included in analysis
- 41,676 patient days
- 347 average daily census

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Results (N = 120 patients)



ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care



- ### Limitations
- Documentation of falls was voluntary.
 - Other contributing factors (other medications, condition of patient, etc.) were not included.
 - Doses used was not analyzed.
 - Combination of medications was not studied.
- ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

- ### Conclusions
- Zolpidem is a risk factor for patient falls.
 - Other medications pose at least equal or greater risk in contributing to patient falls.
- ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

- ### Based upon the results of this study, what is the best action to reduce the risk of patient falls related to zolpidem?
- Remove zolpidem from the formulary and provide a substitution to a benzodiazepine.
 - Do nothing, zolpidem is not a risk to patient falls.
 - Restrict the use of zolpidem to patients younger than 80 years old.
 - Reduce the use of zolpidem and other medications associated with risk of falls.
 - Remove zolpidem from the formulary and do nothing else.
- ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Platform Presentations

Chronic Obstructive Pulmonary Disease (COPD) Exacerbation Inpatient Treatment: A Retrospective Chart Review

Jennifer Arnoldi, Pharm.D., BCPS
Clinical Assistant Professor
SIUe School of Pharmacy
jeamol@siue.edu

I have no conflicts of interest to disclose.

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Pharmacist Objective

- Discuss evidence-based inpatient treatment of COPD exacerbations.

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Background

- COPD exacerbation¹
 - Acute worsening in underlying COPD
 - Increase in cardinal symptoms
 - Shortness of breath
 - Sputum volume
 - Sputum purulence
 - Warrants a change in management

GOLD 2013

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Impact of COPD

- Cost of hospitalization accounts for almost 50% of total COPD expenses²
- A 2006 study of 127 patients over one year
 - 77% of COPD patients experienced an exacerbation³
 - The average cost for an exacerbation-related hospital admission was \$7,100⁴
- 2003-2004 Medicare data⁵
 - COPD-related 30-day readmission rates were 22.6%
 - Cost increases of \$8,400 to \$11,100 found in second admission

2. Hillerman et al. Chest 2000.
3. O'Reilly et al. Prim Care Respir J 2006.
4. Elnhauser et al. Statistical Brief #121: Readmissions for Chronic Obstructive Pulmonary Disease, 2008.
5. Jencks et al. N Engl J Med 2009.

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Inpatient Exacerbation Management

- Global Initiative for Chronic Obstructive Lung Disease (GOLD) Guidelines
 - Controlled oxygen therapy
 - Bronchodilator therapy
 - Glucocorticoids
 - Antibiotics

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

GOLD 2013: Steroids

- Benefits
 - Shorten recovery time
 - Improve lung function
 - Reduce risk of early relapse and treatment failure
- Prednisone 30-40mg/day for 10-14 days
 - 2014: Prednisone 40mg/day for 5 days

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

GOLD 2013: Antibiotics

- Place in therapy:
 - 3 cardinal symptoms present or mechanical ventilation needed
 - 2 of 3 cardinal symptoms (if ↑ sputum purulence is present)
- Common pathogens
 - Viruses
 - *H. influenzae*, *S. pneumoniae*, *M. catarrhalis*
 - GOLD 3 and GOLD 4, consider *P. aeruginosa*

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

GOLD 2013 Empiric Antibiotics

- Amoxicillin ± clavulanate, macrolide or tetracycline
- Consider broader coverage ± sputum cultures if:
 - Frequent exacerbations
 - Severe airflow limitation
 - Mechanical ventilation
- Duration of therapy 5-10 days

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Study Aim

- To evaluate current inpatient treatment of COPD exacerbations in a teaching hospital
- To compare the treatment of COPD exacerbations in clinical practice with recommendations from the GOLD 2013 guidelines

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Methods

- Retrospective chart review
- Patient selection
 - 18 to 89 years of age
 - Hospitalized for COPD exacerbation
 - Exclusions
 - Received antibiotic or systemic corticosteroid therapy for any reason other than a COPD exacerbation

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Data Collection

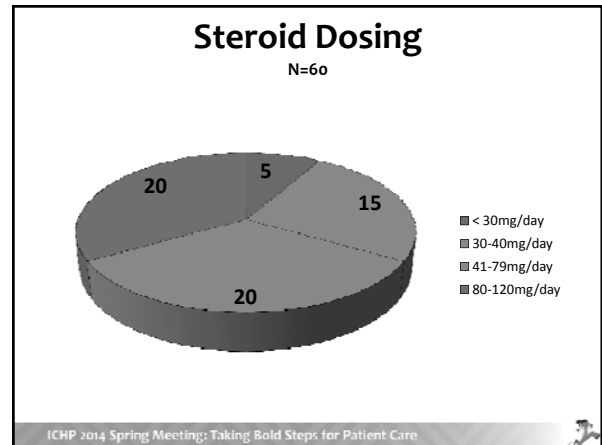
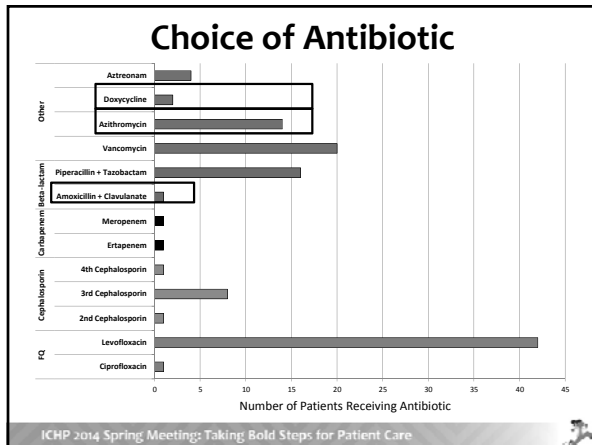
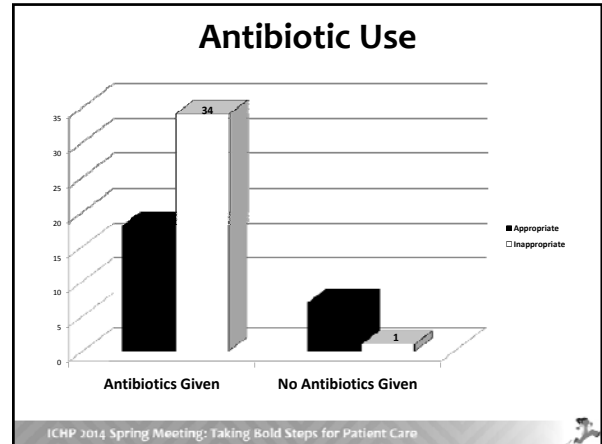
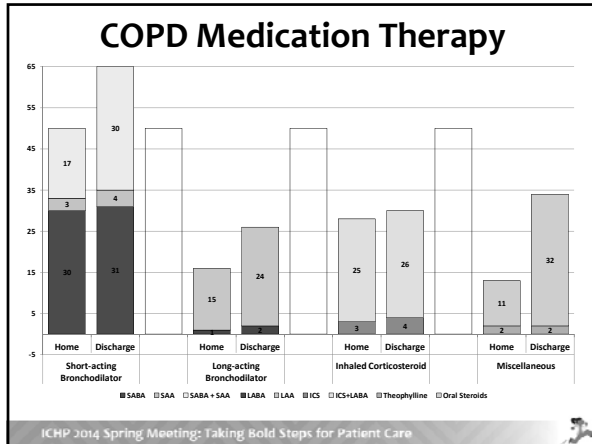
- Disease
 - Smoking history
 - Cardinal symptoms
 - Documentation of baseline COPD severity
- Treatment
 - COPD medication therapy (acute and chronic)
 - Inpatient vaccination screening and administration
- Readmission
 - Time to hospital readmission
 - Reason for hospital readmission

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Patient Characteristics

Total Patients	N=60
Age (years)	
Range	30-89
Mean	70
Race	
Caucasian	57 (95%)
African American	3 (5%)
Gender	
Male	30 (50%)
Female	30 (50%)
Smoking Status	
Current	30 (50%)
Former	22 (37%)
Never	2 (3%)
Undocumented	6 (10%)

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care



Limitations

- Retrospective chart review
 - ICD-9
 - Differential diagnoses
- Single site
- Small number of patients
- Lack of information
 - Baseline COPD status and severity
 - History of exacerbations

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Summary

- Opportunities for improvement
 - Symptom-driven antibiotic use
 - Antimicrobial selection
 - Oral corticosteroid regimens
 - Assessment of baseline disease severity
- Future direction

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Assessment

In which of the following patients, hospitalized for a COPD exacerbation, would it be most appropriate to recommend an antibiotic?

- a. A 66 year old male with a cough
- b. A 72 year old female with shortness of breath and copious clear sputum production
- c. A 54 year old female with copious sputum production that is thick and green-colored
- d. A 63 year old male with cough and shortness of breath

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

References

1. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD). 2013. http://www.goldcopd.org/uploads/users/files/GOLD_Report_2013_Feb20.pdf. Accessed March 2013.
2. Hilleman DE, Dewan N, Malesker M, Friedman M. Pharmacoeconomic evaluation of COPD. *Chest*. 2000; 118:1278-1285.
3. O'Reilly JF, Williams AE, Holt K, Rice L. Defining COPD exacerbations: impact on estimation of incidence and burden in primary care. *Prim Care Respir J*. 2006; 15:346-353.
4. Elixhauser A, Au DH, Podulka J. Statistical Brief #121: Readmissions for Chronic Obstructive Pulmonary Disease, 2008. US Agency for Healthcare Research and Quality. Available from: <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb121.pdf>. Accessed November 15, 2013.
5. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare Fee-for-Service program. *N Engl J Med*. 2009; 360:1418-1428.

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care

Chronic Obstructive Pulmonary Disease (COPD) Exacerbation Inpatient Treatment: A Retrospective Chart Review

Jennifer Arnoldi, Pharm.D., BCPS
 Clinical Assistant Professor
 SIUe School of Pharmacy
 jeamol@siue.edu

ICHP 2014 Spring Meeting: Taking Bold Steps for Patient Care