Opioids in the aging population: How do we improve quality prescribing to reduce harm?

Nicole Murdock, PharmD, BCPS
Clinical Pharmacist - Banner Boswell Medical Center
Associate Professor - Midwestern University

Tom Snyder, RN, BSN, MBA, FACHE(C)
Director, Clinical Performance Assessment and Improvement (CPAI)
Banner University Medical Center - Phoenix

Joanne Ceimo, M.D.
Faculty Geriatric Fellowship
University of Arizona & Banner Boswell Medical Center

Sandhya Reddy, M.D.
Geriatric Fellow
University of Arizona & Banner Boswell Medical Center

Conflicts of Interest

• Nicole Murdock has no disclosures
• Joanne Ceimo has no disclosures
• Thomas Snyder has no disclosures
• Sandhya Reddy has no disclosures

Objectives

• Describe the Banner Health System
• Appraise geriatric syndromes & the risk of opioids
• Determine opioid use in our aging population
• List barriers of high quality prescribing of opioids
• Design interventions to improve quality opioid prescribing in an aging inpatient population
• Discuss innovative next steps towards high quality opioid prescribing
Banner's 2020 Vision: “Our steps to the Future”

- Population Health Management Company
- Acute Care Hospital Company
- Interactive Leadership (2014 - 2020)
- Innovation (2011 - 2015)
- Growth (2007 - 2010)
- Performance (2000 - 2006)
- Sustained (2000 - 2002)

University of Arizona - Banner Health

The Precision Medicine Initiative® Cohort Program

All of Us® Research Program

- Largest NIH grant in Arizona history - $43.3 million over 5 years
- Enroll 150,000 participants
- Collect and share data reflecting individual differences in lifestyle, environment, and genetics
- Researchers across the county will study a wide range of questions about health and disease
- Goal: reducing health disparities and improving patient outcomes
Our Hospital: Banner Boswell Medical Center

- 415 bed community hospital
- FY2016: 48,758 ER visits & 12,853 Inpatient admits
- Hospitalist service provides most of inpatient care

Where we are

- First retirement community in US
- NW Phoenix suburb
- Age-restricted
- 2016 population 37,499 (60:40 female:male)
- Median age is 74.2 years

Who we are

- 21st year
- One year of post-graduate training
- 3-5 fellows per year
- 72 current graduates
Why Geriatrics?

- Changing demographics – the "aging of America" (13% in 2010 census)
- Heterogeneous population
- Unique identifiers: co-morbidities, functional impairments, age-related changes in physiology, pharmacokinetics, and pharmacodynamics

The Aging of America

- The "young old" (65-74)
- Just "old" (75-84)
- "Old old" (> 85)
- With increasing age, increasing impact of:
  - social factors
  - economic factors
  - comorbidities

HOMEOSTATIC RESERVE BECOMES LESS EFFICIENT
Age + Illness

Homeostasis

Increasing age
Aging and Pain

- **Types**: acute vs. chronic; nociceptive, neuropathic, inflammatory, mixed
- **Incidence**: chronic pain: 25-50% of community dwelling; 45-80% in LTC
- **Confounders**: in presentation: dementia, neuropathic impairments, "It's my age", loss of independence
- **Differing pain thresholds** with age - "Start low, go slow."
- **Increased risk of ADRs**

Pain: A Geriatrician’s Approach

- Set realistic goals
- What's wrong with scheduled Tylenol?
- NSAIDS: when to consider; long-term negative impact
- Adjuvant Analgesics: SSIRs, SNRIs, TCAs
- Non-pharmacologic approaches: PT, heat, massage, cold; acupuncture, CBT, visualization (guided imagery)
- Topicals: prescription, OTC, homeopathic
- Opioids when and where appropriate; always opt for the shortest course

Why This Approach Isn’t Working

- Pain as “5th Vital Sign”
  - (VA 1996; JCAHO 2000)
- Patient satisfaction surveys
- Unrealistic expectations
  - (No pain vs. manageable pain)
- Patient factors
  - “Is there a pill for that?”
  - “Do what the doctor says.”
  - Influence of family and caregivers
- Fractionated patient care
- Multiple caregivers, more complex care
- Follow-up care more difficult to schedule
- Over-prescribing -- for convenience?
- "Silo vision" -- lack of specific geriatric expertise in specialists
Why Are Geriatric Patients So Complex?

Geriatric Syndromes

- Cognitive impairments
- Late-life depression
- Urinary incontinence
- Delirium
- Falls
- Functional decline
- Pressure Ulcers
- Frailty
- Polypharmacy
- Pain

Defining the Problem

National Trends of Opioid Overdoses

- 2000-2014: 200% increase in the rate of overdose deaths involving opioids
- 2014: 14% (27,091) per 100,000
- 2015: 28% (40,605) of drug overdose deaths involved some type of opioid

http://www.cdc.gov/mmwr/preview/mmwrhtml6450a3.htm
National Trends of Opioid

- Recent study reviewed nearly 7,000 patients who were prescribed opioids when discharged from the hospital.
- None of the patients studied had been prescribed an opioid in the year preceding their hospitalization.
- Nearly 1,700 of those patients examined filled a new opioid prescription within just 72 hours of leaving the hospital.
- Clinicians most frequently prescribed two opioids: hydrocodone and oxycodone, the study’s authors learned.
- Patients who had not used an opioid pain medication in the year preceding their hospitalization, who were then prescribed an opioid at hospital discharge, were about five times more likely to become a chronic opioid user after one year as compared to patients who were not prescribed an opioid at hospital discharge.

December 5, 2012

Overprescribing of Opioids Impacts Patient Safety and Public Health

Arizona’s Opioid Average 10-year Death Rate per 100,000 population by age group in Arizona from 2007 to 2016

Arizona’s Readmissions for Medicare FFS on Opioids

Arizona’s all cause readmission rate is approximately 15%

NOTE: All-cause readmissions are more than 5% higher in patients discharged with opioids than the same population discharged without any opioids.
Top 10 Opioid Adverse Drug Events Coded for in the Medicare Population

<table>
<thead>
<tr>
<th>ICD-9 Diagnosis Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>980.00</td>
<td>Poisoning by opiate and related narcotics, other</td>
</tr>
<tr>
<td>980.02</td>
<td>Poisoning by opiate and related narcotics, other, acute, unitialized</td>
</tr>
<tr>
<td>980.50</td>
<td>Poisoning by opiate and related narcotics, noted as a contributory cause of death</td>
</tr>
<tr>
<td>980.52</td>
<td>Poisoning by opiate and related narcotics, noted as a contributory cause of death, acute</td>
</tr>
<tr>
<td>980.53</td>
<td>Poisoning by opiate and related narcotics, noted as a contributory cause of death, chronic</td>
</tr>
<tr>
<td>980.59</td>
<td>Poisoning by opiate and related narcotics, noted as a contributory cause of death, unitialized</td>
</tr>
<tr>
<td>980.60</td>
<td>Poisoning by opiate and related narcotics, unitialized</td>
</tr>
</tbody>
</table>

Illicit Opioids Trends

- Heroin overdose deaths increased 125% over the past 4 years
- Fentanyl & Carfentanil emerge as alternatives
- As of 6/1/2017, 27% of patients received multiple doses of naloxone during May

So where do we start?
Phase 1: BBWMC Opioid Review & Analysis

- **Aim of Investigation:**
  To review current opioid use in a geriatric population to identify opportunities to improve safe utilization in this one hospital facility and hospital system.

- **Methods:**
  A retrospective, qualitative review was conducted on patients who received a prescription for an opioid on the date of discharge during the timeframe of October 1 to 21, 2017. Trends for departmental use and physicians within the facility was assessed.

### Opioid use at BBWMC

- **945 discharge opioid scripts**
  - 43 scripts/day
  - 2,288 tablets/day
  - Inpatient, ED, observation, SDS
  - Average age=61.8 yrs

---

**Opioid use at BBWMC**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Number of Scripts</th>
<th>Number of Tablets</th>
<th>Number of tabs/script</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>36</td>
<td>396</td>
<td>25</td>
</tr>
<tr>
<td>IN/BWC</td>
<td>53</td>
<td>1627</td>
<td>31</td>
</tr>
<tr>
<td>3A/B/C/P</td>
<td>49</td>
<td>2084</td>
<td>55</td>
</tr>
<tr>
<td>4A/B/C/D</td>
<td>121</td>
<td>5290</td>
<td>44</td>
</tr>
<tr>
<td>5A/C/B/HC/OB</td>
<td>138</td>
<td>1510</td>
<td>30</td>
</tr>
<tr>
<td>ED</td>
<td>11</td>
<td>218</td>
<td>36</td>
</tr>
<tr>
<td>SHF/SHC</td>
<td>47</td>
<td>1296</td>
<td>28</td>
</tr>
<tr>
<td>ED</td>
<td>87</td>
<td>3315</td>
<td>17</td>
</tr>
<tr>
<td>OPS</td>
<td>146</td>
<td>2858</td>
<td>19</td>
</tr>
<tr>
<td>NKC</td>
<td>19</td>
<td>608</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>945</strong></td>
<td><strong>21,823</strong></td>
<td><strong>24.3 tabs/script</strong></td>
</tr>
</tbody>
</table>
COPD in the Elderly

- 15 million Americans
- 4th leading cause of death
- Prevalence in > 65 is 10%, and increasing
- Accounts for
  - 19.5% of hospital admits of 65-75 yrs
  - 18.5% in those > 75 yrs
- ICU admissions associated with increased 1 year mortality
- Treatment with multiple drugs

Risk Factors for Serious Prescription Opioid-Related Toxicity or Overdose among Veterans Health Administration Patients

- First known screening instrument developed to provide real-time, evidence-based information to the healthcare professional regarding the risk of overdose or serious respiratory depression in medical users of prescription opioids
- First developed utilizing VA data, then validated in a large commercial health plan database (IMS PharMetrics Plus)
- Strongest predictors were similar between development & validation phases: comorbidities and characteristics of prescribed medication
NOTE: higher events were found in opioid-only prescriptions (vs. combo meds) regardless of dose (compared ≤30mg vs. > 30 mg morphine equivalents/day).

Boswell’s Aging COPD Inpatients and Opioids

- Subgroup of patients 65 years and older who had an active diagnosis of Chronic Obstructive Lung Disease (COPD) compared to patients who did not.
- Manual case review was conducted by 5 geriatric medical fellows based on information readily available within the current electronic medical record (EMR) to assess the patient: Risk Index for Overdose or Serious Opioid Induced Respiratory Depression (RIOSORD) score, morphine dose equivalent (MDE), and fall risk.
- For the purpose of this review, prescriptions for tramadol were not included.
Limitations

Due to the retrospective nature of this review, subjects' scores were difficult to calculate for outpatient visits for chronic hepatitis, bipolar, schizophrenia.

Limited information was known regarding inpatient and outpatient visits for COPD or CKD ("clinical significant"), sleep apnea, or trauma/fractures.

Overall, the possibility of 33 points may be missing from total RIOSORD scores due to the retrospective nature and commonly missing data in our EMR.

Due to the retrospective nature of this review, subjects' scores were difficult to calculate for outpatient visits for chronic hepatitis, bipolar, schizophrenia.

Limited information was known regarding inpatient and outpatient visits for COPD or CKD ("clinical significant"), sleep apnea, or trauma/fractures.

Overall, the possibility of 33 points may be missing from total RIOSORD scores due to the retrospective nature and commonly missing data in our EMR.

Boswell's Aging COPD Inpatients and Opioids

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>COPD patients (N=27)</th>
<th>Non-COPD patients (N=27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>1%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>2%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>3%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>4%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>5%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>6%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>7%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>8%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>9%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
<tr>
<td>10%</td>
<td>0.131 (95%)</td>
<td>0.131 (95%)</td>
</tr>
</tbody>
</table>

Phase 1: BBWMC Opioid Utilization Conclusions

- The presence of COPD more than doubles our population risk of respiratory depression or overdose
- COPD patients are receiving a higher rate of NDD prescriptions than non-COPD patients
- COPD patients are on lower MED than non-COPD

Overall our patient population is also considered “High Risk” for falls and opioid use

Our reviewers were able to capture/calculated MED similar to CSPMP

The RIOSORD tool is useful in closed system like the VA, where EMR reflects majority/all of patients' care.

Modification of this tool would need to be validated first should include more easily obtainable, discrete variables as well as account to outpatient histories/medication use.
Phase 2:
Step 1: The Educational Intervention
- Multifaceted training of prescribers & staff
  - Newly employed physicians & geriatric fellows (August 2017)
  - Medical Staff presentation (November 2017)
  - Orthopedic section meetings (TBD 2017)
  - Medication Safety meeting (August 2017)

- Community Outreach
  - Education program (November 2017)
  - Take back section (Planned at Bonnell Jan 2018)
  - Community paramedicine consortium (June 2017)

Phase 2:
Step 2: Feedback & Process Review
- Opioid prescribing process review
  - Are we consistently reviewing the state PMP?
- Common practices vs. Best practices
  - Counseling techniques
  - Prescribing of new opioids
- Opioid prescribers difficulties
  - Pressure to prescribe
  - Prescribing to the right patient
  - SEDS/DSM5 scoring risk assessment
  - Prescribing naloxone for high risk patients (COPD or respiratory disease)
Phase 3: Process Improvement
- Standardized reduced number of tablets for ED discharge scripts
- EMR changes to display total MED (currently underway; production implementation TBD)
- Enroll standardized advocates to pull PMP reports for hospital prescribers for all opioid discharge opioid scripts
- Addition of verbiage of opioid counseling on discharge and community pharmacies
- Include the felony risk of sharing medications
- Encourage disposal of unused medications
- Lock up your opioids

Phase 4: Next Steps Considerations
- Hard stop for opioid scripts in very high risk & high MED
- Shared decision discussions vs. pain specialist requirements
- Standardized naloxone scripts with opioid scripts
  - All vs. high risk (COPD pts)
- Expansion of pharmacodynamics research
- Implement adjusted RIOSORD scoring to alert when opioids are prescribed
- New script vs. any script
- Implementation of descalation strategy for inpatient pain management

Questions?