Adverse Drug Events and Data: A Work in Progress

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PharmD. Candidate 2019
Network Task Lead – Adverse Drug Events
Learning Objectives

• Identify the structure and goals of the QIN-QIO program
• Present overview of QIN-QIO initiatives
• State the definition of an adverse drug event (ADE)
• Recognize the three classes of drugs frequently associated with adverse drug events (anticoagulants, anti-diabetic drugs and opioids)
• Identify challenges and barriers associated with measuring and reducing ADEs in the community setting
Learning Objectives

• State the rate of adverse drug events in NJ associated with anticoagulants, diabetes drugs and opioids
• Describe the “top 10” types of events associated with anticoagulant, diabetes drug and opioid ADEs
• Discuss how ADE data can be applied to quality improvement/prevention initiatives
• Describe outpatient quality measures that address ADEs
• Identify opportunities for pharmacists to get involved in quality improvement activities
Who is Quality Insights?

- Quality Insights is a “QIN-QIO” – Quality Innovation Network – Quality Improvement Organization
- QIN-QIOs are healthcare consultants funded by CMS* to work with providers (and in some cases beneficiaries) across the continuum of care to help meet health care quality goals targeted towards FFS Medicare beneficiaries
- Focus on national and local quality priorities

*Centers for Medicare & Medicaid Services
The QIN-QIO Program’s Approach to Clinical Quality

Aims

- Make care safer
- Strengthen person and family engagement
- Promote effective communication and coordination of care
- Promote effective prevention and treatment
- Promote best practices
- Make care affordable

Foundational Principles

- Enable innovation
- Foster learning organizations
- Eliminate disparities
- Strengthen infrastructure and data systems
QIN-QIO: Quality Insights

- Five-year contract with CMS under its 11th Scope of Work (SoW)
- Includes Delaware, Louisiana, New Jersey, Pennsylvania and West Virginia
Four Key Roles of QIN-QIOs

• Facilitate Learning and Action Networks (LANs)
  – Creating an “all teach, all learn” environment
  – Placing motivation for improvement at the bedside level – e.g., handwashing

• Teach and advise as technical experts
  – Teach so learning is never lost

• Champion local-level, results-oriented change
  – Improve data
  – Active engagement of patients; convene community partners
  – Spread innovation and best practices that “stick”

• Communicate effectively
  – Sustain clinician, provider and patient/family behavior change
Examples of Quality Insights Initiatives

• Care Coordination
  – Develop community coalitions with providers from all levels of care working together to reduce avoidable hospital readmissions
  – Support coalition activities

• Medication Safety
  – Work with post-acute providers, pharmacies, etc. across the state to reduce preventable ADEs with three groups of high risk medications; conduct ADE surveillance
    – Anticoagulants, diabetes drugs, opioids

• Opioid misuse and diversion
Definition of Adverse Drug Event

• Adverse Drug Event (ADE): An injury resulting from medical intervention related to a drug.\(^1\)

Emergency Hospitalizations for Adverse Drug Events in Older Americans

Four medication classes were implicated in 67 percent of events (95 percent CI 60.0 to 74.1)

- Oral hypoglycemics (11%)
- Oral antiplatelets (13%)
- Insulins (14%)
- Warfarin (33%)
National Action Plan for Adverse Drug Event Prevention

http://www.health.gov/hai/ade.asp#action-plan
Messages from the National Action Plan

• Reduce adverse drug events at the community/population level
• Identify events that are common, preventable and measurable

Anticoagulants: Bleeding

Diabetes drugs: hypoglycemia

Opioids: accidental overdose, oversedation, respiratory depression
Which Drugs Cause ADEs?

• Update to original Budnitz study
• ED visits related to outpatient ADEs
• Data set 2013-2014
• DOACs (Direct Acting Oral Anticoagulants) included

In older adults, anticoagulants, diabetes drugs and opioids are implicated in 60% of ED visits for ADEs.²
The Big Three of Adverse Drug Events

Available to project participants only – reach out to your state contact
Measuring Community ADEs

**Measurement**

- Limited/no definitions or validated measures
  - Some on the way?
- Limited/no data sources
  - Claims, self-reported
- Limited ability to gather/report self-reported data/resistance to reporting
  - Community pharmacy, home health, physician practice, urgent care, ED?
- ???
Preventing Community ADEs

• Identify proven best practices & interventions (BP&Is)
  – Anticoagulation clinic, chronic disease management, MTM, diabetes self-management educations?

• Identify settings to implement BP&Is
  – Varies by intervention

• Implement BP&Is
  – Barriers – lack of reimbursement, scope of work limitations, patient factors (engagement, health literacy)

• Measure results

• ???
Adverse Drug Event Rates – Claims Experiment

• Medicare Fee for Service Claims
  – Inpatient, emergency department claims
  – ICD9/ICD10 codes associated with drug related events (no official list – several versions)
  – Medicare Part A, D claims for anticoagulants, diabetes drugs and opioids*
  – Not validated measure, ADEs considered “possible or potential”
  – Serves as a guide or starting point

*Intentional overdose and addiction related codes excluded
Quality Insights Data Portal

QUALITY INSIGHTS LOGIN

Welcome to the Quality Insights login area for registered users. Below are the types of reports available:

- Hospital specific readmission and ADE report
- Community level ADE reports
- Nursing home reports
- Physician practice reports
- Home health reports
- And more...

My Quality Insights
Community training and resources.

Report Data
Participant monitoring reports

MyQI References
Introducing the My Quality Insights Learning Platform
Webinar Handout

Quality Improvement Organizations
Sharing Knowledge. Improving Health Care.
CENTERS FOR MEDICARE & MEDICAID SERVICES
NJ - ADE Rates per 1000 Discharges

NJ Statewide ADEs per 1,000 hospital discharges

Q4 2015: 71.05
Q1 2016: 66.83
Q2 2016: 63.54
Q3 2016: 60.56
Q4 2016: 58.98

Medicare FFS part A and D claims, ICD10 codes available upon request
NJ – ADE rates per 1000 ED Visits

NJ Statewide ADEs per 1,000 ED visits

Medicare FFS part A and D claims, ICD10 codes available upon request
**NJ Readmission Rates (%) - Big Three**

*High risk – defined as FFS beneficiary with Medicare D on 3 or more chronic medications with 1 or more anticoagulant, diabetes drug or opioid.
## Most Common ICD-10 Codes – Anticoagulants*

<table>
<thead>
<tr>
<th>ICD10</th>
<th># of events</th>
<th>Percentage</th>
<th>Potential Anticoagulant Events - Inpatient</th>
<th>ICD10 ED</th>
<th># of events ED</th>
<th>Percentage %</th>
<th>Potential Outpatient Events - Emergency Dept Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>K922</td>
<td>646</td>
<td>28.66</td>
<td>Gastrointestinal hemorrhage, unspecified</td>
<td>R040</td>
<td>1015</td>
<td>44.58</td>
<td>Epistaxis</td>
</tr>
<tr>
<td>K921</td>
<td>185</td>
<td>8.21</td>
<td>Melena</td>
<td>R319</td>
<td>225</td>
<td>9.88</td>
<td>Hematuria, unspecified</td>
</tr>
<tr>
<td>D62</td>
<td>126</td>
<td>5.59</td>
<td>Acute posthemorrhagic anemia</td>
<td>R791</td>
<td>204</td>
<td>8.96</td>
<td>Abnormal coagulation profile</td>
</tr>
<tr>
<td>D649</td>
<td>114</td>
<td>5.06</td>
<td>Anemia, unspecified</td>
<td>D649</td>
<td>186</td>
<td>8.17</td>
<td>Anemia, unspecified</td>
</tr>
<tr>
<td>R310</td>
<td>97</td>
<td>4.3</td>
<td>Gross hematuria</td>
<td>K625</td>
<td>83</td>
<td>3.65</td>
<td>Hemorrhage of anus and rectum</td>
</tr>
<tr>
<td>K254</td>
<td>88</td>
<td>3.9</td>
<td>Chronic or unspecified gastric ulcer with hemorrhage</td>
<td>K922</td>
<td>75</td>
<td>3.29</td>
<td>Gastrointestinal hemorrhage, unspecified</td>
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<tr>
<td>K648</td>
<td>82</td>
<td>3.64</td>
<td>Other hemorrhoids</td>
<td>R310</td>
<td>61</td>
<td>2.68</td>
<td>Gross hematuria</td>
</tr>
<tr>
<td>K625</td>
<td>81</td>
<td>3.59</td>
<td>Hemorrhage of anus and rectum</td>
<td>R042</td>
<td>58</td>
<td>2.55</td>
<td>Hemoptysis</td>
</tr>
<tr>
<td>D500</td>
<td>70</td>
<td>3.11</td>
<td>Iron deficiency anemia secondary to blood loss (chronic)</td>
<td>R58</td>
<td>40</td>
<td>1.76</td>
<td>Hemorrhage, not elsewhere classified</td>
</tr>
<tr>
<td>K264</td>
<td>66</td>
<td>2.93</td>
<td>Chronic or unspecified duodenal ulcer with hemorrhage</td>
<td>H1131</td>
<td>34</td>
<td>1.49</td>
<td>Conjunctival hemorrhage, right eye</td>
</tr>
</tbody>
</table>

*CY 2016 Medicare FFS claims only, ICD10 codes available on request*
# Most Common ICD-10 Codes – Diabetes Drugs*

<table>
<thead>
<tr>
<th>ICD10</th>
<th># of events</th>
<th>Percentage</th>
<th>Potential Diabetes Drug Events - Inpatient</th>
<th>ICD10 ED</th>
<th># of events ED</th>
<th>Percentage</th>
<th>Potential Diabetes Events - Emergency Dept Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>R55</td>
<td>457</td>
<td>66.72</td>
<td>Syncope and collapse</td>
<td>R55</td>
<td>650</td>
<td>51.22</td>
<td>Syncope and collapse</td>
</tr>
<tr>
<td>R4182</td>
<td>138</td>
<td>20.15</td>
<td>Altered mental status, unspecified</td>
<td>R4182</td>
<td>297</td>
<td>23.4</td>
<td>Altered mental status, unspecified</td>
</tr>
<tr>
<td>T383X1A</td>
<td>49</td>
<td>7.15</td>
<td>Poisoning by insulin and oral hypoglycemic [antidiabetic] drugs, accidental</td>
<td>E162</td>
<td>193</td>
<td>15.21</td>
<td>Hypoglycemia, unspecified</td>
</tr>
<tr>
<td>E160</td>
<td>21</td>
<td>3.07</td>
<td>Drug-induced hypoglycemia without coma</td>
<td>R410</td>
<td>50</td>
<td>3.94</td>
<td>Disorientation, unspecified</td>
</tr>
<tr>
<td>R410</td>
<td>11</td>
<td>1.61</td>
<td>Disorientation, unspecified</td>
<td>T383X1A</td>
<td>40</td>
<td>3.15</td>
<td>Poisoning by insulin and oral hypoglycemic [antidiabetic] drugs, accidental</td>
</tr>
<tr>
<td>E162</td>
<td>9</td>
<td>1.31</td>
<td>Hypoglycemia, unspecified</td>
<td>E160</td>
<td>15</td>
<td>1.18</td>
<td>Drug-induced hypoglycemia without coma</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>T383X5A</td>
<td>14</td>
<td>1.1</td>
<td>Adverse effect of insulin and oral hypoglycemic [antidiabetic] drugs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>E161</td>
<td>6</td>
<td>0.47</td>
<td>Other hypoglycemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>E08649</td>
<td>4</td>
<td>0.32</td>
<td>Diabetes mellitus due to underlying condition with hypoglycemia without coma</td>
</tr>
</tbody>
</table>

*CY 2016 Medicare FFS claims only, ICD10 codes available on request*
### Most Common ICD-10 Codes – Opioids*

<table>
<thead>
<tr>
<th>ICD10</th>
<th># of events</th>
<th>Percentage</th>
<th>Potential Opioid Events - Inpatient</th>
<th>ICD 10 ED</th>
<th># of ED events</th>
<th>Percentage</th>
<th>Potential Opioid Events - Emergency Dept Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>R55</td>
<td>321</td>
<td>20.62</td>
<td>Syncope and collapse</td>
<td>R55</td>
<td>511</td>
<td>44.86</td>
<td>Syncope and collapse</td>
</tr>
<tr>
<td>J9601</td>
<td>284</td>
<td>18.24</td>
<td>Acute respiratory failure with hypoxia</td>
<td>R4182</td>
<td>229</td>
<td>20.11</td>
<td>Altered mental status, unspecified</td>
</tr>
<tr>
<td>F1123</td>
<td>278</td>
<td>17.85</td>
<td>Opioid dependence with withdrawal</td>
<td>F1123</td>
<td>107</td>
<td>9.39</td>
<td>Opioid dependence with withdrawal</td>
</tr>
<tr>
<td>T402X1A</td>
<td>136</td>
<td>8.73</td>
<td>Poisoning by other opioids, accidental (unintentional)</td>
<td>R410</td>
<td>58</td>
<td>5.09</td>
<td>Disorientation, unspecified</td>
</tr>
<tr>
<td>J9602</td>
<td>115</td>
<td>7.39</td>
<td>Acute respiratory failure with hypercapnia</td>
<td>T402X1A</td>
<td>45</td>
<td>3.95</td>
<td>Poisoning by other opioids, accidental (unintentional)</td>
</tr>
<tr>
<td>J9600</td>
<td>114</td>
<td>7.32</td>
<td>Acute respiratory failure, unspecified whether with hypoxia or hypercapnia</td>
<td>T40601A</td>
<td>35</td>
<td>3.07</td>
<td>Poisoning by unspecified narcotics, accidental (unintentional)</td>
</tr>
<tr>
<td>R4182</td>
<td>109</td>
<td>7</td>
<td>Altered mental status, unspecified</td>
<td>R0902</td>
<td>19</td>
<td>1.67</td>
<td>Hypoxemia</td>
</tr>
<tr>
<td>T40601A</td>
<td>62</td>
<td>3.98</td>
<td>Poisoning by unspecified narcotics, accidental (unintentional)</td>
<td>R440</td>
<td>16</td>
<td>1.4</td>
<td>Auditory hallucinations</td>
</tr>
<tr>
<td>R410</td>
<td>15</td>
<td>0.96</td>
<td>Disorientation, unspecified</td>
<td>R404</td>
<td>11</td>
<td>0.97</td>
<td>Transient alteration of awareness</td>
</tr>
<tr>
<td>T404X1A</td>
<td>14</td>
<td>0.9</td>
<td>Poisoning by other synthetic narcotics, accidental (unintentional)</td>
<td>R443</td>
<td>10</td>
<td>0.88</td>
<td>Hallucinations, unspecified</td>
</tr>
</tbody>
</table>

*Intentional overdose and addiction related codes excluded; CY 2016 Medicare FFS claims only, ICD10 codes available on request
Other Uses of Claims Data

- Identifying trends within a specific population
  - Rates of hypo/hyperglycemia
  - Combined use of opioids and benzodiazepines
  - Bleeding in patients on oral anticoagulants
  - Use of transitional care management (TCM) office visits
  - Utilization of Medicare Annual Wellness Visits (AWV)
  - Healthcare utilization (readmissions, primary care visits, ED visits) in diabetes self-management education workshop participants
National Outpatient ADE Measures

• Developed by Federal Office of Disease Prevention and Health Promotion (ODPHP) in collaboration with other agencies
  – Outcomes-based rather than process-based
  – Derived from surveillance systems that (a) are nationally-representative, (b) can provide baseline estimates from which to measure progress on prevention, and (c) use consistent and stable ADE measurement methodology for the foreseeable future
  – Align ADE measurement with other departmental medication safety measures and goals (e.g., Partnership for Patients, Healthy People 2020)

https://health.gov/hcq/ade-measures.asp
“Big Three” High Risk Medications

• Reduce U.S. emergency department visits for adverse drug events (unintended measurable harm or injury) from anticoagulants

• Reduce U.S. emergency department visits for adverse drug events (unintended measurable harm or injury) from diabetes agents

• Reduce U.S. emergency department visits for adverse drug events (unintended measurable harm or injury associated with therapeutic use) from opioid analgesics

https://health.gov/hcq/ade-measures.asp
<table>
<thead>
<tr>
<th>Measure</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Target Reduction</th>
<th>Departmental Measure Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of visits to U.S. hospital EDs for injury from oral anticoagulants</td>
<td>Number of visits to U.S. hospital EDs for injury from oral anticoagulants</td>
<td>Number of patients receiving dispensed oral anticoagulants in U.S. retail outpatient settings</td>
<td>10%</td>
<td>HHS Healthy People 2020 Medical Product Safety Objective 5.1</td>
</tr>
<tr>
<td>Rate of visits to U.S. hospital EDs for injury from insulin</td>
<td>Number of visits to U.S. hospital EDs for injury from insulin</td>
<td>Number of patients receiving dispensed insulin in U.S. retail outpatient settings</td>
<td>10%</td>
<td>HHS Healthy People 2020 Medical Product Safety Objective 5.2</td>
</tr>
<tr>
<td>Rate of visits to U.S. hospital EDs for injury associated with therapeutic use of opioid analgesics</td>
<td>Number of visits to U.S. hospital EDs for injury associated with therapeutic use of opioid analgesics</td>
<td>Number of patients receiving dispensed opioid analgesics in U.S. retail outpatient settings</td>
<td>10%</td>
<td>HHS Healthy People 2020 Medical Product Safety Objective 2.3</td>
</tr>
</tbody>
</table>
Data Sources ODPHP Measures

• **Numerator**: NEISS-CADES (CDC): Data sampling from inpatient and ED medical record review.
  

• **Denominator**: Total Patient Tracker®, IMS Health™ data – obtained through FDA
  
  – Estimates total number of unique patients across all drugs and therapeutic classes in the retail outpatient setting over time. (Data from Vector One® database- prescription activity from a sample received from payers, switches, and other software systems)
QPP/MIPS/MACRA Connections

Many services require documentation of current medications and/or completion of medication reconciliation:

• Annual Wellness Visit
• Chronic Care Management
• Initial Preventive Physical Exam
• Transitional Care Management
Medication management and medication reconciliation are required for new quality measures and MACRA Improvement Activities:

- NQF #0419 Documentation of Current Medications in the Medical Record
- NQF #0097 Medication Reconciliation Post-Discharge
- NQF #0022 Use of High-risk Medications in the Elderly
- ACI_HIE_3 Clinical Information Reconciliation
- IA_PM_16 Implementation of Medication Management Practice Improvements
- **Chronic Stable Coronary Artery Disease (CAD) Ischemic Vascular Disease:** Antiplatelet Therapy
- VTE prophylaxis with anticoagulant
- Stroke/Afib - anticoagulant prophylaxis
- Use of high-risk meds in the elderly (Beers list)
- Opioids – therapy follow up eval, pain agreement, screen for abuse/misuse
Warfarin Adverse Events in Nursing Home Residents

- July 12th, 2015 article
- 2011-2014 165 people in nursing homes hospitalized/died due to warfarin errors

Long-Term Care Guidance?

[Image of CMS logo]

**CENTER FOR CLINICAL STANDARDS AND QUALITY/SURVEY & CERTIFICATION GROUP**

**DATE:** July 17, 2015  
**TO:** State Survey Agency Directors  
**FROM:** Director, Survey and Certification Group  
**SUBJECT:** Medication-Related Adverse Events in Nursing Homes

**Memorandum Summary**

- **Medication-Related Adverse Events** – Adverse events related to high risk medications can have devastating effects to nursing home residents. Proper management of high risk medications represents a serious challenge for nursing homes, and merits close attention by top management and staff throughout the facility. We are very concerned about the prevalence of adverse events involving such medications.

- **Focused Survey on Medication Safety Systems and Adverse Drug Event Trigger Tool** – The Centers for Medicare & Medicaid Services (CMS) has begun pilot testing a

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**Trigger Tool**

- Addresses prevention of ADEs and facility procedures and documentation for many high-risk drugs/conditions
- Change in mental status
- Psychotropics
- Hypoglycemia
- Ketoacidosis – insulin
- Thrombosis – anticoagulants
- Constipation – opioids
- Electrolytes – diuretics
- Etc.

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CMS Survey and Certification Letter: Medication-Related Adverse Events in Nursing Homes – Trigger Tool

<table>
<thead>
<tr>
<th>Adverse Drug Event</th>
<th>Risk Factors</th>
<th>Triggers: Signs and Symptoms (S/S)</th>
<th>Triggers: Clinical Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticoagulant/antithrombotic Bleeding and/or Thromboembolism</td>
<td>Anticoagulant, antiplatelet, or thrombolytic medication use</td>
<td>Elevated PT/INR, PTT</td>
<td>Stat order for PT/INR, PTT, platelet count, or CBC</td>
</tr>
<tr>
<td></td>
<td>Concurrent use of more than one antithrombotic medication (e.g., use of aspirin while on anticoagulants)</td>
<td>Low platelet count</td>
<td>Abrupt stop order for medication</td>
</tr>
<tr>
<td></td>
<td>History of stroke or GI bleed</td>
<td>Bruising, Nosebleeds, Bleeding gums</td>
<td>Administration of Vitamin K</td>
</tr>
<tr>
<td></td>
<td>NSAID medication use while on anticoagulants</td>
<td>Prolonged bleeding from wound, IV, or surgical sites</td>
<td>Transfer to hospital</td>
</tr>
<tr>
<td></td>
<td>Antibiotics use while on anticoagulants</td>
<td>Blood in urine, feces, or vomit</td>
<td>Stat chest X-ray</td>
</tr>
<tr>
<td></td>
<td>Amiodarone use while on anticoagulants</td>
<td>Coughing up blood</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dietary changes affecting vitamin K Intake (e.g., dark leafy greens)</td>
<td>Abrupt onset hypotension</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prolonged immobility</td>
<td>Pain or tenderness and swelling of upper or lower extremity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recent major surgery</td>
<td>Increased warmth, edema and/or erythema of affected extremity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prior history of VTE</td>
<td>Unexplained shortness of breath</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consistently sub-therapeutic PT/INR</td>
<td>Chest pain, Coughing, Hemoptysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feelings of anxiety or dread</td>
<td></td>
</tr>
<tr>
<td>Diabetic Agents Hypoglycemia</td>
<td>Insulin use</td>
<td>Hypoglycemia (e.g., &lt;50 mg/dL)</td>
<td>Stat Glucagon or IV dextrose</td>
</tr>
<tr>
<td></td>
<td>Sliding scale insulin use</td>
<td>Falls • Headache</td>
<td>Administration of orange juice or other high sugar food or fluids in response to blood sugar reading or symptoms</td>
</tr>
<tr>
<td></td>
<td>Oral hypoglycemic (sulfonylureas) and/or injectable hypoglycemic medication use</td>
<td>Shakiness, nervousness, anxiety</td>
<td>Transfer to hospital</td>
</tr>
<tr>
<td></td>
<td>Decrease in oral intake while taking antidiabetic medication</td>
<td>Sweating, chills, clamminess</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Irritability, Impatience</td>
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<tr>
<td></td>
<td></td>
<td>Change in mental status</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Emotional changes (including new anger, sadness, stubbornness)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lightheadedness, dizziness • Hunger, Nausea</td>
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<tr>
<td></td>
<td></td>
<td>Complaints of blurred or impaired vision</td>
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<td></td>
<td></td>
<td>Tingling or numbness in lips and/or tongue</td>
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<tr>
<td></td>
<td></td>
<td>Weakness, fatigue, or somnolence</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incoordination • Seizures • Unconsciousness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rapid heartbeat</td>
<td></td>
</tr>
<tr>
<td>Opioid over-sedation, respiratory depression</td>
<td>PRN or routine use of opioid medication</td>
<td>Falls • Hallucinations • Delusions</td>
<td>Administration of Narcan</td>
</tr>
<tr>
<td></td>
<td>Opioid naïve (someone who has not been taking opioids)</td>
<td>Disorientation or confusion</td>
<td>Transfer to hospital</td>
</tr>
<tr>
<td></td>
<td>Opioids used in combination with sedatives or other opioids</td>
<td>Light-headedness, dizziness, or vertigo</td>
<td>Call to physician regarding new onset of relevant signs or symptoms</td>
</tr>
<tr>
<td></td>
<td>History of opioid abuse • Opioid tolerance</td>
<td>Lethargy or somnolence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe pain • Low fluid intake/dehydration</td>
<td>Agitation• Anxiety • Unresponsiveness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low body weight</td>
<td>Decreased</td>
<td></td>
</tr>
<tr>
<td></td>
<td>History of head injury, traumatic brain injury, or seizures</td>
<td>BP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pulse</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pulse oximetry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respiration</td>
<td></td>
</tr>
</tbody>
</table>
## ADE Trigger Tool

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Surveyor Probes - These questions are designed to assist in the investigation. A negative answer does not necessarily indicate noncompliance.</th>
</tr>
</thead>
</table>
| Anticoagulant/Antithrombotic (bleeding, thromboembolism) | • Does the medical record include documentation of clinical indication?  
• Is there evidence the facility routinely monitors lab results of all residents on anticoagulant/antiplatelet therapy?  
• Is there a system to ensure lab results, including PT/INRs, are appropriately communicated to the physician including when panic values are obtained?  
• Is there evidence that the facility educates caregivers on risk factors and symptoms and signs that may be indicative of excessive bleeding due to antithrombotic medications?  
• Are residents/families educated regarding the risks associated with antithrombotic medication use and the signs and symptoms of excessive bleeding?  
• Is there evidence of system to alert prescribers and nursing staff when anticoagulants are combined with other drugs which increase the risk of bleeding?  
• Does the resident’s dietary plan include recognition of foods that interact with antithrombotic medications (e.g., is there a plan to ensure consistent intake of foods and beverages rich in Vitamin K for residents on warfarin)? |
### CMS Survey and Certification Letter

**Drug Class** | **Surveyor Probes** - These questions are designed to assist in the investigation. A negative answer does not necessarily indicate noncompliance.
--- | ---

**Diabetic Agents - hypoglycemia** |  
• Does the care plan reflect interdisciplinary monitoring for:
  • Signs/symptoms of hypoglycemic episodes?
  • Changes in oral intake?
  • Is there evidence blood glucose testing and insulin administration are coordinated with meals?
  • Is there evidence the facility has addressed any pharmacy recommendations?
  • If sliding scale insulin is used, does the medical record contain documentation of risk vs. benefits? Clinical rationale?
  • If an EHR is used, are finger stick glucose testing results incorporated into it?
  • Is there evidence that finger stick glucose results are routinely reviewed for effectiveness as part of the care plan?
  • Is there evidence that the facility routinely educates caregivers on risk factors and symptoms/signs of hypoglycemia?
  • Is the resident and family educated regarding the signs and symptoms of hypoglycemia and regarding the resident’s diabetes management plan
  • Does the facility have low blood sugar protocols in place?
  • **Is there a system to ensure lab results, including finger stick blood glucose results, are appropriately communicated to the physician and the dietician including when panic values are obtained?**
  • Is there evidence that glucose monitoring equipment is maintained and that staff technique meets standards of practice?
### CMS Survey and Certification Letter

**Drug Class**

<table>
<thead>
<tr>
<th>Surveyor Probes - These questions are designed to assist in the investigation. A negative answer does not necessarily indicate noncompliance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid – over-sedation, respiratory depression</td>
</tr>
<tr>
<td>• Is there an assessment and determination of pain etiology?</td>
</tr>
<tr>
<td>• Does the resident’s pain management regime address the underlying etiology?</td>
</tr>
<tr>
<td>• <strong>For a change in mental status, is there evidence that the physician conducted an evaluation of the underlying cause, including medications?</strong></td>
</tr>
<tr>
<td>• Is there evidence of a system for ensuring that residents are routinely assessed for pain, including monitoring for effectiveness of pain relief and side effects of medication (e.g., over-sedation)?</td>
</tr>
<tr>
<td>• If receiving PRN and routinely, is there consideration for the timing of administration of the PRN?</td>
</tr>
<tr>
<td>• <strong>Can staff describe signs/symptoms of over-sedation?</strong></td>
</tr>
<tr>
<td>• Is there evidence of a system for ensuring “hand off” communication includes the resident’s pain status and time of last dose?</td>
</tr>
<tr>
<td>• Do the resident, family, and direct caregivers know signs and symptoms of over-sedation and steps to take if noted (e.g., alert the nurse)?</td>
</tr>
<tr>
<td>• Is there evidence the facility implements non-pharmacological pain management approaches?</td>
</tr>
<tr>
<td>• <strong>Is there a system to ensure extended-release formulations are delivered correctly (e.g. meds not crushed?)</strong></td>
</tr>
</tbody>
</table>
Other Quality Initiatives
Comprehensive Care for Joint Replacement Model

- A proposed model to support better and more efficient care for Medicare beneficiaries undergoing hip and knee replacements
  - Flat rate paid for 90 day post discharge “episode of care” covering all Medicare Part A and B charges

- [https://innovation.cms.gov/initiatives/CJR](https://innovation.cms.gov/initiatives/CJR)

- ADE prevention opportunities: anticoagulation management/education, medication distribution, care coordination
Skilled Nursing Facility Value-Based Purchasing Program

• Part of the Protecting Access to Medicare Act of 2014
• Beginning 10/1/18, 2% of Medicare reimbursement for skilled nursing facilities to be withheld
• Nursing homes with low readmission rates (based on Calendar Year 2017 data) will receive incentive payments—maybe more than 2%
• Nursing homes with the highest all cause readmission rates will not receive incentive payments
• ADE prevention opportunities: medication reconciliation, patient education, discharge planning, care coordination, etc.
IMPACT Act (Improving Medicare Post-Acute Care Transformation)

- Bipartisan bill passed on September 18, 2014 and signed into law by President Obama on October 6, 2014
- Requires Standardized Patient Assessment Data that will enable data element uniformity
- Quality care and improved outcomes
- Comparison of quality and data across post-acute care (PAC) settings
- Improved discharge planning
- Exchangeability of data
- Coordinated care
IMPACT Act

- Measure Domains to be standardized:
  - Skin integrity and changes in skin integrity
  - Functional status, cognitive function, and changes in function and cognitive function
  - Medication reconciliation (10/2018 begin reporting)
  - Incidence of major falls
  - Transfer of health information and care preferences when an individual transitions
  - Resource use measures, including total estimated Medicare spending per beneficiary
  - Discharge to community
  - All-condition risk-adjusted potentially preventable hospital readmissions rates
  - ADE prevention opportunities: medication reconciliation, falls, cognitive function, transitions, discharge to community, readmissions
Anticoagulation Tools

Oral Anticoagulant Medication Guide
Coumadin®, Pradaxa®, Xarelto®, Eliquis®, Savaysa®

Warfarin SBAR Form

SITUATION:
- I am calling about [event or patient condition].
- The patient’s INR is ______。
- The patient’s target INR range is [2.0 - 3.0] or [2.5 - 3.5] or [3.0 - 3.5] or [3.5 - 4.0] or ______ and the above reported INR is considered [SUB-therapeutic, INR therapeutic, etc.].
- The patient was NOT experiencing bleeding.
- The patient was NOT experiencing complications.
- The patient HAS/HAS NOT taken...

BACKGROUND:
- The patient is allergic to the following medications:
- The patient HAS/HAS NOT had Hepatitis B, Hepatitis C, or HIV.
- The patient HAS/DID NOT HAVE a mechanical valve (MVR/Aortic).
- Table 3 (Quick Reference Guide) and Table 5 (Potential Drug Interactions [see Appendix]) with warfarin have been reviewed.

ASSESSMENT:
- The INR may be the result of a missed or held warfarin dose.
- The INR may be the result of a potential drug interaction with warfarin.
- The INR may be the result of a concurrent illness such as diabetes, fever, kidney disorder, nutritional status, and/or OHT evaluation.
- Other...

RECOMMENDATIONS:
- It is determined that a possible drug interaction may exist between warfarin sodium (Coumadin®).
- The new medication may ELIMINATE the patient’s INR with the next INR to be drawn.
- The new medication may DECREASE the patient’s INR with the next INR to be drawn.
- The new medication is CONTRAINDICATED with warfarin and should NOT be dispensed.
- The INR requires administration of ______ mg of [drug name] (or equivalent) with the next INR to be drawn.
- The INR requires administration of [drug name] or [Low Molecular Weight Heparin (LMWH)] [bridges] with the next INR to be drawn.
- No change to the warfarin regimen. The next INR is to be drawn:
- Hold the warfarin dose as follows (optionally draw) The next INR to be drawn:
- Change the warfarin regimen to ______ with the next INR to be drawn:
- The patient requires hospitalization to an Emergency Room for further evaluation and/or intervention.

Other...

Evaluated by Nursing Supervisor: Date:____/____/____
Evaluated by Pharmacist: Date:____/____/____
Evaluated by Physician: Date:____/____/____

This material was prepared by Quality Insights, Inc., based on quality improvement materials by Quality Improvement Organizations for the Medicare Prescription Drug Program. New users and stakeholders are urged to contact their local QIO to discuss and request further assistance.
# Anticoagulation Tools

## Anticoagulant Table

<table>
<thead>
<tr>
<th>Indications</th>
<th>Coumadin® (Warfarin)</th>
<th>Pradaxa® (Dabigatran etexilate)</th>
<th>Xarelto® (Rivaroxaban)</th>
<th>Eliptis® (Apixaban)</th>
<th>Savays® (Edoxaban)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Prophylaxis and treatment of venous thromboembolic and its extension, pulmonary embolism (PE)</td>
<td>- To reduce the risk of stroke and systemic embolism in patients with non-valvular atrial fibrillation (NVAF)</td>
<td>- To reduce the risk of stroke and systemic embolism in patients with NVAF</td>
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</tr>
<tr>
<td>- Prophylaxis and treatment of thromboembolic complications associated with atrial fibrillation (AF) and/or cardiac valve replacement</td>
<td>- For the treatment of deep vein thrombosis (DVT) and PE in patients who have been treated with heparin</td>
<td>- For the treatment of DVT and PE in patients who have been treated with heparin</td>
<td>- For the treatment of DVT and PE in patients who have been treated with heparin</td>
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</tr>
<tr>
<td>- Reduction in the risk of death, recurrent thrombotic infarction (RI), and thromboembolic events such as stroke or systemic embolization after MI</td>
<td>- To reduce the risk of recurrent DVT and PE in patients who have been treated with heparin</td>
<td>- To reduce the risk of recurrent DVT and PE in patients who have been treated with heparin</td>
<td>- To reduce the risk of recurrent DVT and PE in patients who have been treated with heparin</td>
<td>- To reduce the risk of recurrent DVT and PE in patients who have been treated with heparin</td>
<td>- To reduce the risk of recurrent DVT and PE in patients who have been treated with heparin</td>
</tr>
<tr>
<td>- For a patient with a history of DVT or PE</td>
<td>For the treatment of DVT and PE following 5-10 days of initial therapy with a parenteral anticoagulant</td>
<td>For the treatment of DVT and PE following 5-10 days of initial therapy with a parenteral anticoagulant</td>
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<td>For the treatment of DVT and PE following 5-10 days of initial therapy with a parenteral anticoagulant</td>
</tr>
</tbody>
</table>

## Dosage and Administration

- **Coumadin® (Warfarin):**
  - 5 different tablet strengths
  - Do not use more than 2 different doses at once to reduce error
  - For reduction in risk of stroke and systemic embolism in NVAF:
    - CHD: 4mg/min: 1-2mg daily
    - CHD: 1-2mg/min: 1-2mg daily
  - With concomitant use with warfarin or heparin: consider reducing to 1/2mg twice daily
  - For treatment of DVT and PE and reduction in risk of recurrence:
    - CHD: 1-2mg/min: 1-2mg daily
  - Patients with CHD >5mg/min: 1-2mg/min
  - For prophylaxis of DVT and PE following hip replacement surgery:
    - For patients with CHD >5mg/min: 110-130 mg orally daily, then 100 mg orally daily
    - CHD >5mg/min: 100 mg orally daily
  - Temporarily discontinue PRADAXA below average or standard procedures when possible, then restart promptly

- **Pradaxa® (Dabigatran etexilate):**
  - For reduction in risk of stroke in NVAF:
    - Dose: 150 mg orally daily
  - For prophylaxis of DVT and PE following hip replacement surgery:
    - For patients with CHD >5mg/min: 100 mg orally daily, then 75 mg orally daily
  - For prophylaxis of DVT following hip replacement surgery:
    - For patients with CHD >5mg/min: 100 mg orally daily, then 75 mg orally daily
  - For prophylaxis of DVT following hip replacement surgery:
    - For patients with CHD >5mg/min: 100 mg orally daily, then 75 mg orally daily
  - Vitamin K antagonists: 10 mg orally daily
  - Vitamin K antagonists: 5 mg orally daily
  - Vitamin K antagonists: 2.5 mg orally daily
  - For the treatment of DVT and PE:
    - Recommended dose: 100 mg orally daily
  - Reduction in the risk of recurrent DVT and PE following initial therapy:
    - 2.5 mg orally daily after at least 6 months of treatment for DVT or PE

## Converting from Warfarin

- **Coumadin® (Warfarin):**
  - Discontinue warfarin and start Pradaxa when INR < 2.0

- **Pradaxa® (Dabigatran etexilate):**
  - Discontinue warfarin and start Pradaxa as soon as the INR is < 2.0

- **Other Anticoagulants:**
  - Discontinue warfarin and start Pradaxa when INR is < 2.5
Taking Charge of My Warfarin

I will talk to the doctor who manages my warfarin (also called Coumadin®, Jantoven®) if I:

- **START** any new prescription drug(s) or over-the-counter product(s), including vitamins and supplements
- **STOP** any prescription drug(s) or over-the-counter product(s)
- **CHANGE** the dose of any prescription drug(s) or over-the-counter product(s) that I already take or have a major change in the foods I eat (high vitamin K-content foods)
- **EXPERIENCE** bothersome bleeding, such as:
  - Gums that won’t stop bleeding
  - Severe bruises or bruises that appear for no reason

When I call my doctor’s office I will say:

1. **My name is** (state your name).
2. **The doctor who prescribed my warfarin is** (state your doctor’s name).
3. **I was told to call when any of my medications change or if I have noticed bleeding.**
4. **I am calling to tell you** (describe bleeding or change to medications).
5. **Does the doctor have any new instructions for me?** (Write down and follow any new instructions)

I will seek immediate medical attention from my doctor, the emergency room, or 911 if I notice:

Any bleeding I can see, including:
- Vomit that shows blood or looks like coffee grounds
- Stool or bowel movements that show blood or are very dark and tar-like
- Urine that is pink, red, or unusually dark
- Phlegm (mucus) that shows blood

**Major changes** in how I feel, including those resulting from:
- Severe abdominal pain
- Headaches that are severe or won’t go away
- Confusion or decreased alertness
- Dizziness or lightheadedness
- A serious fall or hitting my head

The doctor who manages my warfarin is:

__________

My doctor’s phone number is:

(____) ____-___________

This material was created by IPRO and re-created for use by Quality Insights, the Medicare Quality Innovation Network-Quality Improvement Organization for West Virginia, Pennsylvania, Delaware, New Jersey and Louisiana under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. Publication number QI-CIC-122316A.
# Diabetes Tools

## Diabetes Medication Reference - Insulins

<table>
<thead>
<tr>
<th>Insulin Type</th>
<th>Onset</th>
<th>Peak</th>
<th>Duration</th>
<th>Half Life</th>
<th>Dosage Adjustments</th>
<th>Appearance</th>
<th>Why it’s insulin</th>
<th>When to administer</th>
<th>Additional monitoring to detect hypoglycemia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insulin regular U-100</strong> (Humulin®, NovoRapid®)</td>
<td>15-30 minutes</td>
<td>1-2.5 hours</td>
<td>2.5-6 minutes</td>
<td>1-2 hours</td>
<td>Yes, with NPH only and from the vial only</td>
<td>Clear, colorless</td>
<td>U-100: Yes. From the vial only, add reconstituting (clear) insulin to the syringe first, and use immediately.</td>
<td>15 minutes before a meal</td>
<td>Potassium (hypokalemia risk)**</td>
</tr>
<tr>
<td><strong>Insulin aspart U-100</strong> (NovoLog®)</td>
<td>2-3 minutes</td>
<td>1-2 hours</td>
<td>3-4 hours</td>
<td>30 minutes</td>
<td>No adjustments needed</td>
<td>Yes, with NPH and from the vial only, add rapid-acting (clear) insulin to the syringe first and use immediately</td>
<td>Within 5-10 minutes before a meal</td>
<td>Bectinolate, potassium*</td>
<td></td>
</tr>
<tr>
<td><strong>Insulin glulisine U-100 (Ordex®)</strong></td>
<td>2-4 minutes</td>
<td>1-2 hours</td>
<td>3-4 hours</td>
<td>40 minutes</td>
<td>No adjustments needed</td>
<td>Yes, with NPH and from the vial only, add rapid-acting (clear) insulin to the syringe first and use immediately</td>
<td>15 minutes before or within 30 minutes of starting a meal</td>
<td>Bectinolate, potassium*</td>
<td></td>
</tr>
<tr>
<td><strong>Insulin human injection powder (Afrezza®)</strong></td>
<td>Normal, 10-15 minutes*</td>
<td>Peak effect 180 minutes</td>
<td>30-180 minutes</td>
<td>N/A</td>
<td>Concomitant use of chronic lung disease</td>
<td>N/A</td>
<td>Single injection per cartridge at beginning of meal</td>
<td>Spirometry before initiation, after 6 months and annually. Use black box warning contraindicated in patients with chronic lung disease, potassium*</td>
<td></td>
</tr>
</tbody>
</table>

**Insulin U-500** (Humulin®, NovoMix®): Should only be used with the U-500 syringe. As for the U-100 syringe, is required. Concomitant use of chronic lung disease, potassium**

**Insulin U-200** (Humulin®, NovoMix®): Should only be used with the U-200 syringe. As for the U-100 syringe, is required. Concomitant use of chronic lung disease, potassium**

Storage of insulin products: Unopened vials and prefilled pens may be stored under refrigeration (36-46°F) until the expiration date or at room temperature (not for 18-28 days individual products vary). Refer to individual product information for storage temperature requirements and stability of opened vials and pens. Do not freeze insulin or use insulin after it has been frozen.6

---

**Abbreviations:**
- DM – diabetes mellitus
- DKA – diabetic ketoacidosis
- HHS – hyperosmolar hyperglycemic state

**Quality Improvement Organizations:**
Sharing Knowledge, Improving Health Care.
**Quality Insights:**
Centers for Medicare & Medicaid Services
Diabetes Tools

Hypoglycemia

Hypoglycemia or low blood sugar is when your blood sugar is less than 70 mg/dl.

If you have these symptoms:
- Shaking
- Anxious
- Sweating
- Dizzy
- Hunger
- Fast heartbeat
- Blurred vision
- Weakness/Fatigue
- Headache
- Irritable

Check your blood sugar. If it is less than 70 mg/dl:
1. Eat or drink a simple sugar such as honey, sugar, fruit juice or 1/2 cup of regular soda.
2. Wait 15 minutes and then check your blood sugar again.
3. If your blood sugar is still less than 70 mg/dl have another serving of simple sugar and then eat a snack of complex carbohydrate such as cheese and crackers, or half of a sandwich.

If your family or friends find you “sleeping” and cannot wake you, make sure they know to call 9-1-1.

How to Prevent Hypoglycemia
- Eat at regular times every day.
- Check your blood sugar every day.
- Do not skip meals.
- Take your medicine as directed.

If you continue to have low blood sugar, see your doctor as soon as possible.

Your Blood Glucose Numbers

Your blood glucose number:

\[
\text{Number} \quad \text{Percent}
\]

\[
\begin{array}{|c|c|}
\hline
\text{eAG mg/dl} & \text{A1C}\% \\
\hline
97 & 5 \\
111 & 5.5 \\
126 & 6 \\
140 & 6.5 \\
154 & 7 \\
169 & 7.5 \\
183 & 8 \\
197 & 8.5 \\
212 & 9 \\
226 & 9.5 \\
240 & 10 \\
255 & 10.5 \\
283 & 11.5 \\
298 & 12 \\
\hline
\end{array}
\]

This is your blood sugar right now.

Good is less than 140 mg/dl.

Test regularly throughout the day.

Your # is ____________.

Your goal for next visit is ____________.

Your A1C:

\[
\begin{array}{|c|}
\hline
\text{Number} \\
\hline
100 & \% \\
120 & \% \\
140 & \% \\
\hline
\end{array}
\]

Your doctor will test your A1C at least every six months.

Your % is ____________.

Your goal for next visit is ____________.

Diabetes Control

Everyone wins! Diabetes Control

Eating well, taking medication, and exercising regularly can help you control your diabetes.

Quality Improvement Organizations

Sharing Knowledge, Improving Health Care.

Centers for Medicare & Medicaid Services

Quality Insights
Opioid Tools

Quality Insights Tools

- **Opioid Knowledge E-Learn** – Quality Insights login required, 1.5 nursing CEUs (scroll down to find the program)
- **Medication Teach Back Cards**
- Quality Insights developed an opioid tool that can be found in Appendix C:
  - Opioid Overview - Morphine Milligram Equivalents

Directory of Additional Resources

Resources

- **Potential Adverse Drug Events for Opioid Agents** - drug interaction resource from TMF Quality Innovation Network
- **Pennsylvania Patient Safety Authority Opioid Knowledge Self-Assessment**
- **Cleveland Clinic – Six Myths About Pain Killers**
- **American Academy of Pain Medicine - 8 Opioid Safety Principles for Patients and Caregivers** - flyer for patients and caregivers
- **American Academy of Pain Medicine Controlled Substances Agreement** - pain contract template
- **American Academy of Pain Medicine Controlled Substances Consent for Chronic Opioid Therapy** - pain medication consent template
- **Current Opioid Misuse Measure** - brief patient self-assessment to monitor chronic pain patients on opioid therapy
- **Opioid Risk Tool** - brief screening tool to assess risk for opioid abuse

The Facts:

- Patients on up to 50 MME per day have 2-5 times the overdose risk
- Patients on 100 MME or more per day have up to 9 times the overdose risk
- 31-61% of patients with fatal overdose were using opioids and benzodiazepines together

Common 50 MME per day regimens:

- Hydrocodone/acetaminophen
  - Vicodin® 5/300mg: 2 tablets every 4 hrs
  - Norco® 10/325mg: 1 tablet every 4 hrs
- OxyContin® (oxycodone extended release) 15mg: 1 tablet every 12 hrs
- Tylenol® with Codeine #3 (acetaminophen w/ codeine 300/30mg): 2 tablets every 4 hrs
- Tramadol immediate release 50mg: 2 tablets every 6 hrs

Opioid Medications (cont.)
Opioid Misuse and Diversion Change Package

Upcoming Events

• Anticoagulant Safety – News You Can Use
  – Dr. Vincent Carr, Kisha Gant, PharmD
  – Thursday Nov 16th, 2017 2pm ET
  – [https://wvmievents.webex.com/wvmievents/onstage/g.php?MTID=ee71b2cbbe7ca985367423b31b1789f9a](https://wvmievents.webex.com/wvmievents/onstage/g.php?MTID=ee71b2cbbe7ca985367423b31b1789f9a)

• Care Transitions Program for Dialysis Patients
  – Thursday Jan 25th, 2018
  – Details to come soon....

• Anticoagulant – Antibiotic Drug Interactions (in development)
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QUESTIONS?

Thank You!

This material was prepared by Quality Insights, the Medicare Quality Innovation Network-Quality Improvement Organization for West Virginia, Pennsylvania, Delaware, New Jersey and Louisiana under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. Publication number QI-NJ-C36-110117