Current Evidence on Use of Anticoagulation Therapy in Hospice Care

Jon P. Furuno, Ph.D.
Associate Professor
Oregon State University
Oregon Health & Science University
College of Pharmacy
Background

• Polypharmacy is prevalent end-of-life

• Increased interest in reducing unnecessary, suboptimal, or potentially inappropriate medications

• Re-evaluation of risk/benefit ratio when goals of care have changed

• Statin discontinuation study (RCT)
  – No difference in 60-day mortality (underpowered)
  – Total quality of life higher in discontinuation group
  – Few CVD events in both arms
  – Moderate cost savings in discontinuation group

The Prescribing Model

Overview

• Background on anticoagulation/antiplatelet therapy
• Prevalence
• Safety and benefit
• Antithrombotic therapy on discharge to hospice
• Research opportunities
  – Continuation vs. discontinuation
  – Patient/caregiver perspectives
  – Safety and benefit of discontinuation
Anticoagulation Therapy

- Used for primary and secondary prevention of blood clots and clot-related sequelae

- Primary Indications
  - Atrial fibrillation
  - Artificial heart valve
  - Deep vein thrombosis (DVT)
  - Pulmonary embolism (PE)
  - Genetic clotting disorders
  - Stroke
  - Myocardial infarction
  - Cancer (4x increased risk of VTE)

Anticoagulation agents

- Vitamin K agonists
  - Warfarin

- Heparin

- Low Molecular Weight Heparin (LMWH)
  - Enoxaparin (Lovenox)

- Direct Factor Xa Inhibitors
  - Rivaroxiban (Xarelto)
  - Apixaban (Eliquis)

- Direct Thrombin Inhibitors
  - Dabigatran (Pradaxa)
Antiplatelet Therapy

• Prevent platelet aggregation and subsequent clot formation

• Aspirin

• Adenosine diphosphate (ADP) receptor inhibitors
  – Clopidogrel (Plavix)
Antithrombotic Therapy in Hospice

• Hospice patients are at high risk of VTE/PE
  – Older age
  – Prevalence of advanced cancer or metastatic disease
  – Decreased mobility

• Prevalence in hospice pts with advanced cancer
  – 10% have symptomatic thromboembolism
  – >50% have asymptomatic thromboembolism

Palliative indications for antithrombotic therapy in hospice

- Pleuritic chest pain
- Swelling of lower extremities
- Dyspnea (shortness of breath)
- Qualitative research suggests clinicians split on effectiveness and appropriateness

More on Physician Perceptions

- 45 physicians
  - Oncology, palliative medicine, internal medicine

- May be palliative for dyspnea in PE patients
  - Potentially prevent acute care admission

- VTE/PE may be a “good way to go”
- Lack of “immediate benefit” from injections
- Burdensome injections and monitoring
- “Difficult to stop once you start it”

- Context important
  - Patient wishes
  - Prognosis

Antithrombotic Therapy in Hospice

• Guidelines support lifelong prophylaxis among patients with current thromboembolism or history of thromboembolism plus advanced cancer*

*The National Institute for Health and Care Excellence (UK) guidelines do not support futile use in dying patients (still indicated if “reversible pathology”)

Antithrombotic Therapy in Hospice

• American College of Chest Physicians: Evidence-based Management of Anticoagulant Therapy (2012)

• No discussion of discontinuation beyond whether to taper discontinuation or discontinue abruptly

• “Most anticoagulation questions have not been adequately studied.”

Holbrook et al., Chest. 2012
How prevalent is anticoagulation therapy in hospice care?
Most common medications in hospice care*

<table>
<thead>
<tr>
<th>Drug</th>
<th>%</th>
<th>Drug</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol</td>
<td>29.2</td>
<td>Oxycodone</td>
<td>14.5</td>
</tr>
<tr>
<td>Docusate</td>
<td>28.7</td>
<td>Fentanyl</td>
<td>13.8</td>
</tr>
<tr>
<td>Bisacodyl</td>
<td>25.9</td>
<td>Metoprolol</td>
<td>13.2</td>
</tr>
<tr>
<td>Scopalamine</td>
<td>24.8</td>
<td>Hydromorphone</td>
<td>10.6</td>
</tr>
<tr>
<td>Senna</td>
<td>23.7</td>
<td>Multivitamins</td>
<td>9.5</td>
</tr>
<tr>
<td>Furosemide</td>
<td>18.3</td>
<td>Potassium</td>
<td>9.0</td>
</tr>
<tr>
<td>Aspirin</td>
<td>15.6</td>
<td>Hydrocodone</td>
<td>8.9</td>
</tr>
<tr>
<td>Ipratropium</td>
<td>15.4</td>
<td>Dexamethasone</td>
<td>8.8</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>14.6</td>
<td>Lactulose</td>
<td>8.6</td>
</tr>
<tr>
<td>Magnesium</td>
<td>14.6</td>
<td>Ondansetron</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Other notables:
- Lisinopril: 7.3%
- Insulin: 7.2%
- Levofloxacin: 4.8%
- Simvastatin: 4.7%
- Clopidogrel: 3.8%

*acetaminophen, lorazepam, morphine, atropine, haloperidol, and prochlorperazine included in emergency kits provided on admission
Prevalence: lung cancer patients receiving hospice care

• 16,896 hospice patients with lung cancer in 2006

• Data collected from Hospice Pharmacia
  – >800 hospice programs in the U.S.

• 1157 (9%) received anticoagulation therapy
  – 77.5% Warfarin
  – 24.5% LMWH
  – 4.3% Both warfarin and LMWH

Antithrombotic Therapy in Hospice

• 134 pts in 18 palliative care units in Austria
  – 47% were receiving LMWH (primary/secondary prevention)
  – 18% of patients discontinued LMWH on hospice admission
  – No difference in use of LMWH by cancer or performance status
  – 27% had contraindications for thromboprophylaxis
    • Low platelet count, low creatinine, low Karnofsky Score

Gartner et al. Support Care Cancer. 2012, Johnson et al.
Antithrombotic Therapy in Hospice

- 1164 hospice patients in the UK (7 hospices)
  - 12% receiving therapeutic anticoagulation on hospice admission
  - 5.8% receiving thromboprophylaxis on hospice admission
  - Another 3% commenced thromboprophylaxis post hospice admission

Johnson et al., J Pain Symptom Manage. 2014
Safety and Effectiveness of Antithrombotic Therapy

• Benefit
  – Prevention of thrombotic events

• Safety/Risks
  – Bleeding (3-15% of patients in trials)
  – Major bleeding (e.g. intracranial hemorrhage)
  – Thrombocytopenia (~1%)


<table>
<thead>
<tr>
<th>Medication</th>
<th>Annual National Estimate of Hospitalizations (N= 99,628)</th>
<th>Proportion of Emergency Department Visits Resulting in Hospitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most commonly implicated medications†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warfarin</td>
<td>33,171</td>
<td>46.2</td>
</tr>
<tr>
<td>Insulins</td>
<td>13,854</td>
<td>40.6</td>
</tr>
<tr>
<td>Oral antiplatelet agents</td>
<td>13,263§</td>
<td>41.5</td>
</tr>
<tr>
<td>Oral hypoglycemic agents</td>
<td>10,656</td>
<td>51.8</td>
</tr>
<tr>
<td>Opioid analgesics</td>
<td>4,778</td>
<td>32.4</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>4,205</td>
<td>18.3</td>
</tr>
<tr>
<td>Digoxin</td>
<td>3,465</td>
<td>80.5</td>
</tr>
<tr>
<td>Antineoplastic agents</td>
<td>3,329‡</td>
<td>51.5</td>
</tr>
<tr>
<td>Antiadrenergic agents</td>
<td>2,899</td>
<td>35.7</td>
</tr>
<tr>
<td>Renin–angiotensin inhibitors</td>
<td>2,870</td>
<td>32.6</td>
</tr>
<tr>
<td>Sedative or hypnotic agents</td>
<td>2,469</td>
<td>35.2</td>
</tr>
<tr>
<td>Anticonvulsants</td>
<td>1,653</td>
<td>40.0</td>
</tr>
<tr>
<td>Diuretics</td>
<td>1,071‡</td>
<td>42.4</td>
</tr>
<tr>
<td>High-risk or potentially inappropriate medications§</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEDIS high-risk medications</td>
<td>1,207</td>
<td>20.7</td>
</tr>
<tr>
<td>Beers-criteria potentially inappropriate medications</td>
<td>6,607</td>
<td>42.0</td>
</tr>
<tr>
<td>Beers-criteria potentially inappropriate medications, excluding digoxin</td>
<td>3,170</td>
<td>27.6</td>
</tr>
</tbody>
</table>

*Data from the National Healthcare Disparities Project, funded by the Agency for Healthcare Research and Quality, and the National Center for Health Statistics. The project was conducted under the direction of the Hartford Foundation. The data were obtained from the National Hospital Ambulatory Medical Care Survey (NHAMCS) and the National Hospital Discharge Survey (NHDS). The data were analyzed using Stata 12.1 software. The results were compared to those of previous studies using the same methodology.

†Most commonly implicated medications: Warfarin, Insulins, Oral antiplatelet agents, Oral hypoglycemic agents, Opioid analgesics, Antibiotics, Digoxin, Antineoplastic agents, Antiadrenergic agents, Renin–angiotensin inhibitors, Sedative or hypnotic agents, Anticonvulsants, Diuretics.

‡High-risk or potentially inappropriate medications: HEDIS high-risk medications, Beers-criteria potentially inappropriate medications, Beers-criteria potentially inappropriate medications, excluding digoxin.
Factors associated with risks and benefits of antithrombotic therapy

Drug
- Degree of Inhibition/Dose
- Bioavailability
- Therapeutic Window
- Metabolism and Clearance
- Antigenicity

Patient
- Weight/Body Composition
- Renal Function/Comorbidity
- Dietary or Lifestyle Factors
- Genetics
- Cost/Preferences/Adherence

System and Provider
- Selection of Agent
- Dosing and Monitoring
- Combinations and Switching
- Drug-Drug Interactions
- Invasive Procedures and Techniques
- Gastrointestinal Prophylaxis
- Patient Education
- Management of Complications

Table 2. Patient Factors Related to Risk of Thrombotic and Bleeding Events

<table>
<thead>
<tr>
<th>Factor</th>
<th>Thrombotic Risk</th>
<th>Bleeding Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>Female sex</td>
<td>...</td>
<td>++</td>
</tr>
<tr>
<td>Renal dysfunction (creatinine clearance or serum creatinine)</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Anemia</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>ST-deviation or ST-elevation status</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Anterior myocardial infarction location</td>
<td>++</td>
<td>...</td>
</tr>
<tr>
<td>Left bundle-branch block</td>
<td>+</td>
<td>...</td>
</tr>
<tr>
<td>Cardiac marker elevation</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Heart rate elevation</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Heart failure or Killip class</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>Peripheral vascular disease or stroke</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Low body weight</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Prior history of bleeding</td>
<td>...</td>
<td>++</td>
</tr>
</tbody>
</table>
Thromboembolic (THRIFT) Risk Factors Score

• Pan Birmingham Cancer Network palliative-modified THRIFT Score

• Identify patients at high risk of VTE and associated symptoms

Johnson et al., J Pain Symptom Manage. 2014
Specific Elements of the THRIFT and TER in the Pan Birmingham Cancer Network Palliative Care Modified Flowchart

**THRIFT risk**

High
- Acute illness + previous VTE
- Acute illness + hypercoagulable state
- Stroke
- Acute MI
- Acute respiratory failure
- Acute cardiac failure
- Lower limb paralysis

Medium
- Major medical illness
- Malignancy/myeloproliferative disorder
- Inflammatory disease
- Nephritic syndrome
- Hormone treatment
- Major trauma/burns
- Fracture/orthopedic surgery

Low
- Minor trauma or medical illness

**TER**—recent event with the expectation of recovery from that event such as:
- Recent major surgery
- Acute medical illness
- New diagnosis of spinal cord compression and expected to recover
- Pathological fracture and expected to recover mobility

THRIFT = Thromboembolic Risk Factors; TER = temporary elevated risk; VTE = venous thromboembolism; MI = myocardial infarction.
THRIFT Score Predictive Ability (Symptoms)

• Among patients not on therapeutic anticoagulation and no contraindications

• High/Moderate risk (vs. low risk)
  – 98.4% sensitivity
  – 5.8% specificity
  – 12.2% PPV
  – 96.4% NPV

Johnson et al., J Pain Symptom Manage. 2014
Atrial Fibrillation Patients

• Pooled analysis of 5 randomized trials comparing aspirin or warfarin versus placebo in atrial fibrillation patients

• Annual absolute risk reduction of stroke (warfarin vs. placebo) was 3.1%

• Relative risk reduction 68%

Safety and Benefit of Antithrombotic Therapy in Hospice Care
Summary of Current Knowledge

• Antithrombotic therapy is prevalent among hospice patients

• VTE/PE also prevalent

• No data on safety and effectiveness in hospice to inform continuation/discontinuation decisions
Antithrombotic Therapy on Discharge to Hospice Care
Background/Rationale

• Transition from acute care to hospice care

• What to do about medications that may be not palliative, but may still provide some benefit
  – Continue
  – Discontinue
  – De-escalate
Original Article

A Nationwide Analysis of Antibiotic Use in Hospice Care in the Final Week of Life
Jennifer S. Albrecht, PhD, Jesscia C. McGregor, PhD, Erik K. Fromme, MD, MCR, David T. Bearden, PharmD, and Jon P. Furuno, PhD
Department of Epidemiology and Public Health (USA), University of Maryland School of Medicine, Baltimore, Maryland, Department of Biostatistics, College of Public Health, Oregon Health & Science University, Portland, Oregon, USA.

Antimicrobial Use for Symptom Management in Patients Receiving Hospice and Palliative Care: A Systematic Review
Joseph H. Rosenberg, BS; Jennifer S. Albrecht, PhD; Erik K. Fromme, MD, MCR; Brie N. Noble, BS; Jesscia C. McGregor, PhD; Angela C. Comer, MPH; and Jon P. Furuno, PhD

Frequency of Outpatient Antibiotic Prescription on Discharge to Hospice Care
Jon P. Furuno, Brie N. Noble, Kristi N. Horner, Jesscia C. McGregor, Miriam R. Elman, David T. Bearden, Eric W. Walsh, Erik K. Fromme
Department of Pharmacy Practice, Oregon State University/Oregon Health & Science University, College of Pharmacy, Portland, Oregon, USA; Department of Family Medicine, Oregon Health & Science University, Portland, Oregon, USA; Palliative Care Service, Oregon Health & Science University, Portland, Oregon, USA; Division of Hematology and Medical Oncology, Knight Cancer Institute, Oregon Health & Science University, Portland, Oregon, USA.
Antibiotics on Discharge to Hospice

• Adult inpatients discharged directly from OHSU to hospice care between January 1, 2010 and June 30, 2012

• 21.7% (183/845) of patients discharged to hospice received a prescription for antibiotics at discharge

• Among pts with a prescription for antibiotics, 27.3% (50/183) did not meet criteria for a documented infection during the index admission

Furuno et al., Antimicrob Agents Chemother. 2014
Specific Aims

• Aim 1: Determine the frequency and characteristics of receiving an outpatient prescription for antithrombotic therapy in a retrospective cohort of patients discharged directly from acute care to hospice care

• Aim 2: Perform semi-structured, in-depth interviews in a sample of physicians to identify determinants of antithrombotic decision making on discharge to hospice care
Study Population

• Adult patients (age ≥ 21 yrs) discharged directly from OHSU hospital to hospice care between January 1, 2010 and June 30, 2014
Outcome of Interest

• Outpatient prescription for anticoagulation or antiplatelet therapy in patient’s discharge summary

• Validation
  – all charts of patients who received an antithrombotic medication
  – sample of patients who did not receive an antithrombotic medication
Primary Exposure of Interest

• Possible indication for anticoagulation/antiplatelet therapy
  – Atrial fibrillation
  – DVT/PE treatment
  – DVT/PE prophylaxis
  – History of stroke
  – Heart valve replacement
  – Knee/hip replacement
  – Cardiac Stent
  – Genetic coagulopathies
  – DVT/PE + Cancer
Exposures of interest: All patients

• Demographics (e.g. age, sex, marital status, race)
• Comorbidities (defined using ICD-9 Codes)
• Other medications
• Palliative care consultation on index admission
• POLST
  – Any form on file
  – New form on index admission
• Other medications
• Hospice location (e.g. home, inpatient, SNF)
In-depth Indication and Contextual Data

- CHADS2, HAS-BLED scores
- Palliative care consultation on discharge
- POLST
  - Time since last completion
  - Individual components
- Active bleeding on index admission
- Creatinine clearance
- Patient and family preferences
- Other contextual variables
Preliminary Results

• 1141 adult patients were discharged directly from OHSU hospital to hospice care during the 4.5 year study period

• Of these, 6.8% received an outpatient prescription for either anticoagulation or antiplatelet therapy on discharge
Distribution of Antithrombotic Medication Types

n=77 out of 1141 discharges to hospice
Table 1: Association between patient characteristics and receiving a prescription for antithrombotic therapy on discharge to hospice care

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Received antithrombotic therapy (n=77) n (%)</th>
<th>Did not receive antithrombotic therapy (n=1064) n (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt; 65 years</td>
<td>43 (55.8)</td>
<td>586 (51.4)</td>
<td>0.41</td>
</tr>
<tr>
<td>Male sex</td>
<td>41 (53.3)</td>
<td>622 (54.5)</td>
<td>0.82</td>
</tr>
<tr>
<td>Length of stay &gt;7 days</td>
<td>39 (50.7)</td>
<td>454 (39.8)</td>
<td>&lt;0.04</td>
</tr>
<tr>
<td>Discharged to home hospice</td>
<td>48 (62.3)</td>
<td>672 (58.9)</td>
<td>0.53</td>
</tr>
<tr>
<td>Palliative care consultation</td>
<td>59 (76.6)</td>
<td>873 (81.1)</td>
<td>0.25</td>
</tr>
<tr>
<td>POLST form on file</td>
<td>47 (61.0)</td>
<td>638 (60.0)</td>
<td>0.85</td>
</tr>
<tr>
<td>New POLST form completed during index admission</td>
<td>35 (45.5)</td>
<td>485 (45.2)</td>
<td>0.97</td>
</tr>
</tbody>
</table>

POLST: Physician Orders for Life Sustaining Therapy
Table 2: Association between patient comorbidities and receiving a prescription for antithrombotic therapy on discharge to hospice care

<table>
<thead>
<tr>
<th>Comorbid diagnoses</th>
<th>Received antithrombotic therapy (n=77) n (%)</th>
<th>Did not receive antithrombotic therapy (n=1064) n (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>31 (40.3)</td>
<td>643 (60.4)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>20 (21.1)</td>
<td>174 (16.6)</td>
<td>0.27</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>54 (70.1)</td>
<td>676 (63.5)</td>
<td>0.24</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>9 (11.7)</td>
<td>226 (21.2)</td>
<td>0.05</td>
</tr>
<tr>
<td>Diabetes</td>
<td>23 (29.9)</td>
<td>239 (22.5)</td>
<td>0.14</td>
</tr>
<tr>
<td>Liver disease</td>
<td>26 (33.8)</td>
<td>195 (18.3)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Renal disease</td>
<td>4 (5.2)</td>
<td>148 (13.9)</td>
<td>0.04</td>
</tr>
<tr>
<td>Indication</td>
<td>Received antithrombotic therapy (n=77) n (%)</td>
<td>Did not receive antithrombotic therapy (n=1064) n (%)</td>
<td>p-value</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>32 (41.6)</td>
<td>229 (21.5)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>DVT/PE treatment</td>
<td>9 (11.7)</td>
<td>63 (5.9%)</td>
<td>0.04</td>
</tr>
<tr>
<td>History of stroke</td>
<td>24 (31.2)</td>
<td>371 (34.9%)</td>
<td>0.51</td>
</tr>
<tr>
<td>Heart Valve Replacement</td>
<td>8 (10.4)</td>
<td>18 (1.7%)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Total Knee Replacement/Total Hip Replacement</td>
<td>4 (5.2)</td>
<td>41 (3.9%)</td>
<td>0.56</td>
</tr>
<tr>
<td>Protein C and S Deficiency/Factor V Leiden mutation</td>
<td>2 (2.6)</td>
<td>6 (0.6%)</td>
<td>0.04</td>
</tr>
</tbody>
</table>
Key Results

• Risk Factors
  – DVT/PE treatment on the index admission
  – History of atrial fibrillation or aortic/mitral valve replacement, liver disease

• “Protective” factors
  – History of cancer, cerebrovascular disease, or kidney disease
Key Results

• Among patients previously receiving antithrombotic therapy, 55% did not have any charted rationale for continuation

• Among patients who received antithrombotic therapy on discharge, 22% were not previously receiving antithrombotic therapy prior to the index admission
A 64-year old man with history of metastatic adenocarcinoma with malignant pleural effusion and bone metastases was admitted with acute renal failure. Patient had a history of pulmonary embolism and was taking enoxaparin at home and experienced rectal bleeding on admission. Anticoagulation was held in the hospital and the bleeding improved. The risk of pulmonary embolism along with bleeding risk was discussed and the patient/family decided to continue anticoagulation once discharged home with hospice care. There was discussion with palliative care about not being able to continue enoxaparin while receiving hospice care and the patient’s wife insisted that they would continue until they finished their current supply.
De-escalation example

• An 80-year old man with coronary artery disease and congestive heart failure was admitted after a fall at home. Patient has atrial fibrillation and was taking warfarin prior to admission. Patient reported multiple prior falls. It was decided that his poor prognosis and fall risk exceed the benefit of CVD prevention and warfarin would be switched to 325mg of aspirin daily.
Aim 2

• Perform semi-structured, in-depth interviews in a sample of physicians to identify determinants of antithrombotic decision making on discharge to hospice care

• Rationale: Better understand clinical and contextual determinants of treatment decisions and identify potential opportunities for intervention
Qualitative Methods

• Care Management query to identify patients discharged to hospice in previous 7 days

• Enroll stratified sample of antithrombotic therapy decisions
  – Continued
  – Discontinued
  – De-escalated

• Contact discharging physician via phone or email and request interview on medication decision
Qualitative Results

• 5 interviews of OHSU physicians discharging patients to hospice
  – 2 continued
  – 3 discontinued

• Interventional neurology, internal medicine, cardiac electrophysiology, and oncology (n=2)

• Decisions often made in consultation with palliative care service
Qualitative Results

• Minimal perceived symptomatic benefits of antithrombotic agents
  – Uncomfortable tachycardia was only symptom discussed

• Concerns whether hospice would pay for the medications following transition

• When continued, it was usually not directed at palliation of symptoms, but at preventing events, which may lead to more suffering
  – one physician discontinued statin therapy, but continued the patient on both aspirin and clopidigrel to prevent potential myocardial infarction and DVT or PE.
Next Steps

• Multi-site observational studies on outcomes following hospice admission
  – Continuation
  – Discontinuation
  – De-escalation
  – Safety and effectiveness

• Submitted LOI to perform study with PCRC
Antibiotic Policies and Utilization in Oregon Hospice Programs

Rachel L. Novak, PharmD\textsuperscript{1}, Brie N. Noble, BS\textsuperscript{1}, Erik K. Fromme, MD, MCR\textsuperscript{2,3}, Michael O. Tice, PharmD\textsuperscript{1}, Jessina C. McGregor, PhD\textsuperscript{1}, and Jon P. Furuno, PhD\textsuperscript{1}

Abstract
Antibiotics are frequently used in hospice care, despite limited data on safety and effectiveness in this patient population. We surveyed Oregon hospice programs on antibiotic policies and prescribing practices. Among 39 responding hospice programs, the median reported proportion of current census using antibiotics was 10\% (interquartile range = 3.5\%-20.0\%). Approximately 31\% of responding hospice programs had policies for antibiotic initiation, 17\% of hospice programs had policies for antibiotic discontinuation, and 95\% of hospice programs had policies for managing drug interactions. Diarrhea, nausea/vomiting, and yeast infections were the most frequently reported antibiotic-associated adverse events, occurring “sometimes” or “often” among 62\%, 47\%, and 62\% of respondents, respectively. In conclusion, less than a third of participating hospice programs reported having a policy for antibiotic initiation and even less frequently a policy for discontinuation. More data are needed on the risks and benefits of antibiotic use in hospice care to inform these policies and optimize outcomes in this vulnerable patient population.
Next Steps

• Multi-site observational studies on outcomes following hospice admission
  – Continuation
  – Discontinuation
  – De-escalation
  – Safety and effectiveness

• Submitted LOI to perform study with PCRC
Research Questions

• What % of patients continue on anticoagulation therapy versus discontinue?

• What % of patients initiate anticoagulation?

• How do patients and caregivers feel about discontinuation?

• What are the safety and benefit endpoints?
Proposed Study Design

• Identify patients on hospice admission

• Observe frequency of continuation, discontinuation, or initiation
  – Assess characteristics of this decision
  – Interview patients and caregivers regarding perceptions of discontinuation
  – Follow prospectively to assess safety and benefit
Acknowledgements

• Funding Support: PCRC Pilot Award 2014-03

• Brie Noble, OSU/OHSU College of Pharmacy
• Christina Kowalewska, OSHU Dept. of Pharmacy Services
• Erik Fromme, OSHU Palliative Care Service
• Mary Lynn McPherson, Univ. of Maryland School of Pharmacy
• Kristie Grace, OHSU Care Management
• Seiko Izumi, OHSU School of Nursing
• David Lee, OSU/OHSU College of Pharmacy
Thanks!