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TUESDAY, APRIL 14:
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Anthony Pudlo, PharmD, MBA, BCACP
Vice President, Professional Affairs
Iowa Pharmacy Association

[Image of Anthony Pudlo]
ANALYSIS OF MEDICATION DISCREPANCIES IDENTIFIED BY CLINICAL PHARMACISTS IN AN OUTPATIENT CARDIOLOGY CLINIC

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Analysis of Medication Discrepancies Identified by Clinical Pharmacists in an Outpatient Cardiology Clinic

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Disclaimer

• Brittany A. Bruch reports that she has no actual or potential conflict of interest in relation to this presentation.

• Off-label use of medication will not be discussed during this presentation.
Acknowledgements

• Residency project advisors:
  – Ryan B. Jacobsen, PharmD, BCPS
  – Milena A. Gebska, MD, PhD
About UI Hospitals and Clinics

• 730-bed tertiary care hospital in Iowa City, IA
• US News “Best Hospital” for 24 consecutive years
• By the numbers (2014):
  • 30,762 admissions
  • 56,418 ER visits
  • 811,173 clinic visits
About UI Ambulatory Care

- 811,173 clinic visits (2014)
- Over 200 outpatient clinics
- Ambulatory clinics:
  - Iowa River Landing
  - UI Quick Care
  - UI Community Medical Services
  - UI Hospitals and Clinics
Medication Discrepancies

• In 2013, the cost from avoidable medication errors in the United States was approximately $20 billion
  – At least 25% were considered preventable

• As many as 60% of errors occur during care transitions

• In 2005, the Joint Commission named medication reconciliation as one of its National Patient Safety Goals (NPSG 8)
  – NPSG 8 was suspended in 2009 and reintroduced in 2011

Objectives

• Identify the number and type of clinically important medication discrepancies among medication lists using a Physician-Pharmacist Collaborative Model in an outpatient cardiology clinic

• Analyze potential predictors of medication discrepancies
Study Designs and Methods

- Retrospective review

- Inclusion criteria:
  - Current use of $\geq 3$ chronic medications
  - Completion of a comprehensive medication review by a clinical pharmacist during the study period (09/15/14-01/31/15)

- Exclusion criteria:
  - Subsequent visits were excluded if a patient was seen more than once during the study period
Medication List Comparison

1. Medication list prior to review by pharmacist (pre-pharmacist list)
2. Medication list following comprehensive review by pharmacist (post-pharmacist list)
3. Medication list from primary care provider
Outcomes

• Primary
  – Number and type of medication discrepancies between the pre-pharmacist and post-pharmacist medication lists
  – Number of medication discrepancies involving cardiovascular medications

• Secondary
  – Potential predictors of medication discrepancies
    • Age
    • Number of prescribers
    • Hospitalization within the past 30 days
    • Number of medications
Medication Discrepancies Definitions

• Incorrect medication
  – Different medication within same class

• Incorrect dose
  – Different cumulative dose

• Incorrect directions
  – Same cumulative dose but different directions or tablet strength

• Omission
  – Missing
Medication Discrepancies Definitions

• Level of harm
  – Low: non-prescription medications
  – Moderate: prescription medications (including “as needed”)
  – High: medications that are identified as capable of causing significant harm if used incorrectly

• Cardiovascular discrepancy
  – Any drug that influences cardiac care (e.g., antiplatelets, anticoagulants, antihypertensives, antiarrhythmics, and heart failure medications)
Results

Total medication reviews during study period (09/15/14-01/31/15)  
\( n = 134 \)

Medication reviews excluded  
\( n = 13 \)

Medication reviews included  
\( n = 121 \)

- UIHC PCP  
  \( n = 56 \)
- Non-UIHC PCP  
  \( n = 54 \)
- No PCP  
  \( n = 11 \)
## Patient Demographics

<table>
<thead>
<tr>
<th>Clinical Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Females: 68 (56%)</td>
</tr>
<tr>
<td></td>
<td>Males: 53 (44%)</td>
</tr>
<tr>
<td>Average age</td>
<td>60.3 years ± 14 years</td>
</tr>
<tr>
<td>Average number of medications</td>
<td>11.2 ± 5 medications</td>
</tr>
<tr>
<td>Average minimum number of prescribers</td>
<td>2.3 ± 1 prescriber</td>
</tr>
<tr>
<td>Hospitalization within past 30 days</td>
<td>Yes: 16</td>
</tr>
<tr>
<td></td>
<td>No: 105</td>
</tr>
<tr>
<td>Visit with clinical pharmacist</td>
<td>First: 55</td>
</tr>
<tr>
<td></td>
<td>Return: 66</td>
</tr>
</tbody>
</table>
Results – All Visits

Average discrepancies/patient: 1.6 (range: 0-17)
Preliminary Conclusions

• Majority of identified discrepancies were considered moderate harm (55%)

• Many discrepancies were classified as medication omission (47%)

• Large percentage of medication discrepancies related to cardiac care (29%)

• Further data analysis is currently in progress
EVALUATION OF IRON DEFICIENCY ANEMIA IN A HEMATOLOGY-ONCOLOGY POPULATION AT A LARGE ACADEMIC MEDICAL CENTER

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Evaluation of Iron Deficiency Anemia in a Hematology-Oncology Population at a Large Academic Medical Center

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University of Iowa Hospitals and Clinics (UIHC), Iowa City, IA
Disclaimer

• Tracy Harlan reports that she has no actual or potential conflict of interest in relation to this presentation.

• Off-label use of medication will not be discussed during this presentation.
Holden Cancer Center (HCC)

- Iowa’s only National Cancer Institute (NCI) designated comprehensive cancer center
- 54,400 patient visits scheduled for fiscal year 2015
Objectives

• Explain the benefit of ensuring the proper evaluation and treatment of iron deficiency anemia in patients with cancer

• Recognize laboratory values warranting further workup of iron deficiency anemia

• Interpret laboratory values indicative of iron deficiency anemia
Cancer-Related Anemia (CRA)

- Anemia is a common complication found in many patients with cancer
- Occurrence of anemia in this population is ~40%
- Presence of anemia is associated with overall decreased quality of life
- Pathophysiology of CRA is often multifactorial

*Cancer.* Nov 2003; 98(9): 1786-1801.
Study Objectives

• Examine the percentage of patients who appropriately received iron studies

• Determine if opportunities for improvement exist in evaluation of iron deficiency anemia
Study Design

• Retrospective analysis of patients with Hb ≤ 11 g/dL and MCV ≤ 80 fL between 4/1/14 and 9/30/14
• Approved by the UIHC Institutional Review Board
• Patients identified through UIHC electronic medical records
• Statistical tests
  – Descriptive statistics were used to analyze data
## Study Design

### Inclusion Criteria
- Ambulatory patients with an active non-myeloid malignancy followed by HCC
- Hemoglobin $\leq 11 \text{ g/dL}$ AND Mean corpuscular volume (MCV) $\leq 80 \text{ fL}$
- $>18$ years of age

### Exclusion Criteria
- Sickle cell disease
- Thrombophilia
- Myeloid or lymphoid malignancy
- Thalassemia
- No active cancer
Data Collection

• Demographics
  – Age
  – Gender
  – Cancer diagnosis

• Iron studies
  – Serum iron, ferritin, TSAT, transferrin, TIBC, UIBC

• Complete blood count

• Treatment
  – Iron therapy, erythropoietin stimulating agents, blood transfusions
Outcome Measures

• Primary outcome
  – Percentage of patients in which iron studies were obtained upon meeting criteria for evaluation of IDA (Hb ≤ 11 g/dL and MCV ≤ 80 fL)

• Secondary outcomes
  – Number and percentage of patients:
    • Receiving oral iron, parenteral iron, or erythropoietin stimulating agents (ESAs)
    • Requiring blood transfusions
Results

260 patients were screened

140 patients excluded

120 patients included
Results

Excluded patients

- n=35 (25%)
- n=70 (50%)
- n=15 (11%)
- n=7 (5%)
- n=6 (4%)
- n=5 (4%)
- n=2 (1%)

- Myeloid or lymphoid malignancy
- No active cancer
- Hb and MCV don't meet criteria
- Thalassemia
- Sickle cell
- Never seen in clinic
- Thrombophilias
Baseline Demographics (n=120)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y, mean</td>
<td>59.5</td>
</tr>
<tr>
<td>Gender, no. (%)</td>
<td></td>
</tr>
<tr>
<td>• Male</td>
<td>41 (34.2)</td>
</tr>
<tr>
<td>• Female</td>
<td>79 (65.8)</td>
</tr>
<tr>
<td>Cancer diagnosis, no. (%)</td>
<td></td>
</tr>
<tr>
<td>• Breast</td>
<td>14 (11.7)</td>
</tr>
<tr>
<td>• Lung</td>
<td>10 (8.3)</td>
</tr>
<tr>
<td>• Ovarian</td>
<td>11 (9.2)</td>
</tr>
<tr>
<td>• Renal</td>
<td>11 (9.2)</td>
</tr>
<tr>
<td>• Pancreatic</td>
<td>9 (7.5)</td>
</tr>
<tr>
<td>• Colon</td>
<td>9 (7.5)</td>
</tr>
<tr>
<td>• Cervical</td>
<td>7 (5.8)</td>
</tr>
<tr>
<td>• Rectal</td>
<td>6 (5.0)</td>
</tr>
<tr>
<td>• Endometrial</td>
<td>6 (5.0)</td>
</tr>
<tr>
<td>• Other&lt;sup&gt;a&lt;/sup&gt;</td>
<td>37 (30.8)</td>
</tr>
</tbody>
</table>

<sup>a</sup>Other cancers with incidence of five or less
Testing for Iron Deficiency Anemia

- No iron studies: n=61 (51%)
- Iron studies: n=59 (49%)
  - Functional IDA: n=25 (42%)
  - Absolute IDA: n=23 (39%)
  - Unable to determine: n=9 (15%)
  - No IDA: n=2 (4%)
Iron Therapy Received

- Absolute iron deficiency: 7 (Oral), 3 (Parenteral), 6 (Oral & Parenteral), 7 (None)
- Functional iron deficiency: 12 (Oral), 0 (Parenteral), 2 (Oral & Parenteral), 11 (None)
- No iron deficiency: 0 (Oral), 0 (Parenteral), 0 (Oral & Parenteral), 2 (None)
- No iron studies: 13 (Oral), 2 (Parenteral), 2 (Oral & Parenteral), 0 (None)
Iron studies done

Incidence of PRBC transfusions

- **Functional IDA**
  - Iron therapy: 35.70%
  - No Iron therapy: 27.20%

- **Absolute IDA**
  - Iron therapy: 25.00%
  - No Iron therapy: 42.90%
No iron studies

<table>
<thead>
<tr>
<th>Incidence of PRBC transfusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron therapy</td>
</tr>
<tr>
<td>30.00%</td>
</tr>
<tr>
<td>35.00%</td>
</tr>
<tr>
<td>40.00%</td>
</tr>
<tr>
<td>45.00%</td>
</tr>
<tr>
<td>50.00%</td>
</tr>
<tr>
<td>55.00%</td>
</tr>
<tr>
<td>60.00%</td>
</tr>
</tbody>
</table>
Conclusions

• Nearly half of the study population met criteria for iron studies, but did not receive them

• Of patients who had iron studies performed, 81% met criteria for IDA

• Incidence of blood transfusions was greater in absolute IDA group who did not receive iron therapy

• Opportunities exist for improvement in further evaluation of IDA
Acknowledgements

• Residency project advisors:
  • Jill E. Stein, Pharm.D., BCOP
  • Susan Fajardo, Pharm.D.
  • Susan Sorenson, RPh, BCOP
  • Deanna McDanel, Pharm.D., BCPS, BCACP

• Student research assistant
  • Katharyn Stange, Pharm.D. Candidate
Evaluation of Iron Deficiency Anemia in a Hematology-Oncology Population at a Large Academic Medical Center

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UnityPoint Health/Allen Memorial

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Pharmacy Coordinated Procalcitonin Level to Direct Antimicrobial Therapy Duration

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Disclosure Statement

Disclosure statement: these individuals have the following to disclose concerning possible financial or personal relationships with commercial entities (or their competitors) that may be referenced in this presentation.

- Resident:
  Emily I-Chau Liang has nothing to disclose.

- Project Director and Advisor:
  Jeff Martin and Lisa Veit have nothing to disclose.
Objectives

- **Objective #1)**
  - Identify procalcitonin as a biomarker for detecting the severity of bacterial infection.

- **Objective #2)**
  - Recognize procalcitonin to be a safe and effective biomarker for early discontinuation of antimicrobial therapy in patients with sepsis and/or pneumonia.
Background: Procalcitonin 7,9

- Precursor hormone of calcitonin
  - Procalcitonin (PCT) ↑ in response to severe systemic inflammation by bacterium.

- Generation: Activation of monocyctic cells.
  - Occurs during sepsis and other conditions such as tissue trauma, pancreatitis...etc.

- Sensitivity: 67% to 80%
- Specificity: 70% to 91%
- Peak: Between 24 to 48 hours after onset of infection.
- After reaching peak level
  - PCT ↓ by 50% at 1 to 1 ½ days.
Background: Level Indication

- **PCT levels**
  - Healthy individual: < 0.1 ng/mL
  - Severe bacterial infection: ≥ 0.5 ng/mL
  - High levels of PCT
    - Increased mortality risk
    - Poor prognosis

- **False Elevation**
  - Conditions
  - Medications

- **Elimination**
  - Kidney
Background: Evidence

- PCT-guided versus Control in Antibiotic Duration

Background: PCT Utilization

- Procalcitonin (PCT) has been shown to be an effective biomarker for early discontinuation of antimicrobial therapy
  - Sepsis or pneumonia patients
- Early discontinuation
  - Reduce medication adverse events
  - Minimize microbial resistance
  - Lower hospital cost
- Pharmacists are a good asset
  - Understand medications
  - Existing systems in place to monitor lab values
  - No published study has incorporated pharmacists into the process of monitoring PCT levels
Purpose

- Explore the effect of implementing a pharmacist coordinated PCT level monitoring protocol to assist in the decision making process for antimicrobial therapy
Methodology

- A Prospective Observational Case-Control Study at a Single Facility.

- Outcomes of interest
  - Duration of antibiotic therapy (Primary)
  - Length of hospital stay, readmission due to same infection within one month, successfulness of protocol implementation, acceptance rate of recommendations

- Other pertinent information
  - Start date: January 5\(^{th}\), 2015
  - Guidance: Protocol and algorithm
  - IRB and P&T approval, Hospitalists agreed

- Duration
  - Up to 50 patients
  - 2 months
Allen Hospital Procalcitonin Algorithm for Considering Early Discontinuation of Antibiotic Treatment for Pneumonia and/or Sepsis in Non-Pregnant Patients ≥ 18 y.o.

- ICU
  - 3 Med
  - 4 Med

Antibiotics ordered by hospitalists for treatment of pneumonia or sepsis that required verification by pharmacists.

Ordered by sepsis or pneumonia order set.

- Patient has conditions such as:
  1) Surgery
  2) Trauma
  3) Burn
  4) Pancreatitis
  5) Auto immune disorders
  6) Severe renal or liver dysfunction
  7) End stage of tumor disease
  8) Acute rhabdomyolysis

- Medications such as:
  1) OKT3 antibodies
  2) Monoclonal antibodies
  3) Polyclonal antibodies
  4) Interleukins

Pharmacists verify ABX use for pneumonia or sepsis by:
  1) Diagnosis
  2) Notes
  3) Problem lists

- Yes
  - Do not order PCT. Likely produce false elevation of PCT. Evidence does not support use.
    - Pharmacists order initial PCT within 12 hours of admission.
  - Order 2nd PCT at least 48 hours after 1st.
  - Open new I-Vent (types: Grant) linked with the antibiotics of choice for identification and documentation purposes.

- No
  - Do not order PCT.
  - Pharmacists help monitor that PCT is ordered every 48 hours and recommend ABX use to hospitalists

- PCT value
  - <0.1 ng/mL or drops by > 90%
    - Cessation Strongly Encouraged
      - Consider continuing antibiotics if clinically unstable.
  - 0.1-0.24 ng/mL or drops by > 80%
    - Cessation Encouraged
  - 0.25-0.5 ng/mL
    - Cessation Discouraged
  - >0.5 ng/mL
    - Cessation Strongly Discouraged
      - Poor prognostic: if PCT is rising or not decreasing by at least 10% per day.
      - Consider other diagnoses or broaden antibiotic coverage.

ABX: Antibiotic treatments
PCT: Procalcitonin level
Results-Primary

- Duration of antibiotic therapy

Fraction of Total Patients

- PCT-Guided (25 patients)
- Non-PCT Guided (50 patients)
## Results - Secondary

- Successfulness of protocol implementation

<table>
<thead>
<tr>
<th>Test outcome</th>
<th>Total patient (n=91)</th>
<th>PCT ordered</th>
<th>Not ordered</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible</td>
<td>26</td>
<td>16</td>
<td></td>
<td>Successful inclusion 26/(26+16) → 61.9%</td>
</tr>
<tr>
<td>Non-Eligible</td>
<td>6</td>
<td>43</td>
<td></td>
<td>Successful exclusion 43/(6+43) → 87.8%</td>
</tr>
</tbody>
</table>

- **Ability to order Correctly (Sensitivity)**: 26/(26+6) → 81.25%
- **Ability to exclude Correctly (Specificity)**: 43/(16+43) → 72.88%
- **Accuracy**: (26+43)/91 → 75.8%
## Results - Secondary

- Acceptance Rate of Recommendation

<table>
<thead>
<tr>
<th>Acceptance Rate of Recommendation</th>
<th>Yes</th>
<th>No</th>
<th>Other (No recommendation made or patient discharged prior to 2\textsuperscript{nd} PCT level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total count</td>
<td>14</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Percentage</td>
<td>56%</td>
<td>8%</td>
<td>36%</td>
</tr>
</tbody>
</table>
Discussion

- **Results:**
  - **Duration of antibiotic therapy**
    - Favors PCT guided
  - **Length of hospital stay**
    - Favors PCT guided
  - **Readmission in one month**
    - Favors non-PCT guided
  - **Successfulness of protocol implementation**
    - Accuracy of 75%
  - **Acceptance Rate of recommendation**
    - Rate of 60%
Discussion

Limitations:

◦ Retrospective data
◦ Small sample population
◦ Other considerations
  • Antibiotic spectrum
◦ Confounding factors
  • False elevation of PCT
◦ Loss of 2\textsuperscript{nd} PCT level due to early discharge
◦ Comorbidities and age of patients

Future directions:

◦ Antibiotics
  • Coverage, number, cost…etc.
◦ Other comorbidities
  • COPD, asthma, diabetes…etc.
Conclusion

- **Clinical judgment is always the key!**
  - Other labs, cultures, and patient’s disease progression have to be considered as well.

- PCT provides another piece of evidence for clinical decision of early discontinuation of antibiotics.

- Positive clinical finding trumps PCT.

- PCT is proven effective for early discontinuation of antibiotic in sepsis/pneumonia.
References


EVALUATING PHARMACIST INTERVENTIONS PERFORMED DURING IMPLEMENTATION OF A NEW-PAYER MODEL USING PROFESSIONAL SERVICE FEES

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Evaluating Pharmacist Interventions Performed During Implementation of a New-Payer Model using Professional Fees

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Iowa City, IA
Disclosure Statement

Disclosure statement: these individuals have the following to disclose concerning possible financial or personal relationships with commercial entities (or their competitors) that may be referenced in this presentation.

- Resident: Rani Raju has nothing to disclose.
- Project Director, Advisors, & Co-Investigators: Randy McDonough, Michael Deninger, William Doucette, and Stevie Veach have nothing to disclose.
Background

• Community pharmacists can improve patient outcomes\textsuperscript{1}
• Dispensing reimbursement is based upon\textsuperscript{2}:
  • Ingredient costs
  • Dispensing fees
  • Does not pay for costs to resolve problems identified by dispensing pharmacists
• Reimbursement utilizing MTM platforms.
• Pilot project initiated between local payer and independent pharmacy
  • Professional fee + Dispensing fee per prescription for plan patients
Objectives

• To quantify, classify and evaluate the types of interventions documented by pharmacists when paid a professional fee in addition to a dispensing fee
Methodology

• Study Design: Retrospective chart review

• Patient Population: ~ 600 patients were enrolled in this specific health plan and fill prescriptions at this independent pharmacy

• Data Collection: Patient data extracted from PharmClin® software from April 1, 2014 to October 31, 2014
## Results

### Table 1. Patient Demographics (N=193)

<table>
<thead>
<tr>
<th>Sex n (%)</th>
<th>Female 103 (53%)</th>
<th>Male 90 (47%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages &lt; 18 years (n)</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Ages 18-64 years (n)</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Ages &gt; 65 years (n)</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Average Age (years)</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Average # of Medications</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Patients with Documented Interventions n (%)</td>
<td>140 (73%)</td>
<td></td>
</tr>
<tr>
<td>Total Interventions (n)</td>
<td>483</td>
<td></td>
</tr>
</tbody>
</table>
Fig 1. Pharmacist Interventions (N=483)

- Rx Counseling: 49.9%
- Drug Therapy Problem: 29.8%
- Patient Education: 11.0%
- SOAP Notes: 3.9%
- Other: 2.9%
- Injections: 1.4%
- MTM: 0.4%
- DI Request: 0.4%
- Patient Screening: 0.2%
## Results

### Table 2. DTP Identified Categories (N = 144)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-adherence n (%)</td>
<td>119 (83%)</td>
</tr>
<tr>
<td>Drug-Drug Interaction n (%)</td>
<td>11 (8%)</td>
</tr>
<tr>
<td>Other n (%)</td>
<td>10 (7%)</td>
</tr>
<tr>
<td>High Risk Medication n (%)</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>Therapeutic Duplication n (%)</td>
<td>2 (1%)</td>
</tr>
</tbody>
</table>
Discussion

• Nearly 75% of patients had a pharmacist intervention
• Majority of pharmacist interventions:
  • Prescription counseling (50%)
• Most common drug therapy problem (DTP):
  • Medication adherence (83%)

Limitations:
• Flagging cohort patients
• Varying pharmacist documentation style
• Clinical software updates Sept 2014
Conclusion

• Pharmacists can make critical clinical interventions during dispensing process.

• Better clinical documentation of interventions can:
  • Shift pharmacy practice to focus more on delivering quality health care
  • Show pharmacists’ value as health care providers

• Research is in progress to determine:
  • Total health care spend
  • Pharmacy performance measures.
References


   http://www.uspharmacist.com/content/s/216/c/34894/
Questions
ASSESSING ATTITUDES AND KNOWLEDGE OF PATIENTS AND PROVIDERS ABOUT ROLES AND SERVICES FOR DIABETES CARE

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ASSESSING ATTITUDES AND KNOWLEDGE OF PATIENTS AND PROVIDERS ABOUT ROLES AND SERVICES FOR DIABETES CARE

Working Together to Manage Diabetes: A CDC Toolkit for Pharmacy, Podiatry, Optometry, and Dentistry

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University of Iowa College of Pharmacy
PGY-1 Community Pharmacy Practice Resident
Osterhaus Pharmacy
Disclosure

• No conflict of interest to disclose
• Did not receive funding from any source
Background of Study

• Three main questions
  – How much do patients know about their diabetes care and the various providers that play a role?
  – How much do providers know about what each other can offer in the care of patients with diabetes?
  – Does better coordination of care amongst various providers lead to better outcomes for our mutual patients with diabetes?
What is PPOD?

- A toolkit developed by the CDC to encourage providers (in particular pharmacists, podiatrists, optometrists, and dentists) to take a multidisciplinary approach in caring for patients with diabetes
- It recommends evaluating the whole patient, not just individual specialties
The Toolkit

- 112 pages
- Introduction to a team approach
- Brief information on each PPOD provider
- Goals for diabetes management (A1c, blood glucose, etc.)
- Recommended screenings and follow-ups
- Patient resources
PPOD Providers:

- Reinforce consistent messages to patients across different disciplines
- Encourage patients to complete annual recommended screenings and follow-ups
- Provide patients with education about diabetes and how to self-manage their condition
- Identify potential diabetes complications and refer patient to physician or other PPOD provider for follow-up
- Monitor diabetes clinical markers and progression of disease
The Importance of Coordinating Care in Diabetes

- Minimize disease-related complications
  - Periodontal disease
  - Neuropathy
  - Blindness
  - Cardiovascular disease
  - Renal insufficiency

- Reduce healthcare costs
  - Constitutes 27% of national healthcare medication costs

- Optimize outcomes

- Improve patient education and self-management
Study Objectives

• To assess:
  – Patients’ knowledge of the recommendations for diabetes care and the role of PPOD providers in their care
  – The effect of introducing the CDC’s PPOD toolkit on providers’ knowledge of each others’ services offered in managing diabetes and attitudes toward collaborating
Study Methods

• Phase 1: Patient portion
  – Patient population: Age $\geq 18$ that filled any diabetes medication from 01/01/14 to 12/31/14. Exclusion criteria: cognitive deficits and metformin use for Polycystic Ovary Syndrome

• Phase 2: Provider portion
  – PPOD providers practicing in Maquoketa, IA
Phase 1: Patient Portion of Study

- 294 eligible patients
- 275 received the survey at the next prescription fill

- Surveys were distributed from 1/13/15 to 2/28/15
- 86 surveys were collected (31.3% response rate)
- Patients were age 66.0 ± 12.0, 40.7% female, and 65% had diabetes for > 5 years
- Patients scored an average of 62.0% on the patient survey (s.d. 13.4%)
Phase 1: Patient Portion of Study

Knowledge of PPOD Providers' Role in Their Diabetes Care
(% Answered Correctly)

- Pharmacist: 46%
- Podiatrist: 45%
- Optometrist: 41%
- Dentist: 26%
Phase 2: Provider Portion of Study

Invited local PPOD Providers:
- 2 podiatrists
- 2 optometrists
- 3 pharmacists
- 7 dentists

Pre- and post-surveys were distributed to meeting attendees

- 5 Providers attended provider meeting (all were dentists)
- Meeting introduced PPOD toolkit, gave an overview of different professions, provided sample interprofessional cases, and discussed ways of collaborating
- Pre- and post-surveys assessed knowledge of standards for diabetes care, services offered by different PPOD providers, and willingness to collaborate
Phase 2: Provider Portion of Study

Willingness to Collaborate

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<tr>
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<th>Pre-Meeting Survey</th>
<th>Post-Meeting Survey</th>
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<tbody>
<tr>
<td>Agree</td>
<td>40.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>60.0%</td>
<td>80.0%</td>
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</table>
# Phase 2: Provider Portion of Study

**% Answered Correct (p=0.794)**

<table>
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<tr>
<th>% Answered Correct</th>
<th>Pre-Meeting Survey</th>
<th>Post-Meeting Survey</th>
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<tr>
<td>%</td>
<td>73%</td>
<td>74%</td>
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The graph shows that the percentage of answers correct increased from 73% in the Pre-Meeting Survey to 74% in the Post-Meeting Survey, with a p-value of 0.794.
Discussion

- Patient survey responses suggested gaps in knowledge of PPOD providers’ role in their diabetes care
- Of the 4 PPOD providers, patients more frequently identified roles of pharmacists and podiatrists in their diabetes care
- Providers’ knowledge of each others’ services remained constant between pre- and post-meeting survey
- PPOD providers were willing to collaborate both pre- and post-provider meeting
- Ideas were shared at the local PPOD provider meeting on the process of communication and coordination of care with each other
Limitations and Conclusions

- **Limitations:**
  - Distribution period for patient surveys was limited to a 9 week period
  - No intervention or post-survey was given to patients
  - Only dentists attended the PPOD meeting

- **Conclusions:**
  - Patients’ knowledge of their diabetes and the PPOD providers’ roles were low
  - Pharmacists will provide education to patients on the roles of PPOD providers and appropriate follow-up
  - Plans for formal collaboration with local PPOD providers are in process
References


Thank You!!!

Feel free to contact me!

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THANKS FOR ATTENDING!

JOIN US TUESDAY, MAY 12:
OPEN FORUM ON
PROPOSED IPA POLICIES

Questions? Contact Laura Miller at lmiller@iarx.org or 515-270-0713