Innovative Pharmacy Services: Boldly Going Where No Pharmacist Has Gone Before

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Learning Objectives

• Examine the role of the pharmacist in collaborative care clinics
• Discuss the development of a pharmacy consult service within interprofessional sites
• Explore methods to enhance student learning in a collaborative setting
• Identify metrics used to track the impact of collaborative efforts on patient outcomes

Pharmacists Walking on New Territory to Save Limbs: The Collaboration Between Pharmacists and Podiatrists

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Disclosures

• I have no actual or potential conflict of interest in relation to this presentation.

Wound Healing Center (WHC)

• Located within a safety-net hospital
• 12 beds
• 20-30 patients per day
• Outpatient/inpatient wound management:
  – Diabetic foot ulcers (DFU)
  – Neuropathic
  – Venous stasis
  – PVD
  – Decubitus ulcers

WHC

• Wound management team
  – Doctors of podiatric medicine (DPMs)
  – Physicians
  – Surgeons (vascular)
  – Physical therapists
  – Nurses
  – Wound specialists
  – Wound care technicians
  – Pharmacy
    • Medication delivery

DPM: Doctor of podiatric medicine
**Patient case**

- 63 y/o HM, Spanish speaking, newly diagnosed diabetic, malnourished, not seen a physician in past 15 yrs
- Recently d/c from hospital, no PCP
- DFU, OM, HBV, current smoker (~5/d)
- Pain: 5-10/10, unable to walk 50 ft.
- No surgeries

**Case**

- Medications
  - Metformin 1000 BID
  - Ertapenem 1 g IV daily
  - Outpatient infusion clinic
  - Hydrocodone/APAP 7.5mg/325 mg PRN
- Monitors BG QID
  - Per granddaughter - FBG
    - 280s and PPBG 350s despite diet changes (lots of fruit)
- Laboratory results from admission
  - A1C: 14.5%; LDL: 37, TG: 50;
    HDL: 7; TC: 74; Alb: 1.0

**What is the most appropriate intervention a pharmacist can do at this time?**

A. Order an A1C, CMP, pre-albumin and another fasting lipid panel to confirm current results
B. Obtain immunization history and administer the recommended vaccinations per CDC
C. Add insulin, an ACEI/ARB, a high-intensity statin and aspirin to his current diabetes treatment
D. Counsel the patient and family and schedule an appt. with the next available PCP asap
Background

- DFUs; major medical, social and economic problem
- >25% of the patients with diabetes will develop a foot ulcer and have a 40% higher 10-year mortality
- ~90% of amputations are preceded by foot ulcers that could potentially be prevented
- >70,000 non-traumatic lower-limb amputations in 2010
- ~50% who had a major limb amputation will die within 5 years
- Recurrence >50%

Guideline recommendations

- A foot specialist and a “multidisciplinary” team approach:
  - Decrease the risk of foot infections
  - Decrease complications
  - Optimize glycemic control
  - Educate patient
    - Diabetes education, smoking cessation, nutrition
    - Prevent recurrence!

Role of the pharmacist in a WHC

- Medication optimization
- Education
  - Patient, podiatrist and physician
- Monitoring
- Coordination of care
- Immunizations!!!
Assessment question

When initiating new clinical pharmacy services, the following should be considered:

A. Patient demographics such as age, sex, race and insurance
B. How to improve patient outcomes, experience and decrease costs
C. Location of the clinic, access and the cost of services to be provided
D. Developing a collaborative practice agreement and define roles

The IHI Triple Aim

Population Health

Experience of Care Per Capita Cost

Establishing clinical pharmacy services in a WHC

- Identify your population of care and measures
- Form a team
- Test your idea
- Monitor outcomes
An efficient way pharmacists can evaluate and implement a new clinical service in a clinic is by:

A. Performing a retrospective chart review to obtain a baseline
B. Performing patient satisfaction surveys before and after a service
C. Using a model for improvement such as the Plan-Do-Study-Act (PDSA)
D. Forming a team that includes pharmacy students on rotation

Establishing clinical pharmacy services in a WHC

• Identify your population of care
  – Ambulatory care services
  – WHC was not part of the original plan
  – Work with IT
    – 1600 admissions related to diabetes!
  – Setting goals
  – Time frame
  – How to measure improvement (Triple Aim)
    • A1C, BP, LDL, medication adherence…
    • Readmissions, amputations, reinfections…
    • Patient satisfaction,

• Form a team
  – Physician champion
  – Support services
  – Promote services
  – Net-work
  – Other clinicians?
  – Involve IT
  – Engage your leadership
    • Pharmacy director/manager
    • Anyone from the C-suite!
Establishing clinical pharmacy services in a WHC

• Testing the idea
  – Plan, Do, Study and Act
    • A1C screening-inpatient
    • Provide DM education during admission
    • Diabetes education group/individual-outpatient
    • Missing appointments
      – Transportation issues
      – Costs
    • Promote pharmacy services among physicians/clinics
      – Pre-filled referral DM forms
      – Wound clinic!


• WHC
  – About 90% appt show rate
  – Transportation provided
  – About 70% diabetes
  – Ulcer recurrence/reinfection
  – Multiple readmissions
  – Multiple medications/comorbidities
  – Lack of primary care provider f/u or multiple providers
  – Polypharmacy
Establishing clinical pharmacy services in a WHC

- More PDSA cycles!
  - Laboratory monitoring
  - Medication optimization
    - Challenging: Need a PCP
  - Patient education (empower)
    - Disease state, medication, nutrition...
  - Follow up
    - How often?
  - Communication with PCP
    - Challenges: unable to contact or no PCP

Establishing clinical pharmacy services in a WHC

- Monitoring outcomes
  - Assess your progress
    - How many patients have you seen?
    - What services have you provided?
    - Are your measures improving?
      - A1Cs
      - BP
      - Medication adherence
      - Readmissions
      - Patient satisfaction
    - Do you need to add new/tailor services?
      - Patient-centered care
Patient case- A month later

• Pt has now a PCP, next appt in 4 wks
• Pain 2-3/10, able to walk
• Still smoking
• BG monitoring log
  – FBG: 180s
  – 2Hr PPBG 200s
• Two new medications added

Medications:
– Metformin 1000 BID
– Ertapenem 1 g IV daily
  – Outpatient infusion clinic
– Hydrocodone - Acetaminophen 7.5mg/325 mg PRN
– Lantus 15 units QHS
– Lisinopril 20 mg

What is the most appropriate intervention a pharmacist can do during this encounter?

A. Assess diabetes control, and adjust insulin after discussing with PCP
B. Refer to a smoking cessation specialist or the quit line; pt ready to quit
C. Recommend walking 20-30 min per day at least 5 days per week
D. Measure BG, blood pressure and discuss medication adherence
Integrating pharmacy students and enhancing learning in a WHC

- **Ambulatory care rotation**
  - Description of rotation
    - Patient population
      - You will see blood!
    - Interdisciplinary team
      - DPMs, PTs, MDs, surgeons, MD students/residents
    - Common disease states
      - All chronic conditions!
      - DM → ulcer
  - Student references
    - ADA standards of care

- **Role of the pharmacy student**
  - Optimize medications
    - SOAP format!
    - Monitoring
      - Drug safety
        - Adjusting, stopping, adding, refilling meds
      - Drug efficacy
      - Empowering the patient!
  - Student intervention process
    - 10 patients seen at the same time
    - Average wound care visit 60-90 min
    - Population of focus

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**Figure 1. Clinical pharmacy services**

- **New Patient**
  - DPM or wound care specialist:
    - Wound evaluation
    - Medical history
    - Order baseline laboratories:
      - CBC, CMP, A1C and lipids
    - Consult Pharm.D:
      - If diabetes present or MRP is suspected

- **Pharmacist**
  - Patient evaluation
  - Comprehensive medication review
  - Review pertinent labs results
  - Assess patient needs
  - Determine if diabetes is present

- **Diabetes Ulcer**
  - Monitoring
    - Safety and efficacy of treatment
    - Assess the following:
      - Diabetes complications
      - Medication assessment
    - Baseline HbA1C and every 3 months or as needed and before discharge
    - Treatment appropriateness and effectiveness
    - Glucose monitoring
    - CMP/BMP, CBC as needed
    - Medication safety:
      - Lifestyle modifications
      - Medication adherence
      - Adverse drug events (ADEs)
      - Other:
        - Blood pressure during clinic
        - Potential ADEs (pADEs)
        - Smoking cessation
        - BG during clinic if necessary
        - Medication adherence
        - Immunizations
        - Miscellaneous
    - Referrals
  - Document and f/u as needed based on DM control, patient needs or until d/c from the WHC
  - Coordinate care as necessary

- **Non Diabetes Ulcer**
  - Document in EHR
  - Document each encounter and interventions/recommendations discussed with provider (PCP, DPM)
  - Contact primary care physician if further adjustments are necessary
  - Discuss with DPM/PCP and resolve

- **MRP**
  - Document and f/u as needed based on DM control, patient needs or until d/c from the WHC
  - Coordinate care as necessary
Patient case: 6 months later

- Pt is doing well
- FBG: 120s, PPBG 150s
- During wound care appointments, pharmacy students continued to:
  - Optimize medications
  - Provide education:
    - Diabetes
    - Nutrition
    - Medication
    - Smoking cessation!
    - On NRT
  - Non-pharmacological recommendations
  - Monitor labs

Patient case- 6 months later

- Medications:
  - Metformin 1000 BID
  - Nicotine patches
  - Lantus 30 units QHS
  - Lisinopril 20 mg
  - Aspirin 81 mg
  - Atorvastatin 80 mg
- Labs
  - A1C 6.5%; HDL 49; LDL 92; Alb 4.0

What service can a pharmacy student provide during this visit?

A. Administer PPSV23 and influenza vaccines today
B. Refer the patient to the certified diabetes educator
C. Adjust insulin based on the most recent A1C of 6.5%
D. Refer the patient to GI to initiate hepatitis treatment
Integrating pharmacy students and enhancing learning in a WHC

• Common clinical interventions
  – Patient education
    • Medication
    • Diabetes
    • Life style
    • Smoking cessation
    • Immunizations!
  – Monitoring
    • Labs: A1C, CMP/BMP, Lipids, BP, BG
    • Medication adherence
    • ADEs, pADEs

Integrating pharmacy students and enhancing learning in a WHC

– Coordination of care
  • Referrals
  • Collaborating with PCP
  • Transitions of care
  • Communication with other clinicians, social workers, case managers
– Tracking results and interventions!
  • Potential for research

Tracking patient outcomes - Metrics used

• Back to the triple aim!
  – Improve outcomes
    • A1C
    • ADEs, pADEs
  – Improve patient experience
    • Patient satisfaction
      – By WHC
  – Decrease cost
    • Amputations $$$?
    • ED visits
Tracking patient outcomes - Challenges

- Documentation!
  - Multiple EHRs
  - Laboratory results
    - MEDITECH
    - PCP clinics
    - Athena
  - Outpatient WHC notes
    - MEDITECH
    - Paper charts!
    - Excel
  - No access to PCP notes
    - Did the pt f/u?

Tracking patient outcomes - Challenges

- Documentation…
  - Pharmacist’s notes
    - Diamed
      - Only certain providers had access to it
      - Fees to obtain certain reports
      - Fax notes, recommendations
    - Excel
      - Tracking lab values and interventions

Tracking tool used

- ADE and pADEs tracking tool
  - Adapted from the University of Southern California School of Pharmacy Medication Therapy Intervention & Safety Documentation Program User Manual (v 7.0, last updated 4/6/2012)
**Table 1.** Commonly Identified Medication Related Problems (MRPs) in a WHC

<table>
<thead>
<tr>
<th>Category</th>
<th>Commonly Identified MRPs</th>
</tr>
</thead>
</table>
| Treatment Appropriateness and Effectiveness | - Untreated medical problem  
- Drug dosing not adequate for treatment goals  
- Treatment not optimal based on current evidence/ guidelines  
- Monitoring standards not being followed(for disease state) |
| Medication Safety (ADEs/pADEs)  | - Drug dosing excessive for treatment goals  
- Incomplete/improper directions  
- No indication for medication prescribed  
- Polypharmacy-Rx not needed/duplication  
- Contraindication  
- Adverse Drug Reaction (ADR)  
- Drug interaction  
- Lab/diagnostic test indicated, not ordered  
- Abnormal lab result not addressed  
- Medication overdose or misuse  
- Dose discrepancy between patient use & prescribed therapy  
- Using expired medications |
| Non-adherence & patient variables | - Medication underuse/poor adherence  
- Dosage form not reasonable for patient  
- Inadequate patient self-management  
- Patient dissatisfied or refuses treatment |
| Miscellaneous                    | - Inadequate refills between visits |
Interventions/recommendations conducted by pharmacists/students

Table 3. Interventions Conducted by Pharmacists at the WHC Between February 2013 and December 2015

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention</th>
<th>Arm (n=515)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients seen by pharmacist</td>
<td>N</td>
<td>309</td>
</tr>
<tr>
<td>Patient Encounters</td>
<td></td>
<td>888</td>
</tr>
<tr>
<td>Encounters Per Patient</td>
<td></td>
<td>2.9</td>
</tr>
<tr>
<td>MRPs encountered (%)</td>
<td></td>
<td>441</td>
</tr>
<tr>
<td>Appropriate and Effective</td>
<td></td>
<td>138 (31.3)</td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td>155 (35.1)</td>
</tr>
<tr>
<td>ADE’s</td>
<td></td>
<td>72 (16.3)</td>
</tr>
<tr>
<td>pADE’s</td>
<td></td>
<td>83 (18.8)</td>
</tr>
<tr>
<td>Non-Adherence and Patient Variables</td>
<td></td>
<td>99 (22.4)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td>49 (11.1)</td>
</tr>
</tbody>
</table>

Which of the following was the most common intervention performed by pharmacists/students at the WHC?

A. Identifying medication related problems related to safety
B. Administering influenza and pneumonia vaccines
C. Providing patient education during each visit to the WHC
D. Optimizing medications and monitoring laboratory values

Questions?

- Seven months later!!!
Acknowledgements

• All my students who completed their rotation at the WHC and participated in this project
• Drs. Valdes, Kulekowskis, Lopez and all the WHC staff at NAH WHC
• Charlene A. Hope, MS, Pharm.D., BCPS

Clinical Pharmacy Services in a Dental Clinic – an Innovative and Dynamic Interprofessional Team

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ICHP 2016 Annual Meeting
September 17, 2016

Disclosures

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Case

BP is 77 year old female with a history of atrial fibrillation, HTN, T2DM, COPD and osteoporosis. Current medications include:

- Albuterol
- Alendronate
- Aspirin
- Lisinopril
- Metformin
- Budesonide/formoterol
- Warfarin

HTN = Hypertension
T2DM = Type 2 Diabetes Mellitus
COPD = Chronic Obstructive Pulmonary Disease

Dental clinic - background

- 50,000 + patients/year
- Student - driven clinic
  - 150 third year and 150 fourth year dental students
- Clinic structure:
  - 12 suites (~ 16 operatory rooms)
  - Dental student teams
  - At one time approximately 150 patients at clinic

Pharmacist role in a dental clinic

- Innovative interprofessional patient care approach
- Literature scarce/none
- Medication experts
  - Obtain additional patient medical information
  - Review medications and medical conditions
  - Identify dental medication interactions
  - Discuss recommendations to enhance dental patient care
Workflow and pharmacy patient care

- **Triage visit**
  - Obtain basic patient demographic info
  - Blood pressures
  - Blood glucose

- **Comprehensive Screening**
  - Detailed medical history
  - Blood pressures
  - Blood glucose

- **Treatment planning**
  - Review procedures and cost

- **Dental procedure**
  - Patients receive dental care needed

General patient demographics

Pharmacist based consults

<table>
<thead>
<tr>
<th>New Consults*</th>
<th>Average ± SD (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of medications average ± SD (range)</td>
<td>7.4 ± 5.4 (0 – 28)</td>
</tr>
<tr>
<td>Number of disease states average ± SD (range)</td>
<td>4.0 ± 2.7 (0 – 14)</td>
</tr>
<tr>
<td>Consult duration (min) average ± SD (range)</td>
<td>8.2 ± 4.0 (5 – 20)</td>
</tr>
</tbody>
</table>

*New Consults, % (n=924)*
- Vasculature: 33%
- Mental Health: 21%
- Endocrine: 15%
- Neuro/musculo/skeletal: 14%
- Gastrointestinal: 13%
- Hematological: 9%
- Others: 8%
BP is 77 year old female with a history of atrial fibrillation, HTN, T2DM, COPD and osteoporosis. Current medications include:

- Albuterol
- Alendronate
- Aspirin
- Lisinopril
- Metformin
- Budesonide/formoterol
- Warfarin

HTN = hypertension
T2DM = Type 2 Diabetes Mellitus
COPD = Chronic Obstructive Pulmonary Disease

How can the pharmacist ensure this patient is getting the best dental care?

A. Obtaining additional patient medical information such as the value and date of last INR
B. Assess patient’s risk of developing osteonecrosis of the jaw due to bisphosphate use
C. Assess patient’s blood pressure to ensure value is not high enough to warrant vasoconstrictor dose limit
D. Discuss with patient the importance of rinsing mouth after using budesonide/formoterol
E. All of the above

INR = international normalization ratio

Establishing services...

1. Connecting between pharmacy and dental providers
2. Identify the dental patient populations of high risk needs
3. Establish a protocol of high risk dental patients
4. Determine the best process for intervention
5. Develop plans for management of the dental populations consulted
6. Evaluate the efficiency and use of the protocol
Where to begin…

1. Connecting between pharmacy and dental providers
2. Identify the dental patient populations of high risk needs
3. Establish a protocol of high risk dental patients
4. Determine the best process for intervention
5. Develop plans for management of the dental populations consulted
6. Evaluate the efficiency and use of the protocol

Initial protocol

Establishing services…

1. Connecting between pharmacy and dental providers
2. Identify the dental patient populations of high risk needs
3. Establish a protocol of high risk dental patients
4. Determine the best process for intervention
5. Develop plans for management of the dental populations consulted
6. Evaluate the efficiency and use of the protocol
Process of intervention

• Trial and error

• Learning the dental process of patient information intake
  – What questions does the pharmacist need to ask?

• Re-assess process of dental care during visit

• Where can pharmacy make the most impact?

Establishing services...

1. Connecting between pharmacy and dental providers
2. Identify the dental patient populations of high risk needs
3. Establish a protocol of high risk dental patients
4. Determine the best process for intervention
5. Develop plans for management of the dental populations consulted
6. Evaluate the efficiency and use of the protocol

Dental patient - treatment protocols/recommendations

Utilizing dental resources and literature:
  – American Dental Association
  – American Heart Association
  – American Academy of Orthopedic Surgeons
  – Little and Falace’s - Dental management of the medically compromised patient. 8th ed. 2013.

Protocols:
• Blood pressure
• Diabetes
• Anticoagulation
• Hepatic/Renal dysfunction
• Others
Which of the following dental patients would benefit most from screening by a pharmacist?

A. 57 yr old with a history of anxiety and depression.
B. 42 yr old male with well controlled HTN.
C. 71 yr old with a history of T2DM, HTN, & CKD.
D. 38 yr old who recently recovered from acute sinusitis.

Establishing services...

1. Connecting between pharmacy and dental providers
2. Identify the dental patient populations of high risk needs
3. Establish a protocol of high risk dental patients
4. Determine the best process for intervention
5. Develop plans for management of the dental populations consulted
6. Evaluate the efficiency and use of the protocol

Retrospective research – chart review

What were the reasons and who prompted the consult?

<table>
<thead>
<tr>
<th>Reason for Consult</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacist</td>
<td>42.3%</td>
</tr>
<tr>
<td>Dental patient</td>
<td>49.1%</td>
</tr>
<tr>
<td>Dental student</td>
<td>6.4%</td>
</tr>
<tr>
<td>Dental faculty</td>
<td>4.8%</td>
</tr>
<tr>
<td>Others</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

- PMCP*: 42.3% (n=113)
- PBCI†: 49.1% (n=131)
- DI‡: 6.4% (n=17)
- Other Ψ: 2.2% (n=6)
Retrospective research – chart review
What were the specific triggers in the PBCI?

- Elevated blood pressure, n=54
- PMH/FH of concerning disease status, n=26
- Medication question, n=22
- Follow up visits, n=9
- Tobacco cessation, n=8
- History of cancer, n=4
- Allergy history, n=3

Modified protocol

Continuous evaluation of the protocol

- Recognizing potential areas of missed patient care opportunities
- How to address the concerns
- Recurrent themes of medical conditions/medications
Most of the pharmacy consults were being prompted by which of the following?

A. Pharmacy medication protocols
B. Pharmacy based case inquiries – reasons outside of the protocol
C. Drug information questions
D. Other

Which condition triggered the most Patient Based Case Inquiries (PBCI) by the pharmacist?

A. Medication allergies
B. History of cancer
C. Elevated blood pressure
D. Anticoagulation use

Impact on student learning

• Dental students
• Pharmacy students
Impact on student learning—dental students

Preliminary data – survey based research

Survey based design

Identifying high risk medications and associated dental outcomes or interactions

ONJ* risk (total possible = 3)

Bleeding risk (total possible = 2)

Limiting of epinephrine (total possible = 2)

Identifying high risk medications and associated dental outcomes or interactions

Start of third year

End of third year

*ONJ = Osteonecrosis of the Jaw, statistically significant p < 0.05

Preliminary data – survey based research

Survey based design

Identifying signs and symptoms of myocardial infarction and stroke

Myocardial infarction*

(Stoke*)

(Stoke*)

(Stoke*)

*Statistically significant p < 0.05
Pharmacy Student Learning

- Ambulatory care rotation
- Interdisciplinary education
- Learning experiences
  - Medication Reconciliation
  - Review/incorporation of guidelines
  - Drug information questions from dental faculty
  - Patient Counseling
  - Communication and interviewing skills

Pharmacy Student Learning

- Pharmacy students teach dental students
  - Chronic disease state management
  - HTN, T2DM, anticoagulation, immunosuppression, smoking cessation, osteoporosis

- Pharmacy students learn unique dental aspects
  - Local anesthetics
  - Drug interactions
  - Dental implications of medications-xerostomia

Pharmacy Student Learning

- Get students involved in all aspects
  - Screenings
  - Patient consults
  - Dental student consults
  - In-services to dental faculty and students
Pharmacy consults by dental students were prompted approximately _________% of the time.

A. 20  
B. 50  
C. 75  
D. 100

The development of protocols in a dental clinic not only enhances patient safety but also enhances student learning. Which of the following medical conditions is most effectively managed by a protocol?

A. Osteoporosis  
B. Smoking cessation  
C. Type 2 Diabetes Mellitus  
D. Hypertension  
E. C and D

Tracking outcomes  
Challenges and methods used

• Interventions incorporated into pharmacy consult note – easy to track  
• IT support  
• EMR  
• Support by administrators/deans/dental faculty  
• Executive report completed annually
Description of Interventions

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assessing for signs/symptoms (s/sx) of disease events (e.g. myocardial infarction (MI)/stroke, hypo/hyperglycemia, etc.)</td>
</tr>
<tr>
<td>2</td>
<td>Recommending specific consults to be obtained by specialists or primary care physicians</td>
</tr>
<tr>
<td>3</td>
<td>Recommending specific medication therapies/adjustments (e.g. pain management, lidocaine/epinephrine, antibiotics, etc.)</td>
</tr>
<tr>
<td>4</td>
<td>Inquiring on the safety and efficacy of the medications (i.e. side effects of local anesthetic after administration)</td>
</tr>
<tr>
<td>5</td>
<td>Medication review during consult or if thorough assessment of medications and oral health implications in consult form</td>
</tr>
<tr>
<td>6</td>
<td>Contacting the primary care provider or specialist via telephone to review the patient case (e.g. elevated blood sugars &gt; 300)</td>
</tr>
<tr>
<td>7</td>
<td>Educating the patient, student, and/or faculty on monitoring and medication information (e.g. managing hypoglycemia)</td>
</tr>
<tr>
<td>8</td>
<td>Written/printed handouts provided (e.g. tobacco cessation products, list of free clinics, drug information, etc.)</td>
</tr>
<tr>
<td>9</td>
<td>Assisting in patients with high risk needs (e.g. coordinating care to the emergency room)</td>
</tr>
<tr>
<td>10</td>
<td>Drug information, smoking cessation, updated medication list</td>
</tr>
</tbody>
</table>

Most Common Interventions

Total interventions for FY 2015-2016 = 3140

Type 7 - Educating the patient or student on monitoring parameters (e.g. signs and symptoms of myocardial infarction/stroke), medication interactions, and disease state management and preventative measures (e.g. minimizing the risk of hypoglycemia) — most frequently and consistently 21.7%.

Type 3 - Recommending specific medication therapies/adjustments (e.g. pain management, etc.) — occurred consistently 19.1%; and

Type 1 - Assessing for signs and symptoms of myocardial infarction or stroke, hypoglycemia, depression, etc. — occurred consistently 19.0%.

Which of the following was the most tracked intervention?

A. Educating the patient or student on monitoring parameters, medication interactions, and disease state management and preventative measures

B. Recommending specific consults to be obtained by specialists or primary care physicians

C. Medication review during consult or if thorough assessment of medications and oral health implications in consult form

D. Drug information, smoking cessation, updated medication list
Current challenges
Change of workflow

- Triage
  - No medical history on chart

- Comprehensive Screening

- Treatment Planning
  - Review procedures and cost

- Dental Procedure
  - Patients receive dental care needed

Questions
Pharmacists Walking on New Territory to Save Limbs: The Collaboration Between Pharmacists and Podiatrists – slides 30 and 40

**Figure 1. Clinical pharmacy services**

**New Patient**

- DPM or wound care specialist:
  - Wound evaluation
  - Medical history
  - Order baseline laboratories: CBC, CMP, A1C and lipids
  - Consult Pharm.D.: If diabetes present or MRP is suspected

- Pharmacist
  - Patient evaluation
  - Comprehensive medication review
  - Review pertinent labs results
  - Assess patient needs
  - Determine if diabetes is present

**Diabetes Ulcer**

- DSME
  - Diabetes disease process
  - Diabetes complications
  - Medication assessment
  - Glucose monitoring
  - Lifestyle modifications
  - Other:
    - Smoking cessation
    - Immunizations
    - Blood pressure
    - Dyslipidemia
    - Referrals
      - Primary care
      - Ophthalmologist
      - Dentist
      - Nutritionist

- Monitor
  - Safety and efficacy of treatment
  - Baseline HbA1C and every 3 months or as needed and before discharge
  - CMP/BMP, CBC as needed
  - Medication adherence
  - Blood pressure during clinic
  - BG during clinic if necessary

**Non Diabetes Ulcer**

- CMMS
  - Assess the following:
    - Treatment appropriateness and effectiveness
    - Medication safety:
      - Adverse drug events (ADEs)
      - Potential ADEs (pADEs)
  - Medication adherence
  - Miscellaneous
  - Medication education
  - Document and communicate findings

**Treatment Optimization Needed?**

- No
  - Document and f/u as needed based on DM control, patient needs or until d/c from the WHC
  - Coordinate care as necessary

- Yes
  - Document in EHR
    - Document each encounter and interventions/recommendations discussed with provider (PCP, DPM)
    - Contact primary care physician if further adjustments are necessary
  - Discuss with DPM/PCP and resolve MRP
  - Document and f/u as needed based on DM control, patient needs or until d/c from the WHC
  - Coordinate care as necessary

* DPM: doctor of Podiatric medicine, MRP: medication related problem…..
**Table 1. Commonly Identified Medication Related Problems (MRPs) in a WHC**

| Treatment Appropriateness and Effectiveness | Untreated medical problem  
| Medication Safety (ADEs/pADEs) | Drug dosing excessive for treatment goals  
| | Incomplete/improper directions  
| | No indication for medication prescribed  
| | Polypharmacy- Rx not needed/duplication  
| | Contraindication  
| | Adverse Drug Reaction (ADR)  
| | Drug interaction  
| | Lab/diagnostic test indicated, not ordered  
| | Abnormal lab result not addressed  
| | Medication overuse or misuse  
| | Dose discrepancy between patient use & prescribed therapy  
| | Using expired medications  
| Non-adherence & patient variables | Medication underuse/poor adherence  
| | Dosage form not reasonable for patient  
| | Inadequate patient self-management  
| | Patient dissatisfied or refuses treatment  
| Miscellaneous | Inadequate refills between visits  
| | Non-formulary/not cost effective drug choice  
| | No follow-up/appointment with PCP  

* Adapted from the University of Southern California School of Pharmacy Medication Therapy Intervention & Safety Documentation Program User Manual (v 7.0, last updated 4/6/2012)