What is Health-System Pharmacy’s Contribution to the Value Equation?

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Learning Objectives

• Describe health-system pharmacy imperatives as a result of changes in the healthcare landscape.
• Identify high impact areas and metrics to demonstrate value.
• Describe the transformation of pharmacy practice from acute care to patient-centered care.

Shifting Landscape

Volume → Value → Results

Health-System Transformation

Traditional Acute Care
• Episode-based
• Medical care
• Treatment of acute conditions
• Admissions
• Medication orders
• Outpatient revenue
• Oral medications mainstay for chronic diseases

Health and Wellness
• Patient-centered care
• Team-based care
• Preventing readmissions
• Transitions of care
• Patient’s medication list
• Outpatient costs
• Specialty medications for chronic diseases

Health-System Implications
Managed Care 2.0

• Population health
• Risk-based contracting
• Focus on efficiency and costs
• Reducing readmissions and Length of Stay (LOS)
• Mergers-acquisitions and joint ventures
• Metamorphosis of retail sector
  – Hospital-retail partnerships
  – Healthcare clinics
  – Infusion services

Outpatient Conundrum

• Cancer Centers
• Specialty Drugs
  – Outpatient Infusions
  – Prescriptions
• Diagnostics/Procedures

Revenue Risk
Changing Landscape for Pharmacy
Driven by Changing Reimbursement Models

Evolving Health-System Pharmacy’s Role

Drug

Risk

Revenue

Expenses

Traditional Health-System Pharmacy’s Role

Healthcare Problems

Medications

Overuse

Misuse

Quality

Cost

VALUE

IMS Health Identifies Potential Savings of $213.2 billion

- Overuse
  - 78 million outpatient visits
  - 248 million prescriptions
  - 4 million needless Emergency Department (ED) visits
- Opportunities
  - Improve adherence
  - Evidence-based treatments
  - Focus on antibiotic misuse
  - “Mismanaged polypharmacy” in elderly
  - Targeted disease management


Choosing Wisely (choosingwisely.org)

- 60 specialty societies
- Evidence based recommendations
- Many are medication-related
- Don’t prescribe a medication without conducting a drug regimen review. American Geriatrics Society

Choosing Wisely?

- Consists of evidence-based recommendations
- Supports patient engagement in discussions about treatments and tests
- Has many medication-related recommendations
- All of the above

High Impact Areas to Demonstrate Value

- Drug expenses with focus on specialty medications
- Cancer Care
- Antimicrobial Stewardship
- Transitions of Care

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Specialty Drug Spend

- PMPY* 2013 for medical and pharmacy cost: $348 vs traditional drugs: $676
- PMPY 2018 anticipated specialty: $846 vs. traditional $836
- Cost savings opportunities
  - Site of administration
  - Specialty disease algorithms aka clinical pathways 2.0
- Prerequisites: clinical subject matter experts


Rheumatoid Arthritis (RA) Pathway Results

CareFirst BlueCross BlueShield, Cardinal Health
- Payer-sponsored collaborative
- Evidence based, consensus driven RA pathway
- Reimbursement enhancements to support adoption and compliance
- Goal 70% 1st year, 80% 2nd year
- 1800 pt results: Adherence to pathway did not increase Clinical Disease Activity Index (composite score of disease) based on patient and M.D. perspective
- 8% reduction in biologics

Fainberg SG. Rheumatoid arthritis pathway program impact on patterns of care. ISPOR 2014

Epoetin (000)

Pharmacy Protocol to start medication on day #8 and reduce standard dose to 50 units/kg three times/week

Hepatitis B Immune Globulin (both inpatient and outpatient)

Value Examples

<table>
<thead>
<tr>
<th>Medication</th>
<th>Opportunity Identified and Pharmacist Intervention</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMV-IVIG</td>
<td>Patient with CMV viremia who had response to change in antiviral from ganciclovir to foscarnet. Intervention: Discontinued CMV-IVIG</td>
<td>$75,000</td>
</tr>
<tr>
<td>Glucarpidase</td>
<td>Patient with methotrexate toxicity. Intervention: Dose rounding</td>
<td>$24,805</td>
</tr>
<tr>
<td>Hemin for injection</td>
<td>Patient without lab confirmation of acute intermittent porphyria. Intervention: Hold therapy pending labs results. Labs returned negative.</td>
<td>$24,984</td>
</tr>
<tr>
<td>IVIG</td>
<td>Patient with HIV, hepatitis C, ITP; received 3 doses of IVIG as outpatient. Admitted with bruising and headache, platelet count of 9000/uL. M.D. ordered 2 more doses, however platelets were increasing. Intervention: Discontinue IVIG order</td>
<td>$15,074</td>
</tr>
<tr>
<td>Idursulfase</td>
<td>Patient with VP shunt malfunction repair. Receives Idursulfase weekly as an outpatient. Intervention: Contacted patient’s medical geneticist to administer dose post-discharge.</td>
<td>$10,500</td>
</tr>
</tbody>
</table>
Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis

Cancer Care Trends
- 900 oncology drugs in development; 50% are oral
- Cost cancer care $100 billion/year; projected to grow to $200 billion by 2020
- Approximately 14 million people have had cancer in U.S.; projection: 18 million survivors by 2030
- Center for Medicare & Medicaid Services pays for 45% of patients with cancer
  - 53% of cancer diagnoses were in pts ≥65 years old in 2012
- Oral drugs cost up to $100,000/year
- Care is often fragmented and poorly coordinated

Hospital Acquisition of Oncology Practices
- Higher cost of care: 55% increase to infuse in hospital-based setting (source Medicare)
- Higher out of pocket costs for patients
- Risk to hospitals and M.D. = Narrow networks
- Payer focus on site of care

Delivering Affordable Cancer Care in the 21st Century
Institute of Medicine (IOM) Workshop examined drivers of cancer care costs
- Inappropriate financial incentives
- Unrealistic expectations re: effectiveness of screening & treatments for cancer by patients and clinicians
- Overuse and misuse of medical resources and inadequate adherence with treatment guidelines
- Lack of evidence on what represents high quality, affordable cancer care

IOM Recommendations

“If we can find a way to solve this problem for cancer care, we have the keys to solve it for health care more broadly.”

Harvey Fineberg, IOM President

Value of Cancer Treatment

- Does median survival of 1-2 months at a cost up to $100,000 represent value?
- United Kingdom Value Based Pricing
  National Institute of Health and Care Excellence (NICE): evaluation of new medications and development of guidelines
    - Quality Adjusted Life Year (QALY) = length of life x quality of life
    - Therapeutic benefit (Value) determination
      - Threshold for drug approvals: $30,000-$50,000 for each quality-adjusted life year added by an intervention
      - Oncology drugs may be funded at a higher level: approx $16,000

American Society of Clinical Oncology (ASCO) Value in Cancer Care Initiative

- Value algorithms for chemotherapy
- Indicators under development
  - Overall survival and/or progression-free survival
  - Quality of life
  - Impact on patient’s health based on treatment toxicities
  - Disease-specific cost

Episode Payment for Breast, Colon, Lung Cancer A Preview of Coming Attractions

- Bundled payment for treatment episode with aligned M.D. incentives, i.e., use of higher cost chemo didn’t increase reimbursement
- 60 measures of cost, quality and use
  - Survival: time to progression and survival
  - Use of CSFs
  - ED visits/admissions for cancer- or treatment-related symptoms
  - Days in hospice
- Results
  - 34% reduction in total medical cost and 179% increase in chemotherapy drug cost
  - Decreases in hospitalization and use of therapeutic radiology
  - Delays in post-discharge follow up resulted in readmissions


Oncology Value Initiatives FY14

<table>
<thead>
<tr>
<th>High Cost Cancer Comte Created Jan 13</th>
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<tbody>
<tr>
<td>Supportive Care Guidelines</td>
</tr>
<tr>
<td>- Antiemetics</td>
</tr>
<tr>
<td>- Growth Factors</td>
</tr>
<tr>
<td>- CSFs</td>
</tr>
<tr>
<td>- Bone-Modifying Agents</td>
</tr>
<tr>
<td>- Savings: $1.25 million</td>
</tr>
<tr>
<td>Disease Research Groups</td>
</tr>
<tr>
<td>- Cancer-specific guidelines</td>
</tr>
<tr>
<td>- Breast, Thoracic, Prostate, Gyn, GI, Lymphoma, Melanoma-in-progress</td>
</tr>
<tr>
<td>Strategies:</td>
</tr>
<tr>
<td>- ASCO Choosing Wisely: ECOG=2 discussion on chemo Dose Rounding to Vial Size</td>
</tr>
<tr>
<td>FY 14 Results: $4.2 million under budget</td>
</tr>
</tbody>
</table>

Performance Status and End of Life Chemotherapy

- Why measure performance status?
  - ASCO Choosing Wisely: tests, procedures and/or treatments whose common use and clinical value are not supported by available evidence
  - Number 1: Do not use cancer-directed therapy for solid tumor patients with the following characteristics: low performance status (ECOG 3 or 4)
- Why target chemotherapy use at the end of life?
  - As compared with pts receiving standard care for metastatic NSCLC**, patients receiving early palliative care had less aggressive care at the end of life but improved quality of life and longer survival (Temel, et al. NEJM 2010)

*Eastern Cooperative Oncology Group Score
** Metastatic non-small cell lung cancer

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ECOG Score Definitions
Eastern Cooperative Oncology Group

<table>
<thead>
<tr>
<th>Score</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>Fully active&lt;br&gt;Able to carry on all pre-disease performance without restriction</td>
</tr>
<tr>
<td>1</td>
<td>Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature</td>
</tr>
<tr>
<td>2</td>
<td>Ambulatory and capable of all self-care but unable to carry out any work activities. Up and about more than 50% of waking hours</td>
</tr>
<tr>
<td>3</td>
<td>Capable of only limited self-care&lt;br&gt;Confined to bed or chair more than 50% of waking hours</td>
</tr>
<tr>
<td>4</td>
<td>Completely disabled&lt;br&gt;Cannot carry on any self-care; totally confined to bed or chair</td>
</tr>
<tr>
<td>5</td>
<td>Dead</td>
</tr>
</tbody>
</table>

% Documentation of ECOG on Chemotherapy Orders

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient</td>
<td>ECOG (IV orders)</td>
<td>55%</td>
<td>83%</td>
<td>85%</td>
<td>95%</td>
</tr>
<tr>
<td>Inpatient</td>
<td>ECOG (IV)</td>
<td>37%</td>
<td>93%</td>
<td>97%</td>
<td>100%</td>
</tr>
<tr>
<td>ECOG (Non-IV)</td>
<td>0%</td>
<td>100%</td>
<td>65%</td>
<td>85%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>ECOG document</td>
<td>87%</td>
<td>89%</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td>w/E COG &gt;2</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

Antimicrobial Stewardship

- 3 day timeout
  - De-escalate
  - D/C
  - IV to p.o. conversion
- Non-SCIP (Surgical Care Improvement Project) Prophylaxis
- Advanced Antimicrobial Management
  - Immunosuppressed patients with complex infections
    - Antivirals
    - Antifungals
    - Antibiotics for resistant strains
  - Core competency is prerequisite to pharmacy value

Transformation of Pharmacy Practice: Acute Care to Patient-Centered Care
Patient-Centered Medication Use Process 2.0

Value

- Site of Care
- Medical Home MTM
- Post-Discharge F/U

Reduce Preventable Admissions
Prevent Adverse Drug Events
Reduce Length of Stay

50% of patients do not take their medications as prescribed

$100 billion/year in medication-related admissions

Patient Understanding and Adherence

50% of patients do not take their medications as prescribed

$100 billion/year in medication-related admissions

Why medication literacy matters?

- The instructions are 3 times daily
  – I am taking the medication at 8am, 9am, and 10am.

- My friend is getting 100mg for his blood pressure.
  – Why am I only getting a 5mg pill?

- I am taking both pravastatin and pantoprazole.
  – Pantoprazole is for my high cholesterol and pravastatin is for my acid reflux, which I only take as needed.

Med “Wreck”

- Over 1/3 of patients had a medication error at admission and 85% had errors that originated from their prior to admission medication histories

- 54-86% of patients have discrepancies in medications upon admission to the hospital with an estimated 3.3 discrepancies per patient

- 14-80% of patients experienced at least one medication discrepancy post-discharge

- 19% of patients experienced an adverse event within 3 weeks of hospital discharge, 67% were attributed to medications, and 12% of the adverse drug events were preventable

Medication lists generated by electronic health records are generally accurate

a. True
b. False

Ensuring the Accuracy of the Medication List

- A medication order is a sentence and if any element: drug, dose, dosage form, route, frequency, duration are incorrect, patient harm can result

- A variety of individuals (licensed and non-licensed) enter medication information into traditional and electronic health records across different settings

- Clinicians rely on the information and prescribe medications that are listed even though the information may be inaccurate

CMS 2012—Meaningful Use

- Any licensed healthcare professional and credentialed medical assistants, can enter orders into the medical record.

- Credentialed medical assistants are:
  - Certified medical assistants - graduates of an accredited medical assisting program
  - Accredited Medical Assistant Programs requirements: 2-6 units of pharmacology training. (based on evaluation of 4 California programs)
  - Medical assistants (who are not certified) who have completed a required order entry course

Requirements for Medical Assistants (non-certified) to Perform Order Entry

- 2 year recent experience in a health care facility under the supervision of a licensed health care provider
- Application signed by supervising (LHP) attesting proficiency in electronic health record proficiency demonstrated by knowledge in areas including pharmacology
- Completion of Assessment-Based Recognition in Order Entry (ABR-OE) training- 5 courses (1 hr each)
  - Clinical Laboratory Testing
  - Disease Screening
  - Legal Aspects of Patient Care Documentation
  - Lost in Translation: Eliminate Medical Errors
  - Medical Records: A Vital Wave

Sources of Medication Lists

Errors introduced in any of these settings can become “hardwired” into the pt record

- Home
  - Patient
  - Family members
  - Caregivers
  - Home Health nurses
- Outpatient Settings
  - Certified medical assistants
  - Physicians
  - Community pharmacies
  - Patients
- ED/Hospital
  - Nurses
  - Physicians
  - Pharmacists
  - Pharmacy technicians
  - Pharmacy residents, students
- Skilled Nursing Facility
  - Nurses
  - Physicians

Pharmacist’s Value in Evaluating Medications

- Medications
  - Prior to admission
  - Medication List
  - As well as new orders
  - Drug
    - Indication
    - Dose
    - Route
    - Frequency
    - Dosage form
    - Duration
  - Patient Characteristics
    - Age
    - Pediatrics
    - Geriatrics
    - Gender
    - Height/Weight
    - Allergies
    - Kidney/Liver
    - Function
    - Current labs
    - Previous admissions
  - Current Medication
    - List
    - Drug-drug interactions
    - Drug-disease interactions
    - Drug-food interactions
    - Duplicating therapy
    - Contraindications
    - Medications needed but not prescribed
    - Monitoring requirements
- Special Considerations
  - High risk patients or therapies such as:
    - Chemotherapy
    - Blood thinners
    - Antibiotics
    - Drugs with narrow therapeutic index

Ensuring Safe Medication Transitions

- Prior to Admission
  - Assess PTA medication list
- Hospital Admission
  - Assess inpt medications
  - Hospital Transfers
- Hospital Discharge
  - Re-assess inpt medications
  - Discharge medications
- Post Discharge
  - Assess chronic medications
  - Re-assess chronic medications
- Outpatient Discharge

Mitzy’s Admissions

Ensuring safe medication transitions
Use of the MedAL Algorithm to Identify Patients At Risk for 30-Day Readmission

- **Primary objective**
  Determine if the Medication Adherence and Literacy (MedAL) algorithm effectively identifies patients at risk of readmission within 30 days

- **Secondary objective**
  Determine if post-discharge interventions impact 30-day readmission rates for pts identified by the MedAL algorithm

**Use of the MedAL to Identify Pts At Risk for 30-Day Readmission**

**Value as Predictive Indicator**

- **Results**
  - The odds of readmission for the group identified as needing post-discharge follow-up was 2.8 times greater than for the group identified as not needing post-discharge follow-up (95% CI 0.172 - 0.710, p=0.0045)

- **Conclusion**
  - The MedAL algorithm can serve as a tool to identify patients that are at risk for readmission within 30 days.
  - Post-discharge follow-up of patients identified by the MedAL algorithm may reduce 30-day admission rates.

**CSMC MedAL Algorithm**

**Medication Adherence and Literacy Score**

<table>
<thead>
<tr>
<th>Medication Literacy (Scale 0-4)</th>
<th>Medication Adherence (Scale 0-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Literacy (4 points)</td>
<td>High Adherence (4 points)</td>
</tr>
<tr>
<td>Intermediate (2-3 points)</td>
<td>Intermediate (2-3 points)</td>
</tr>
<tr>
<td>Low Literacy (0-1 point)</td>
<td>Low Literacy (0-1 point)</td>
</tr>
</tbody>
</table>

- Need for Post-Discharge Follow Up based on MedAL algorithm

<table>
<thead>
<tr>
<th>Need for Post-Discharge Follow Up based on MedAL algorithm</th>
<th>30 Day Readmissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not need post-discharge intervention (n=115)</td>
<td>10% (12/115)</td>
</tr>
<tr>
<td>Needed post-discharge intervention (n=163)</td>
<td>24% (39/163)</td>
</tr>
</tbody>
</table>

| Post-discharge follow-up completed (n=102) vs Post-discharge follow-up not able to complete (n=61) | 14% (14/102) vs 41% (25/61) |

**Prospective Study of 30 Day Readmission Rates for High-Risk Patients Who Received Post-Discharge Follow Up**

**Relative Risk Reduction: 45%**

- High-risk: ≥10 chronic prescription medications, anticoagulants, de of CHF, AMI, history of transplant, on narrow therapeutic index drugs

**Odds Ratio: 2.1 (CI 0.78-6.9)**
Post-Discharge

Safe Medication Transitions: Metrics and Results

- Ensure accurate medication lists on admission, especially for high risk patients
- 7 errors or discrepancies (DRP: drug-related problems) identified and resolved/patient
- 50-60% of DRPs are serious or life-threatening
- Post-discharge follow up of high risk patients with focus on adherence and literacy
- 50-60% of patients have low literacy and/or adherence
- 2.1 fold readmissions for patients who had follow up compared to those who did not
- Average of 2 serious DRPs/patient resolved at discharge/post-discharge

SNF pts: 50% of patients require intervention due to serious DRPs

Examples of Pharmacist Post-Discharge Follow-up

<table>
<thead>
<tr>
<th>Reason for Admission</th>
<th>Drug-Related Problems Identified Post-Discharge and Pharmacist Intervention</th>
<th>Adverse Outcome Prevented</th>
</tr>
</thead>
<tbody>
<tr>
<td>54 y/o w/ HTN &amp; DVT admitted for sickle cell crisis &amp; left parietal stroke</td>
<td>Issue discovered: Pt. had self-discontinued warfarin, amiodipine, and carvedilol &lt;br&gt; Intervention: Contacted M.D. and confirmed that warfarin and anti-hypertensives should be re-started. Educated pt. and instructed to take all meds as prescribed</td>
<td>Avoided potential thromboembolism, re-admission, and/or death</td>
</tr>
<tr>
<td>92 y/o w/ altered mental status found to have a UTI &amp; toxic digoxin level, also w/ arrhythmias &amp; low blood pressure</td>
<td>Issue discovered: Pt. had continued taking medications that had been stopped, including digoxin, metoprolol, and zolpidem &lt;br&gt; Intervention: Instructed patient to discontinue these medications</td>
<td>Avoided potential drug toxicity, life-threatening arrhythmias, recurrence of confusion, re-admission, and/or death</td>
</tr>
<tr>
<td>98 y/o M from home w/ hip fracture and multiple medical issues.</td>
<td>Issue discovered: Pt. was a new start on fentanyl 25mcg in house. Dose was increased to 50mcg one hour prior to discharge. &lt;br&gt; Intervention: Called SNF to d/c fentanyl 50mcg order. Informed SNF R.N. that the patch was already placed on the pt. SNF R.N. was unaware.</td>
<td>Avoided severe respiratory depression or death due to potential supra-therapeutic dose of fentanyl.</td>
</tr>
<tr>
<td>79 y/o M w/ ESRD - HD on Tu, Th, Sat - with catheter-related S. aureus bacteremia.</td>
<td>Issue discovered: Per ID, vancomycin after dialysis to be continued after d/c and was on discharge medication list. There was an order at the SNF for vancomycin but not at the dialysis center. Pt. dialyzed on Sat after d/c but did not receive vancomycin. &lt;br&gt; Intervention: Ensured vancomycin administration occurred.</td>
<td>Avoided progression of bacteremia and catheter related infection d/t missed doses of antibiotics.</td>
</tr>
</tbody>
</table>

Transformation of Pharmacy Practice: Acute Care to Patient-Centered Care

- Integration of acute care and transitions of care <br> - Knowledge and skills <br> - Roles and responsibilities
- Layered learning models: students, residents
- Leveraging techs
- Team-based care models
- Understanding of implications of Population Health

Disciplined Focus and Accountability Yields Value

<table>
<thead>
<tr>
<th>Relevance</th>
<th>High Impact Areas</th>
<th>Subject Matter Experts</th>
<th>Clinical Knowledge and Skills</th>
<th>Metrics</th>
<th>Explicit</th>
<th>Owner</th>
<th>Timetable</th>
<th>Results</th>
<th>Value</th>
<th>10</th>
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</table>
References


