Improving Healthcare Quality and Safety While Reducing Costs Through Clinical Pharmacy Service Integration

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Questions to Run on...

• What are some successes your organization has had in improving medication-related quality and safety for patients with poor control of chronic disease(s)?

• How can your organization adapt the approaches shared to provide optimal medication therapy outcomes for your patients?

• What barriers prevent your organization from integrating clinical pharmacy services?
Outline

• Overview of the USC / AltaMed Healthcare Innovation Award (HCIA) program from CMMI
• Early results from the HCIA program
• Medical leadership perspective
• Patient perspective
• Stepwise process for implementation
Medication Safety Problems in U.S.

- 1.5 million people are injured each year due to medications
- ~25% of ambulatory patients experience adverse drug events
- 90% of chronic diseases require medications as first-line therapy
- “...for every dollar spent on ambulatory medications, another dollar is spent to treat new health problems caused by the medication.”

$12 Million USC / AltaMed CMMI Project: Specific Aims

10 teams
Pharmacist + Resident + Clinical Pharmacy Technician

Telehealth clinical pharmacy

Resident and technician training for expansion

OUTCOME MEASURES
✓ Healthcare Quality
✓ Safety
✓ Total Cost / ROI
✓ Patient & provider satisfaction
✓ Patient access

Web-based pharmacist training and credentialing
Comprehensive Medication Management (CMM)

- Evidence-based
- Physician approved
- Pharmacist-led
- Preventive clinical service
  - ensuring optimal use of medications that is effective at improving health outcomes for high-risk patients while decreasing health care costs
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>MTM</th>
<th>CMM</th>
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<tbody>
<tr>
<td>Conduct a comprehensive medication therapy review to identify all medication-related problems</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Confirm medication-related problems including assessment, point-of-care testing, medication-related labs</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Assess ALL medications and medical conditions</td>
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<td>✓</td>
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<tr>
<td>Develop individualized medication care plan to address medication-related problems and ensure attainment of treatment goals</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Add, substitute, discontinue, or modify medication doses</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Generate complete medication record</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Document care delivered and communicate to health care team</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ensure care is coordinated with other health care providers</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Provide follow-up care in accordance with treatment-related goals</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Requires collaborative practice agreement between pharmacist and physician</td>
<td></td>
<td>✓</td>
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</tbody>
</table>
USC Patient Targeting and Management Strategy

Clinical Pharmacy

USC School of Pharmacy

- High cost patients
- Frequent and recent acute care utilizers
- 48 EHR-embedded triggers to detect high risk patients
- MD referrals

Comprehensive Medication Management

Treatment Goal Reached?

Yes

Clinical pharmacy tech “check-ins” every 2 months

No

Unstable
Pharmacist Comprehensive Medication Management Programs: Responsibilities

- Identify potential drug-related problems
- Consult with primary provider if needed
- Order tests, drugs, and consults as needed per collaborative practice agreement
- Promote patient self-management, document activities
- Interview patient, apply assessment skills as needed
- Provide follow-up care to ensure successful outcome

High-risk patient with chronic medical conditions
Outline

• Overview of the USC / AltaMed Healthcare Innovation Award (HCIA) program from CMMI

• Early results from the HCIA program
Outcome: Recruit high risk patients

- Enrolled 6,000 patients since Oct 2012
  - Predominantly Hispanic, non-elderly women
- $\frac{3}{4}$ths have hypertension, 36% uncontrolled
- $\frac{2}{3}$rds have diabetes, 60% uncontrolled
- High rates of hospitalizations
Outcome: Improvement in Clinical Markers

**Systolic Blood Pressure**

- Baseline: 151
- 3 Months: 139
- Most Recent: 137

**Diastolic Blood Pressure**

- Baseline: 85
- 3 Months: 77
- Most Recent: 75

*Among those with uncontrolled hypertension at baseline*
Outcome: Improvement in Clinical Markers

A1C Levels

- Less than 7
- 7 to 8
- 8 to 9
- 9 to 10
- Greater than 10

Baseline | 6 months | Most Recent
---|---|---

0.0% | 5.0% | 10.0% | 15.0% | 20.0% | 25.0% | 30.0% | 35.0% | 40.0%
Outcome: Hospitalizations are declining

-16.8%
-21.0%
Control Group Selection

Propensity scoring to match CPS enrollees (treatments) to similar patients receiving care at non-treatment clinics (controls) in three steps:

- Wave 1 treatment patients
- PACE treatment patients from Wave 2
- Non-PACE treatment patients from Wave 2

Covariates used to model the propensity score:

- Demographics
- Health status
- Utilization
- Other
Summary of Difference-in-Differences Results (Treatment – Control)

Clinical results

HbA1C average change in 6 months, uncontrolled at baseline \(-11\%\)

BP % under control in 6 months, uncontrolled at baseline \(-9.3\%\)

Utilization results (Probit Analysis)

Readmissions per year per patient (6 month panel) \(-16\%\)

Readmissions per year per patient primarily attributed to medications (6 month panel) \(-33\\%\)
Untreated (Cohort) vs. Treated Patients, USC CMMI Program

Mortality rates

- 25.7% absolute difference

- Preliminary analysis, data on file

USC Schaeffer Center for Health Policy & Economics
Medication-Related Problems Identified Through CMMI Clinical Pharmacy Program
67,169 problems among 5,775 patients (Avg 11.6 per patient)

- Safety Issues: 22,229, 33%
- Appropriateness / Effectiveness: 14,059, 21%
- Insufficient Patient Self-Management: 13,352, 20%
- Medication Nonadherence: 14,059, 21%
- Misc: 9,222, 14%
- Insufficient Patient Self-Management: 8,267, 12%
Top Actions Taken by Pharmacists to Resolve Medication-Related Problems (excluding education)

- Change Dose or Drug Interval: 14,981
- Add Medication: 5,554
- Order test: 4,230
- Discontinue Medication: 3,847
- Substitute Medication: 2,665
Physician Satisfaction

- Pharmacy team is accessible
  - Strongly disagree: 10.4%
  - Disagree: 89.6%

- Pharmacy team is respectful and courteous
  - Strongly disagree: 6.3%
  - Disagree: 93.7%

- Pharmacists are knowledgeable
  - Strongly disagree: 8.3%
  - Disagree: 91.7%

- Agree with pharmacists' recommendations
  - Strongly disagree: 22%
  - Disagree: 24.4%
  - Agree: 73.3%

- SOAP notes are completed and forwarded in a timely manner
  - Strongly disagree: 4.4%
  - Disagree: 6.7%
  - Agree: 88.9%

- Encourage the utilization of CPS
  - Strongly disagree: 14.6%
  - Disagree: 85.4%

- CPS improves my patients' care
  - Strongly disagree: 8.3%
  - Disagree: 91.7%

- Support having CPS in my clinic
  - Strongly disagree: 6.3%
  - Disagree: 93.7%
Unsolicited letter from AltaMed Physician

”I am writing to you today of my own accord, I have offered to make my opinion known about the excellent work that USC pharmacy team is doing without solicitation because I think pharmacy team has done an extraordinary job.”

“Both Dr. Oh and Dr. Lin are extremely diligent and knowledgeable professionals, with very good rapport with their patients. I know that most of my patients actually look forward to having their sessions with the pharmacy team and have learned a great deal regarding their chronic disease self-management. Improving patient clinical parameters are an excellent proof of that.”

“Dr. Oh in particular has been an integral part of the work that we do here, as a resident she goes above and beyond to make sure the patient are well care for. We have had some really mutually beneficial academic discussions and she has helped changed my practice on a few occasions while bringing in new research to my knowledge. I am really grateful to have the opportunity to work with Dr. Oh and Dr. Lin and look forward to their continued mutually beneficial relationship with us.”
Outline

• Overview of the USC / AltaMed Healthcare Innovation Award (HCIA) program from CMMI
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• Medical leadership perspective
The Case for Clinical Pharmacy
Michael Hochman, MD, MPH
September 3, 2015
“Aren’t pharmacists trying to practice medicine without a medical degree??”

• Pharmacists are filling a gap in the healthcare system
  – Prevent medication-related harm
  – Manage medications to help patients reach treatment goals
  – Work with most challenging patients with the greatest needs
    • More time for physicians to evaluate and diagnose
  – Strong support from Centers for Disease Control, Centers for Medicare and Medicaid Services, Health Resources and Services Administration, Patient-Centered Primary Care Collaborative, US Public Health Service

Pharmacists are the only healthcare professional excited about managing...
...this
Pharmacist Training Today

• All U.S. schools: Doctor of Pharmacy programs
  – 4 year graduate program
  – Almost all require undergraduate degree
• Train with all healthcare professionals
• 1-2 year postgraduate residency training
• Fellowships
• Board certification
Outline

• Overview of the USC / AltaMed Healthcare Innovation Award (HCIA) program from CMMI
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Patient Satisfaction

Year 1 (n=168)
- 0-6: 3.6
- 7-8: 92.2

Year 2 (n=269)
- 0-6: 6.3
- 9-10: 93.3
Unsolicited letter from AltaMed patient

• I wanted to take this time to commend and congratulate Alta Med Healthcare in implementing such a vital and useful program for their patients. The Clinical Pharmacy Service is a benchmark that all other Health Care providers could learn from and try to emulate. And in an era where severe cuts are the norm at the State and Local levels, I can’t begin to express how fortunate I feel to be a benefactor of this program. It is well staffed with professionals who seem to want to make a positive difference in their community outreach. I was made aware that the Clinical Pharmacy Service was established through a grant to maintain a more efficient protocol between Dr. and patient. In reflective thought I can’t think of money better spent.

• However when I was first introduced to this program I was quite leery to say the least... I’m quite busy and after seeing my primary care physician the last thing I wanted to do is spend more time with a clinical pharmacist... But after my first visit with Dr. Hamai I became a true believer. I was so taken back and impressed with her immeasurable knowledge and seasoned professionalism.
Patient letter (cont.)

• Being insulin dependent for over a quarter century I thought I had a real grasp on my condition, but she opened my eyes to a number of things that I wasn’t even aware existed. Long term complications from diabetes can be quite devastating; to say the least and I really felt she had my best interest in mind. Not only was Dr. Hamai instrumental in shedding insight regarding my condition, but her team of Gabriella and Wendy also proved to be more than worthy on the support side. In fact Gabriella brought to my attention that I might not be getting the most efficient readings from my glucometer given the way I was administering my blood sample. Wendy’s phone follow-up was more than I could have asked for with respect to having a trusted liaison to the program.

• As I look at this program in retrospect, I can only see the positive long term effects and cost savings to the community at large. Cost savings in the way of much needed education and support that can make all the difference from falling victim to one’s disease or gaining the upper hand in living and controlling it. My hopes are that the Clinical Pharmacy Service program does not fall victim to any budget shortfall in the future and continues to thrive in the community. Knowledge is power and this program embraces that statement ever so.
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The Patient-Centered Medical Home: Integrating Comprehensive Medication Management to Optimize Patient Outcomes

A RESOURCE GUIDE

https://www.pcpcc.org/sites/default/files/media/medmanagement.pdf
“...medication management services demonstrated an ROI of as high as 12:1 and an average of 3:1 to 5:1.”
A PROGRAM GUIDE FOR PUBLIC HEALTH

Partnering with Pharmacists in the Prevention and Control of Chronic Diseases

National Center for Chronic Disease Prevention and Health Promotion

Comprehensive Medication Management Programs: Description, Impacts, and Status in Southern California, 2015

Value Proposition - Comprehensive Medication Management

Integration of comprehensive medication management for high-risk patients:

- **Lowers total healthcare costs** (↓ hospitalizations / readmits)
- **Improves healthcare quality measures** (Pay for performance)
- **Improves medication safety** (priority for CMS, others)
- **Improves provider access** (PCMH measure, video telehealth) and satisfaction (less staff turnover)
- **Improves patient satisfaction** (retention)
- **Saves lives**
# Modes of Clinical Pharmacy Service Delivery

<table>
<thead>
<tr>
<th>1. Medical Groups (Pay for Performance, Chronic Disease Management)</th>
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<tbody>
<tr>
<td>- Cedars-Sinai, Sharp, USC</td>
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<tr>
<td>2. Integrated into Medical Homes</td>
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<tr>
<td>- VA, Kaiser, safety net clinics including AltaMed, QueenCare, LA Christian</td>
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<td>3. Community Pharmacies</td>
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<tr>
<td>- Ralphs, Walgreens, independents</td>
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<tr>
<td>4. Video Telehealth - VA, USC</td>
</tr>
<tr>
<td>5. Telephonic</td>
</tr>
<tr>
<td>- MEDCO, SinfoniaRx, Kaiser Permanente, USC, Heritage ACO</td>
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[Higher complexity](http://www.pcpcc.net/files/medmanagepub.pdf)

[Lower complexity](http://www.cdc.gov/dhdsp/programs/nhdsp_program/docs/pharmacist_guide.pdf)

[Limited scale](http://www.pcpcc.net/files/medmanagepub.pdf)

[Broader scale](http://www.cdc.gov/dhdsp/programs/nhdsp_program/docs/pharmacist_guide.pdf)
USC School of Pharmacy
Collaborations to Develop High-Impact, Sustainable Results
Can barbers cut BP too?

Ron Victor, M.D.
Burns & Allen Chair in Cardiology Research Professor of Medicine, UCLA
Director, Hypertension Center
Associate Director, Cedars-Sinai Heart Institute
High Blood Pressure (Hypertension, HTN)

- 70 million Americans
- 1 billion people
- <1 in 3 controlled
- 40% of heart attacks, 50% of strokes
- Cost to US health care $100 billion/yr
Disparity in death rates from HTN

AHA 2009 Update: (NCHS, 2005)
Disparity in stroke deaths

Relative Risk

Whites

CDC: MMWR, 2000
These men died young from complications of uncontrolled high blood pressure.

Gerald Le Vert
Heart Attack
age 40

Barry White
Kidney Failure
age 59

Rick James
Heart Failure
age 56

Luther Vandross
Stroke
age 54
Health…It’s A Family Affair

I am 45. I have always made sure my daughters go to the doctor but didn’t make time to get a doctor for myself. I’ve been too busy working and providing for my family. I wasn’t feeling well for a couple of months and finally let my daughter take me to the emergency room. They prescribed medication for hypertension, diabetes and cholesterol but didn’t get me an appointment to follow up with a doctor. Mrs. Byrd did. She got me my own doctor within a week. I feel that I was treated well and will work with the doctor and do what it takes to get my blood pressure, diabetes and cholesterol under control. I want to be there for my children for a very long time.
Barber-Based Intervention

Hess et al. *Hypertension*. 2007
BARBER-2 Trial (in Los Angeles): How to optimize intervention potency?

Barber fidelity
Patron acceptance

Pharmacists?

Non-Adherence

Better medical treatment

Physician inertia
The LA Blood Pressure Barbershop Study

- PI: Ronald Victor, MD
- NIH-funded R01 grant
- 2015-2019
- ClinicalTrials.gov Identifier NCT 02321618
40 Barbershops randomized (500 patrons)

Baseline
20 barbershops
15 patrons/shop

Enhanced Intervention
Barber-pharmacist BP mgt.

6 Month Follow up
Extension Study
12 Month Follow up

Baseline
20 barbershops
15 patrons/shop

Active Comparator
Barber health educator

6 Month Follow up
Extension Study
12 Month Follow up
Setting
Enhanced Intervention

Barber’s Blood Pressure
Work Station

Wireless transmission

The LA Barbershop
Blood Pressure
Study

Cohort member card with barcode

Pharmacist visits
Community Advisory Board

Community Advisory Board Members:

Brian Davis, Ron Victor MD, Tony Reid MD, Robert Elashoff PhD, James Smith, Stanley White, Luther Sherman
• How can you adapt the approaches shared to provide optimal medication therapy outcomes for your patients?

• What barriers prevent you from integrating comprehensive medication management services?

• What can you do next Tuesday to begin offering comprehensive medication management in your organization?