Integrating Clinical Pharmacy into Health Care Delivery

USC/Altamed CMMI Program

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Learning Objectives

- Describe the various methods by which clinical pharmacy services are provided
- List the goals of the USC / AltaMed CMMI grant program
- Summarize the impact of the clinical pharmacy services on healthcare quality, safety, and cost
Chronic Diseases

- Affects **45%** of the population
  - yet, accounts for

- 76% of all MD visits
- 81% of all hospital admissions
- 91% of all prescriptions filled
Problem!

Medication adherence is terrible

Take your pills!  
Nah.

Nearly half of all patients prescribed Rx therapies do not take sufficient doses to experience a therapeutic effect

Estimated cost of poor adherence is $290 billion per year
Solution: Utilize Clinical Pharmacy Services

- All U.S. schools: Doctor of Pharmacy programs
  - 4 year graduate program + undergraduate degree
- 1-2 year postgraduate residency training
- Fellowships
- Board certification

The only healthcare professional excited about managing...
10 Ways to Build Clinical Pharmacy Services into the Healthcare Delivery System

As Programs of Coordinated Care
1. Preventive Care Programs
2. Medication Therapy Management (MTM)
3. Disease State Management

As Discrete Service Components
6. Medication Access Services to Patients
7. Patient Counseling
8. Drug Information Services to Patients
9. Medication Reconciliation Services
10. Provider Education

As Clinical Review Services
4. Retrospective Drug Utilization Review
5. Prospective Chart Review & Provider Consultation

CPS services packaged for delivery and reimbursement

Source: HRSA Patients Safety & Clinical Pharmacy Services Collaborative
Where Pharmacists Provide These Services

1. **Medical Groups** (Pay for Performance, Chronic Disease Management)
   - Cedars-Sinai, Sharp, USC

2. **Integrated into Medical Homes**
   - VA, Kaiser, safety net clinics

3. **Community Pharmacies**
   - Ralphs, Walgreens, independents

4. **Telehealth** - CMMI grant, Heritage ACO

5. **Telephonic** ("low-hanging fruit")
   - MEDCO, Kaiser Permanente, U of Az, Heritage ACO

Higher complexity

Lower complexity

Limited scale

Broader scale

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http://www.pcpcc.net/files/medmanagepub.pdf
Targeting Patients at High-Risk for Poor Medication-Related Outcomes (Quality, Safety, Cost)

- Multiple medications, chronic diseases, prescribers
- Medications requiring frequent monitoring or dose titration: (Coumadin, insulin, etc.)
- Elderly, recently / frequently hospitalized, minorities & underserved
USC Experience in Safety Net Clinics
Spread from 3 to 17 sites in 9 years (+ spread)

- Center for Community Health
- QueensCare – 4 sites
- Maternal, Child, and Adolescent HIV Center
- LA Christian Health Center
- Ravenswood
- AltaMed- 10 sites + telehealth
- Altadena barbers
National Campaign to Promote Clinical Pharmacy Service Integration:

The HRSA Patient Safety & Clinical Pharmacy Collaborative

“Committed to saving and enhancing thousands of lives a year by achieving optimal health outcomes and eliminating adverse drug events through increased clinical pharmacy services for the patients we serve.”
National spread of clinical pharmacy services with the HRSA PSPC- Over 300 teams, + CMS (QIOs)
HRSA PSPC Impact on High-Risk, Complicated Patients Not at Treatment Goal After 6 months…

- Diabetes: 35% reached A1C goal
- Hypertension: 43% reached BP goal
- Dyslipidemia: 37% reached LDL-C goal
- Warfarin: 51% achieved INR goal
- Asthma: 32% reached “well-controlled”
- 30% reduction in adverse drug events
- 50% reduction in potential adverse drug events
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Center for Medicare & Medicaid Innovation
Healthcare Innovation Award
Project Goals

- Improve care, improve health and reduce costs by transforming the delivery of primary care services in vulnerable, high risk populations
- Implement an evidence-based intervention that can be easily deployed within 6 months
- Train and develop a workforce capable of spreading and sustaining the intervention
- Evaluate the cost-effectiveness and cost-benefit of the program
Grant Timeline

Year 1
Enroll 9,000 patients

Year 2
Increase to 15,000 patients

Year 3
Add telepharmacy program

These interventions are projected to lead to $31.7 million in savings over 3 years.
USC / AltaMed CMMI Project: Specific Aims

10 teams
Pharmacist + Resident + Clinical tech

Telehealth clinical pharmacy

Resident and technician training for expansion

Web-based pharmacist training and credentialing
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USC / University of Southern California
National Conference on Best Practices and Collaborations to Improve Medication Safety and Healthcare Quality
Feb 20-21, 2014
Clinical Pharmacy Service (CPS) Patient Targeting Strategy

- IT Triggers
- MD Referrals
- Frequent ER / Hospitalizations
- \( \uparrow \) $$ Healthcare Costs
- Collaboration with Contract Pharmacy (PAP, 340B, formulary, referrals & service development, etc.)
- Timely Referrals of Patients Discharged from Hospital or ER
- Transitional Care Management
- MTM / DSM for highest-risk patients
- Medication Reconciliation
- MTM / DSM Maintenance-Clinical Pharm Techs
Primary Outcome Measures

- Medication safety: USC tool developed for HRSA and CMS
- Medication-related quality of care: NQF and medication-focused measures
- Acute care utilization (ER, hospitalizations)
- Medical, lab, and pharmacy expenditures
- Access to health care services (wait times and follow-up appointments)
- Patient and physician satisfaction
Learning Objectives

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➢ List the goals of the USC / AltaMed CMMI grant program

➢ Summarize the impact of the clinical pharmacy services on healthcare quality, safety, and cost
“...for each dollar invested in the clinical pharmacy service over the period from 1988 to 2005 (nearly two decades), the overall average benefit gained was $10.07 per $1 of allocated funds.”
# CMMI Program Progress (5 sites)
## 10/1/12 – 8/22/13

<table>
<thead>
<tr>
<th></th>
<th>N</th>
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<tbody>
<tr>
<td>Total patient visits</td>
<td>10,256</td>
</tr>
<tr>
<td>Total unique patients</td>
<td>2,151</td>
</tr>
<tr>
<td>Diabetes Dx</td>
<td>76%</td>
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<tr>
<td>Hypertension Dx</td>
<td>64%</td>
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<tr>
<td>Daily Visits</td>
<td>12-22 per team*</td>
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<tr>
<td>Team patient panel size</td>
<td>300-350</td>
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*Depending on MA availability
A1C Changes for Poorly-Controlled Diabetes Patients (Baseline A1C > 9%) after 180 Days

% of Patients with A1C < 8%:
Pharmacy Team 30%, Control 13%
Blood Pressure Changes at 45 Days (n=356), Patients with BP > 140/90 mmHg Upon Enrollment

87% achieved BP < 140/90 mmHg within 45 days
Changes in Frequency Distribution of Blood Pressure, Patients with BP > 140/90 mmHg Upon Enrollment (N=356)
<table>
<thead>
<tr>
<th>1. MEDICATION-RELATED PROBLEM (MRP)(^1)</th>
<th>14. Abnormal lab result not addressed</th>
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<tbody>
<tr>
<td>Appropriateness and Effectiveness</td>
<td>15. Pharmacy / dispensing error</td>
</tr>
<tr>
<td>1. Untreated medical problem</td>
<td>16. Medication overuse or misuse</td>
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<tr>
<td>2. Drug dosing not adequate for treatment goals (dose, interval, or duration)</td>
<td>17. Dose discrepancy between patient use &amp; prescribed therapy</td>
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<td>3. Treatment not optimal based on current evidence / guidelines</td>
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<tr>
<td>4. Monitoring standards not being followed</td>
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<tr>
<td>Safety (pADE / ADE)</td>
<td>18. Using expired medication(s)</td>
</tr>
<tr>
<td>5. Drug dosing excessive for treatment goals (dose, interval, or duration)</td>
<td>19. Medication underuse / poor adherence</td>
</tr>
<tr>
<td>6. Incomplete / improper directions</td>
<td>20. Dosage form is not reasonable for patient</td>
</tr>
<tr>
<td>7. No indication for medication prescribed</td>
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<tr>
<td>8. Polypharmacy (Rx not needed) / duplication</td>
<td>21. Inadequate patient self-management of lifestyle and other non-drug variables</td>
</tr>
<tr>
<td>9. Contraindication</td>
<td>22. Patient dissatisfied or refuses treatment, no rational reason given</td>
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<tr>
<td>10. Adverse drug reaction (ADR)</td>
<td></td>
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<tr>
<td>11. Allergy</td>
<td></td>
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<tr>
<td>12. Drug interaction</td>
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<tr>
<td>13. Lab/diagnostic test indicated, not ordered</td>
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**Nonadherence and Patient Variables**

19. Medication underuse / poor adherence
20. Dosage form is not reasonable for patient
21. Inadequate patient self-management of lifestyle and other non-drug variables
22. Patient dissatisfied or refuses treatment, no rational reason given

**Miscellaneous**

23. Drug not available in prescribed strength
24. Inadequate refills between scheduled visits
25. Nonformulary / not cost effective drug choice
26. Illegible prescription
27. No follow-up appointment with PCP
28. Other
Medication-Related Problems Identified Through CMMI Clinical Pharmacy Program, 10/112-8/28/13
19,696 problems, 1,993 patients (9.9 per patient)

- Appropriateness / Effectiveness: 8545, 43%
- Safety Issues: 3495, 18%
- Medication Nonadherence, Misuse: 5313, 27%
- Misc: 2343, 12%
Appropriateness / Effectiveness of Drug Therapy Problems Identified Through CMMI Clinical Pharmacy Program 10/1/12 to 8/28/13 (N = 8,545)

- Inadequate dosing for Tx goals: 4613
- Tx not optimal per guidelines / evidence: 2045
- Monitoring stds not followed: 1439
- Untreated medical problem: 487
Top Actions Made by Pharmacists to Resolve Medication-Related Problems

- Change Dose or Drug Interval: 5699
- Patient Education: 5621
- Add Medication: 1708
- Discontinue Medication: 1248
- Substitute Medication: 668
**Patient Satisfaction Survey**
(N=174)

**Graph 5: Overall Rating of Clinical Pharmacist**

* Average score: 9.6
Patient Comments about CPS (N=131)

- Helpful, satisfied, thankful
- Good experience, excellent service
- Interpersonal skills (e.g. attentive, kind)
- Positive feedback on clinical pharmacy office staff
- Pharmacist explained things clearly
- Improved understanding of disease and medication adherence
- Better health
- Other
- Wait time, forgot to send Rx

# of responses
"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.”
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.
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.
Reflective Question

What clinical pharmacy services or collaborations could assist your organization in improving medication-related health outcomes and quality measures?
## Where Pharmacists Provide These Services

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