Improving Patient Outcomes: A Case Study in Adherence in Diabetes

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Objectives

- Identify patient barriers to medication adherence.
- Describe the clinical and economic impact of medication non-adherence in diabetes patients.
- Discuss communication strategies to improve medication adherence.
- Outline a medication adherence plan for a diabetic patient.
Outline

- Case
- Nature and extent on medication non-adherence in diabetes
- Barriers to medication non-adherence
- Consequences of medication non-adherence
- Assessment of non-adherence
- Interventions to improve medication adherence in diabetes
- Conclusions

Lucy Rodriguez
51 y/o HF- Type II DM

<table>
<thead>
<tr>
<th>Date</th>
<th>Rx Num</th>
<th>Drug</th>
<th>Qty</th>
<th>Directions</th>
<th>MD</th>
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<tr>
<td>9/20/10</td>
<td>115678</td>
<td>Fluoxetine 40 mg</td>
<td>30</td>
<td>Once daily</td>
<td>Clinton</td>
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<td>9/05/10</td>
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<td>Bush</td>
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<tr>
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<td>135685</td>
<td>Lisinopril 20 mg</td>
<td>30</td>
<td>Once daily</td>
<td>Bush</td>
</tr>
<tr>
<td>8/02/10</td>
<td>135685</td>
<td>Lisinopril 20 mg</td>
<td>30</td>
<td>Once daily</td>
<td>Bush</td>
</tr>
<tr>
<td>7/23/10</td>
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<td>Once daily</td>
<td>Clinton</td>
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<tr>
<td>07/23/10</td>
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<td>Glyburide 10 mg</td>
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<td>Lisinopril 20 mg</td>
<td>30</td>
<td>Once daily</td>
<td>Bush</td>
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<td>Bush</td>
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Activity #1

- Please discuss what you think is happening with Lucy and why?
- Please discuss what you think the strengths and limitations of the information you have.

What is Adherence?

- Compliance: a process in which a patient passively follows a treatment plan as instructed
- Adherence: a process in which a patient actively decides to follow a treatment plan as instructed
- Persistence: duration of how long a patient remains on a medication
- Consistency: how regular a patient takes their medication
Continuum of Medication Adherence

- Non-adherence
- Initial Non-adherence
- Partial Non-adherence
  - Sporadic Non-adherence
  - Repeat Non-adherence
- Persistence
- Adherence

Sporadic & Repeat Non-adherence

- Sporadic non-adherence\(^1\): individual took 1-19\% more or less than the prescribed number of doses
- Repeat non-adherence\(^1\): individual took >20\% more or less than the prescribed number of doses
Other Types of Non-adherence

- Non-adherence to a regimen is not limited to frequency of tablet consumption
  - Improper use of medication administration devices
  - Taking a dose with prohibited foods, liquids, or other medications
  - Taking medications at wrong or inconsistent times of the day

Scope of Non-adherence

- High rates and wide ranges of non-adherence have been reported.
- Non-adherence appears to be greater in some diseases than others.
  - Asthma: 10-46%\(^2\)
  - Arthritis: 55-71%\(^3\)
  - Diabetes: 13-64% oral agents, 19-46% insulin\(^4,6\)
  - Hypertension: 16-50% non-adherence\(^7\)
Risk Factors to Non-adherence

- Complex drug regimens
- Multiple doses
- Asymptomatic conditions
- Chronic conditions
- Cognitive impairments
- Physical impairments
- Dissatisfaction with care
- Poor provider-pt relationships
- Low health literacy
- Difficult route of administration

Risk Factors to Non-adherence (Cont.)

- Adverse drug reactions/side effects
- Hectic lifestyle
- Caregiver needed for administration
- Alternate health beliefs
- Fears of addiction
- Fears of long-term complications
- Economics
Consequences of Medication Non-adherence

- Physician misjudge medication’s efficacy
- Loss of confidence by the patient in the efficacy of medications and skills of health care team
- Poor clinical outcomes due to increased morbidity and mortality
  - Direct and indirect medical costs of diabetes estimated to be $194 Billion.\(^8\)

Consequences of Medication Non-adherence

- Economic loss due to less productivity, hospitalization, physician visits, etc.
  - Activity 2: Reflect on what could be bought for $290 billion.\(^9\)
Activity #3

- How would you go about finding out about Lucy’s medication use and why?
- What would you do differently if you had different resources than that which you currently use in practice?

Self-Report Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
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</thead>
<tbody>
<tr>
<td>Patient Interview</td>
<td>Easy to use</td>
<td>Influenced by question construction &amp; interviewer’s skill</td>
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<tr>
<td></td>
<td>Inexpensive</td>
<td></td>
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<tr>
<td>Diary</td>
<td>Contains regimen data over long periods</td>
<td>Can involve overestimation; Patient must return diary</td>
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</table>
### Self-Report Assessment Methods (Cont.)

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adherence Surveys</td>
<td>Easy to administer</td>
<td>Accuracy dependent on instrument</td>
</tr>
<tr>
<td></td>
<td>Often Validated</td>
<td>Lack of continuous data</td>
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</table>

### Other Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Estimate</td>
<td>Easy to obtain from physician</td>
<td>Usually based on patient self-report, same concerns of bias as with self-report</td>
</tr>
<tr>
<td></td>
<td>Based largely on clinical outcomes</td>
<td></td>
</tr>
<tr>
<td>Family Member</td>
<td>Can be reliable if family very involved</td>
<td>Details often unclear</td>
</tr>
</tbody>
</table>
### Objective Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug levels in biologic fluids</td>
<td>Recent med use verified</td>
<td>Not useful for long-term use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient-specific kinetic variations</td>
</tr>
<tr>
<td>Direct patient observation</td>
<td>Verified use</td>
<td>Impractical at outpatient sites</td>
</tr>
</tbody>
</table>

### Objective Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pill Count</td>
<td>Easy to use</td>
<td>Patient may forget or alter unused portion</td>
</tr>
<tr>
<td></td>
<td>Inexpensive</td>
<td></td>
</tr>
<tr>
<td>Pharmacy Profile</td>
<td>Doesn’t involve approaching patient</td>
<td>Does not always reflect actual use</td>
</tr>
<tr>
<td></td>
<td>for data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very accessible</td>
<td>May not be complete</td>
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</tbody>
</table>
**Objective Assessment Methods (Cont.)**

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance system records</td>
<td>Noninvasive</td>
<td>Access more difficult</td>
</tr>
<tr>
<td></td>
<td>More complete pharmacy use info</td>
<td></td>
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<tr>
<td>MEMS Caps</td>
<td>Precise data on regimen use</td>
<td>Expensive</td>
</tr>
<tr>
<td></td>
<td>Printouts, graphs</td>
<td>Inconvenient</td>
</tr>
</tbody>
</table>

**Additional Thoughts About Assessment**

- Ask Indian Health Service Questions:
  - What were you told the medicine was for?
  - How were you told to take the medicine?
  - What were you told to expect from the medicine?
- Avoid being accusatory; use “I” statements instead of “You” statements:
  - Ex: I noticed your refill was due a few days ago.”
Additional Thoughts About Assessment (Cont.)

• Uncover the reason for non-adherence
  • “What is it about the medication that makes it difficult to take every day?”
  • “What concerns you when taking this medication?”
• Classify the cause - is it a knowledge deficit, a process-related barrier, or a motivational barrier?

Activity #4

• You have determined Lucy is not adherent to her medications for Diabetes. Select any 2 possible reasons for her non-adherence. For these 2 reasons, what would be your action plan for her and why?
• What kinds of barriers could you anticipate with Lucy following your action plan? What could you do to help Lucy follow the plan?
Adherence Interventions

- Knowledge deficits:
  - Correct the misunderstanding
  - Fill in any missing information (use printed information, refer to websites)
  - Check for understanding
- Process-Related Barriers
  - Place medication into simple packaging
  - Use calendars
  - Tailor regimens given patient’s schedule

Adherence Interventions (Cont.)

- Suggest the use of a medication reminder system (calendars, pill boxes)
- Cue patients to put medication in places they will best remember
- Help patient manage side effects or have patient ask doctor for different medicine
- Recommend medicines at low costs
- Ask doctor for once a day dosing/less complex regimens
Adherence Interventions (Cont.)

• Motivational Barriers:
  • Use of motivational interviewing techniques (Miller & Rollnick\textsuperscript{10})
  • Avoid arguing with patient views or making fun of them, use empathy
  • Ask permission to offer suggestions about what worked for others; respect autonomy

Adherence Interventions (Cont.)

• “What would it take for you to change?”
• Help them identify the good things and not so good things about the medicines
• Develop discrepancy between current and desired behavior
• Use of confidence and importance rulers
Community Pharmacist’s Role in Diabetes Adherence

• Improve Drug Therapy; Reinforce Lifestyle changes; Assist patients in self-monitoring
• More studies needed to explore community pharmacist’s role in medication adherence.
• Only 2 RCTs done in community pharmacy examining medication adherence.\textsuperscript{11-12}
• Pharmacy Quality Alliance - pharmacy-level adherence rates as indicators of pharmacy quality.

Activity #5

• Do you think the quality of pharmacies should be based on patient adherence rates? Why or why not?
• Do you think pharmacists should contact prescribers that their patients are non-adherent? Why or why not?
Conclusion

• Proactive identification and monitoring of non-adherence is critical.
• Good adherence assessment can lead to a tailored plan to improve adherence to meet specific needs.
• Be supportive and non-judgmental.
• Build relationship with patients is needed to help maximize medication adherence.

Contact/Follow-Up

• Please feel free to contact Nate Rickles at n.rickles@neu.edu (617-373-7721) with any questions, thoughts, or interests in participating in research involving the advancement of medication adherence in community practice.
Improving Medication Adherence in the Community Setting

David D. Pope, PharmD, CDE
Editor-in-Chief, CreativePharmacist.com,
TheHealthyHeartClub.com
Program Coordinator, Barney’s Pharmacy Diabetes
and Wellness Center

Objectives

• Identify patient barriers to medication adherence.
• Describe the clinical and economic impact of medication non-adherence in diabetes patients.
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• Outline a medication adherence plan for a diabetic patient.
Statistics

• “… $290 billion in avoidable medical spending every year when patients don’t take their medications as prescribed.”

• “A reported 125,000 patients die annually of cardiovascular disease alone as a result of nonadherence to prescribed medication.”

—America’s Pharmacist, July 2010

Statistics

• Balkrishnan et al. found that a 10% increase in Medication Possession Ratio for an anti-diabetic medication was associated with an 8.6% reduction in total annual health care costs

• Cost Of Diabetes Non-Adherence could be as high as $11,000 Yearly Per Patient

  • There are important variations in the reported costs of diabetes non-adherence, due to methodological differences among studies. Therefore, we do not currently have a complete cost for non-adherence in diabetes patients
Who Benefits from Medication Adherence?

- Patients
  - Patients who take their medications are more likely to maintain control of their chronic conditions
- Prescribers
  - Reduces ‘medication stacking’
  - Improves results
    - ‘Pay-for-Performance’ insurance plans
- Pharmacists
  - Improves prescription fill rates
  - Sets the pharmacy apart from the competition

Barriers to Medication Adherence

- Cost
- Side Effects
- Perception
Barriers to Adherence

- Cost
  - Many patients cannot afford certain medications because of financial constraints
  - Example: Medicare Part D members
- Pharmacists play a vital role in optimizing medications to lower cost
  - Many times, pharmacists are the only healthcare professionals aware of patients who are not taking medications due to cost concerns

Improving Adherence While Decreasing Cost

- 3 Critical ways to overcome the financial barrier of medication adherence:
  - Perform a drug utilization review
    - Why are they taking the medication?
    - Are there any less expensive alternatives that can be used?
  - Look for generic alternatives
    - Is there another drug in the same class that is available in generic form?
  - Work alongside the prescriber
    - Be careful in your approach!
Improving Adherence While Decreasing Cost

- Perform a Drug Utilization Review
  - Write down the indication for each drug before making a recommendation
  - Vital step in determining cost effectiveness
  - Example: A patient on Eplerenone (Inspra®)

Clinical Pearl: ‘Reconcile’ each medication before making a recommendation.

Barriers to Adherence

- Consider generics
  - One of the greatest areas in which pharmacists excel
  - Example: A diabetes patient on an Angiotensin Receptor Blocker (ARB)
- Use your clinical skills as a pharmacist to determine the most cost effective medication
- Set yourself apart from the competition by taking a proactive approach in lowering costs for your customers
Barriers to Adherence

- Work alongside the prescriber
  - Be careful in your approach!
  - Example: Two different ways to deliver an effective recommendation to the physician
- Ensure the prescriber that you are looking after the best interest of the patient
  - Develop a relationship with your local ‘target’ physicians

Barriers to Adherence: Side Effects

- Many patients who begin taking medications for chronic diseases stop taking their medications due to effects from the drug
  - Example: A new diabetes patient on Acarbose
- Overcome this barrier by…
  - Using effective first-fill counseling techniques to improve adherence
  - Giving your patients living with diabetes a phone call one week after dispensing a diabetes-related drug for the first time
Barriers to Adherence: Side Effects

- Effective first-fill counseling:
  - ‘What did the doctor tell you this medication was for?’
    - Challenge: Let them speak 80% of the time!
  - Discover their knowledge of the drug and its effects (and side effects)
    - This will maximize your time in the counseling process
  - Fill in the gaps in the patients’ knowledge of the drug

Clinical Pearl: Let your customers know that you want to partner with them to improve their health!

Barriers to Adherence: Perception

- Many patients have preconceived notions about the medication or their disease state that may cause them to stop taking their medications
  - Example: ‘My blood sugar stays below 200mg/dL. Therefore, I only take my metformin when I need it.
  - Overcome this barrier by…
    - Counseling your patients on the difference between ‘everyday medications’ and ‘as needed medications’
    - Following up with your patients by identifying when they aren’t filling their ‘everyday medications’ regularly
Improving Communication to Increase Adherence

Financial Considerations in the Diabetes Patient

- Did you know…
- The top 1% of diabetic patients will spend $28,000 at the local pharmacy
  - Average diabetes patient at Barney’s Pharmacy: $6,000-12,000 per year
  - The average diabetic visits the pharmacy 48% more than the average and spends 43% more
- The average diabetic fills 44 prescriptions per year
- OTC diabetes products generated 3.4 billion in sales in 2010
Medication Adherence and Prescription Drug Revenue Calculator

This calculator is designed to determine the changes in gross profit for a pharmacy after encouraging a higher medication adherence rate. Please input values in the boxes below then scroll down for analysis.

Gross profit per prescription

$13.13

In 2006, the average gross profit per prescription drug was $13.13

Number of different drugs prescribed per average patient for chronic conditions.

6

In 2006, the average patient with a chronic condition consumed 3 different chronic medications.

Number of days it takes the average non-adherent patient to refill a 30 day medication.

45

This number must be greater than 30. For many non-adherent patients it will take 40 to 45 days to refill a 30 day medication.

Number of existing patients recruited each business day to join an adherence program.

0.14

A very good goal is to identify 2 patients each business day that are on maintenance medications. The purpose of an adherence program is to have the pharmacist work with these identified patients to promote perfect adherence beginning on the day the patient is recruited into the program.

The calculator assumes that the pharmacy is open 365 days a year, and recruits patients for an adherence program on each work day.

Without an Adherence Program

Without an adherence program, each patient over the next 12 months consuming 6 different medications each month spent under current adherence conditions:

$760.02 before tax

After Implementing an Adherence Program

Hypothetically, if the pharmacist was able to work with existing patients to promote perfect adherence so that recruited patients refilled all their medications on a monthly basis, then each patient measured over a 12 month time frame represents:

$1,024.14 in gross profit to the pharmacy before tax

Thus, each patient enrolled into an adherence program over a 12 months represents the potential for:

$315.12 in additional gross profit before tax
Effective Communication Strategies in the Diabetes Patient

• Speak their language!
  • Convey to the patient that your desire is to partner with them to improve their health
    • This is the foundation for all communication you will have
  • Keep it Simple
    • When you perform your first-fill counseling, refrain from using words such as ‘hyperglycemia’
    • Confused patients may be more likely to stop taking their medication
    • Be sure they know what each medication is for
    • Consider using a Medication Review Form
### My Health Form

#### Personal Information
- **Name:**
- **Address:**
- **City:**
- **State:**
- **Zip:**
- **Phone:**
- **Email:**
- **Height:**
- **Weight:**
- **Date of Birth:**

#### Medical History
- **Allergies:**
- **Emergency Contact:**
- **Relationship:**
- **Notes:**

#### Medications
<table>
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<tr>
<th>Brand Name/Generic Name</th>
<th>Strength</th>
<th>Indication</th>
<th>Instructions</th>
<th>Additional Notes</th>
<th>Doctor</th>
<th>Number</th>
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</thead>
<tbody>
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**Barney’s Pharmacy**
- Address: 123 Main St, Anytown, USA
- Phone: 123-456-7890
- Email: pharmacy@barneys.com

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### My Vitamins

#### Vitamins

### My Dental

#### Dental

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### My Immunizations

#### Immunizations

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### My Allergies

#### Allergies

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### My Medications

#### Medications
Effective Communication Strategies in the Diabetes Patient

- Use your influence as a pharmacist
  - Ask your patients how their blood sugar has been in the past month
  - Encourage them and provide a healthy accountability towards taking their medications properly
    - Ask them about their personal health goals (i.e. A1c <7%) and remind them of the importance of taking their medications
- Simply Ask
  - Phrase your adherence questions to get the most accurate response
    - Are you taking your medications as prescribed?
    - How many days during the week do you miss or skip a dose of your diabetes medicines?

Effective Communication Strategies in the Diabetes Patient

- Simply Ask (cont’d)
  - When a patient presents for a refill of their medications, simply ask, ‘How have your blood sugars been this month?’
  - Inquire about any side effects they may be experiencing

Clinical Pearl: Your customers will become more loyal to your pharmacy as you reveal your desire to improve their health.
Additional Tools to Improve Adherence

- Medication Reminders
  - Alarm ‘toppers’ for prescription bottles
  - Auto-Refill Programs through your pharmacy software system
- Call Reminders
- Text Messaging Reminders
- Blister Packaging or other packaging systems
- Example: Robert Bowles, RPh, CDE, owner of Big C Pharmacy in Thomasville, GA
- While medication reminders may be effective initially, they do not replace the vital interaction between pharmacists and patients

Case Example

- 66 year old African-American Female
  - Presents to the pharmacy for refills of her glipizide 5mg
- Past Medical History/HPI
  - Type 2 Diabetes (diagnosed 6 months ago)
  - High Blood Pressure
  - Hypercholesterolemia
- Previous Educational Experience
  - Initial training done at XYZ pharmacy
  - Shows knowledge of A1c, basics of diabetes care, carb counting
Case Example

- Current Medications
  - Glipizide 5mg BID
  - Lantus 20 Units HS
  - Lisinopril 10mg QD
  - Lipitor 20mg QD

Case Example

- How can you effectively open up a conversation about the current status of her diabetes management?
  - The patient responds that her blood sugars have been high in the morning, but seem to be at normal levels after meals
  - After asking about adherence, the patient also says they have been unable to fill their Lipitor due to ‘being in the donut hole’
Case Example

• How can you improve medication adherence in this patient?
  • Probe into morning blood sugar levels
  • Work with physician and insurance company to find a solution for cholesterol medication

Case Example

• Results
  • Upon review of the patients medications, the pharmacist discovered that the patient was filling their Lantus infrequently. After discussing with the patient, the pharmacist discovered that the patient was ‘afraid of needles and didn’t want to give themselves a shot.’
  • The patient was instructed about administering insulin by the pharmacist and regained confidence in giving themselves a dose of insulin.
  • The pharmacist contacted the prescriber to discuss the intervention with the insulin. The prescriber also switched Lipitor to simvastatin.
Case Example

• Results
  • The patient was impressed with the pharmacists’ sincere desire to improve their health. As a result, the patient encouraged her two cousins, both living with diabetes, to switch to your pharmacy.
  • The physician was also thankful that the pharmacist had taken a proactive role in assisting their patient. As a result, the physician began referring patients to the pharmacy for diabetes education training.

Conclusions

• By improving medication adherence, you can:
  • Improve outcomes
  • Lower overall healthcare costs
  • Improve the bottom line of your pharmacy
• Utilize the tools necessary to improve adherence in the diabetes patient
  • Remember, your influence is the greatest factor in improving adherence
  • Use effective communication techniques to get the most accurate adherence information