Understanding Medication Adherence to Achieve the Triple Aim:
Frank Federico BS, RPh
Elizabeth Oyekan, PharmD

"Drugs don't work in people who don't take them."
Former Surgeon General C. Everett Koop

Four Questions....

- How do you define medication adherence?
- Why is medication adherence important to you and your organization?
- Medication Adherence & the Triple Aim – what is the connection?
- What do you hope to get out of this session?
Defining Medication Adherence

- Adherence is defined as the extent to which patients follow the instructions they are given for prescribed treatments.

- Medication non-adherence includes:
  - delaying prescription fills,
  - failing to fill prescriptions,
  - cutting dosages,
  - reducing the frequency of administration.


The Patient
Mr. MT

- 62 yr old man with a Hx of Diabetes, CAD, uncontrolled HTN, smokes up to 1 pack of cigarettes daily, 25 pounds overweight
  - Drove to ER with chest pains
  - Dx: Mild heart attack
  - Admitted to the hospital
  - Discharged 3 days later
  - Scheduled for a 5 day follow up with his PCP
  - Labs: HgA1c = 9.2, LDL = 162, BP = 146/92

Case: Mr. MT (continued)

- With this HbA1c, should you:
  a) Consider adding Glipizide
  b) Switch to Insulin
  c) Switch to met / glip combination
  d) Get a better medication taking history
Follow-up Visit with MD

At medication review

- Diabetes medication:
  - Metformin 1000mg twice daily
- Problems:
  - Morning dose: stomach ache and diarrhea
    → reduced to half the dose
  - Evening dose: generally forgets to take
- HTN medications -- feels dizzy and nauseous
- Beta Blocker medication: Feels tired → stopped taking it
- MT felt he was on too many medications (11)
- Not unique

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Some FACTS about medication taking behaviors in our patients....

1 out of 8 heart attack patients stops taking life saving drugs after just 1 month

15 - 31% of all prescriptions are not filled the first time

1 out of 2 prescriptions are not taken as directed: over 3.8 billion prescriptions were dispensed in 2005 = 1.9 BILLION RX not taken as directed
Non-Adherence by Disease Condition over 12 months

Many patients stop taking their medications
Adherence rates plummet in just a few months

<table>
<thead>
<tr>
<th>Treatment area</th>
<th>3 months</th>
<th>6 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol</td>
<td>60%</td>
<td>50%</td>
<td>41%</td>
</tr>
<tr>
<td>Diabetes (type 2)</td>
<td>53%</td>
<td>48%</td>
<td>38%</td>
</tr>
<tr>
<td>Obesity</td>
<td>47%</td>
<td>42%</td>
<td>33%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>47%</td>
<td>24%</td>
<td>15%</td>
</tr>
<tr>
<td>Depression</td>
<td>51%</td>
<td>14%</td>
<td>8%</td>
</tr>
</tbody>
</table>

By the end of the first year of treatment, 50 to 90% of patients stop taking their prescribed therapies.

*Adherence rate ranges were averaged. Source: Various sources; AT Kearney analysis

PREVLEENCE: Poor adherence exists across all therapeutic categories – Days to discontinuation

The 30 day challenge

- **2010 Adheris Study** and 2009 JMCP study—attempt to measure the PDC in multiple chronic therapeutic areas
EXERCISE:

Do you have patients such as the one described in this case?

What do you do to help them?

The Impact of Medication Non-Adherence...
Decrease in Population Health

By Increased Hospitalizations & Nursing Home admits

- Preventable Hospital Readmissions (10 - 15%)
- Nursing Home 1 out of 5 patients (23%)

Decrease in Population Health

By increased Disease Progression

- Non-adherence to Beta Blocker therapy in post MI patients – 4.5x increase in mortality
- Poor adherence to Tamoxifen \(\rightarrow\) increased risk of death from breast cancer (Thompson et al., 2007).
- Poor adherence to hypertensive medications \(\rightarrow\) heart disease, kidney disease and other complications
Decrease in Population Health

By having unnecessary deaths

Increased Cost Per Capita

Cost / patient with CAD episode due to non adherence:
Before CAD episode: $2.8K/yr  After CAD episode: $10.4K / yr

A typical mid-sized employer with $10 million in annual claims might be wasting over $1 million due to non-adherence

$177 - 290 billion in direct and indirect healthcare costs
Increase in Total Healthcare Costs per Patient per Year


The Evidence when medication is used effectively...

40% improvement in mortality when medications are used appropriately (HOPE & S4) *Heart outcome prevention evaluation & Scandinavian stroke survival study

J Dudl et al: A.L.L. Simplified Bundle of Cardioprotective Medications- 60% reduction in hospitalizations for MI and stroke

Higher adherence = lower Medicare spending:
A 10% point increase in MPR = $285 lower Medicare costs

Better Adherence to antihypertensive treatment alone could prevent 89,000 premature deaths in the United States annually!
And now....Medicare Stars

- CMS has placed much importance on members’ medication adherence within plan sponsors

- Medication adherence comprises nearly 20% of STAR Ratings, with a weighted value three times the amount of most STAR measures

CMS Star Measures focusing on Medication Adherence

- The four therapeutic areas for adherence are as follows:
  - Medication Adherence for Oral Diabetes Medications, including biguanides, sulfonylureas, thiazolidinediones, and DiPeptidyl Peptidase (DPP)-IV Inhibitors,
  - Medication Adherence for Hypertension (RAS Antagonists, defined as ACE inhibitors, ARBs, or Direct Renin Inhibitors),
  - Medication Adherence for Cholesterol (Statins),
  - Medication Adherence for HIV/AIDS (Antiretrovirals)
EXERCISE:

What is the impact of medication non-adherence to your organization?

Successfully addressing Medication Adherence

- Better Health for our Population
  - Understanding the Barriers
  - Focusing our efforts – Perato’s principle
  - Break down the problem into manageable components
  - Population Proactive Solution: what can we do proactively 100% of the time

- Better Care For Individuals
  - Tools to make it easier for providers to address medication adherence at the point of contact
  - Individualized Solution: What can we do consistently (standardized way) to address medication non-adherence at every point of patient contact – The BSMART Checklist

- Better Cost & Enabling Teams
What contributes to non-adherence – Barriers?

EXERCISE:

What contributes to medication non-adherence in your organization?
What contributes to Non-adherence?

- Do not understand instructions
- Incomplete instructions
- Do not believe that medications will help
- Fear side effects
- Cannot purchase medications
- Cannot reach a pharmacy
- Find schedules inconvenient
- Do not believe that they need medication
- Do not see any benefit
- Burden of treatment
  - e.g. hypertension

What contributes to Non-adherence?

- Lack of trust between patient and provider
- For chronic medications:
  - We do not understand what motivates our patients
The Barriers - Over 250 barriers (recorded in the literature)

PATIENT RELATED
- Forgetfulness
- Lack of knowledge
- Value of therapy
- Cultural/Ethnic
- Denial
- Financial
- Health literacy
- Social support

MEDICATION RELATED
- Complex regimens
- Side effects
- Multiple medications
- Length of therapy

PROVIDER RELATED
- Poor relationship and/or poor communication
- Disparity around cultural or religious beliefs
- Lack of feedback/ongoing reinforcement
- Emphasizing negative aspects of the medication vs benefits

HEALTH SYSTEMS RELATED
- Type of health insurance
- Insurance/Pharmacy benefit design

Cumulative complexity model

Burden of treatment

Workload

Capacity

Outcomes

use

self-care

Burden of illness

Shippee et al 2011
Health Literacy and Medication Adherence You Can’t Tell By Looking

Your experience...

- Have you ever been in a situation when someone shared information in a manner that was difficult to understand?

- What did you do?
Your thoughts....

- What happens if someone does not understand directions?
- What are the implications to health care?

Health Literacy

- Health literacy has been defined as a patient's ability to read, comprehend, and act on medical instructions.
- Limited health literacy is common among elderly patients, patients with chronic diseases, and patients of lower socioeconomic status or educational attainment.
The consequences of inadequate health literacy

- Poorer health status
- Lack of knowledge about medical care and medical conditions
- Decreased comprehension of medical information
- Lack of understanding and use of preventive services
- Poorer self-reported health, poorer compliance rates
- Increased hospitalizations, and increased health care costs
  - 6% more hospital visits
  - 2 day longer length of stay

Institute of Medicine Report

Health care practitioners literally have to understand where their patients “are coming from” — the beliefs, values, and cultural mores and traditions that influence how health care information is shared and received.

The discrepancy between patient literacy levels and readability and comprehension of written materials is well documented.
Cultural Competency

- Culture clashes can erode trust between caregiver and patients and their families and impede effective communication.
- When it was explained to Lia’s father that she would likely die within hours of being removed from life-sustaining equipment, his impulse was to grab her and run, which is what he did. In Hmong culture, it is deeply offensive and threatening to predict the death of someone.
- Similarly, when a Spanish-speaking interpreter was asked to tell a Mexican mother that her child would die overnight and there was no more hope, the interpreter refused because “you never tell a mother in our culture to give up hope.”

Polypharmacy
**Polypharmacy**

- What is your definition?
- Administration of many drugs together
- Administration of excessive medications
- “More than a patient can handle”
  - “If patient cannot handle three medications, then that is polypharmacy.”

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**Epidemic of Over Prescribing**

- Doctors in the US, on average, now fill out 12 prescriptions per year for every American; up from an average of seven per person in the 1970s

http://www.guardian.co.uk/commentisfree/cifamerica/2011/jun/20/healthcare-drugspolicy

*If all the drugs were thrown in the ocean, everyone would be better-off ... except the fish.*

– Oliver Wendell Holmes
Polypharmacy

- 44% of men and 57% of women older than age 65 take five or more medications per week
- About 12% of both men and women take 10 or more medications per week

How does Polypharmacy Contribute to Non-Adherence?

CONCLUSIONS:
Polypharmacy with more than four pills daily leads to a lower compliance and can therefore influence the implementation of guideline-medicine. Non-prescription medication is widely used and should be considered because of their potential side-effects and drug interactions.(7)
What is the challenge in addressing polypharmacy?

How to address polypharmacy

- Review all medications a patient is taking
  - Which are truly necessary?
  - Which are the address the side effects caused by another medication?
- Instruct patients to keep a medication list
- Schedule “Brown Bag” lunches
- Follow BEERS Criteria for the elderly
Solutions

Better Health for Our Population
Where Medication Adherence breaks down. Proactive solutions
Barriers and Solutions...

- Because there are many reasons why patients are not taking their medications (MT had at least 3), the solutions have to multifaceted

Single solutions for all members (one size fits all) rarely work

Address every barrier possible in each member (over 250 barriers identified in the literature) – not realistic

A SOLUTION
1. 20% of the barriers that affect 80% of the people (Pareto's principle)
2. Have a model that will show where the 20% barriers occur

STEP 1: Understand where Medication Adherence Breaks Down

<table>
<thead>
<tr>
<th>Rx Prescribed</th>
<th>Rx Filled</th>
<th>Rx Taken</th>
<th>Rx Continued</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>88%</td>
<td>76%</td>
<td>47%</td>
</tr>
<tr>
<td>(Primary Non Adherence - 12% not filled)</td>
<td>(Primary Non Adherence - 12% not taken)</td>
<td>(Secondary Non Adherence -29% not finished)</td>
<td></td>
</tr>
</tbody>
</table>

Breaking Medication Adherence Down into Manageable Components
STEP 2: Pareto’s Principle - 80/20 Rule:
Most Common Barriers at each Point of Contact

<table>
<thead>
<tr>
<th>Rx Prescribed</th>
<th>Rx Filled</th>
<th>Rx Taken</th>
<th>Rx Continued</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provider’s Office</strong></td>
<td><strong>Pharmacy</strong></td>
<td><strong>Home</strong></td>
<td><strong>Others</strong></td>
</tr>
<tr>
<td>Value</td>
<td>Perceived Value</td>
<td>Forgetfulness</td>
<td>Lack of reinforcement</td>
</tr>
<tr>
<td>Concern</td>
<td>Side effects</td>
<td>Side Effects</td>
<td>Forgetfulness</td>
</tr>
<tr>
<td>Necessity</td>
<td>Value</td>
<td>Finance</td>
<td>others</td>
</tr>
<tr>
<td>Finance</td>
<td>Literacy</td>
<td>Literacy</td>
<td></td>
</tr>
<tr>
<td>Literacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forget</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Proactive: what can we do proactively to improve Medication Adherence for every patient?
The Provider’s Office: V.E.C.A.T

Reduce Primary Non Adherence at every point of clinical contact & improve population health

Value and Benefit of Therapy: Physician & provider emphasis and reinforcement – in provider office

Educate to focus on the markers of the disease (LDL, BP, etc) instead of symptoms of the disease as predictors for how well they are doing (many diseases have no symptoms) & set goals

Cost / Financial issues

Adherence Tools

Triage to other health care services

In the Pharmacy:

Value and Benefit of Therapy: pharmacist emphasis and reinforcement

Ensure 4Rs - Right patient, Right medication, Right indication & Right duration of therapy

Provide Adherence Tools

The Sandwich Consult
Focus on the importance of adherence – add 1 – 2 pharmaceutical pearls
Address the most common side effects and close with a positive affirmation
Better Care for Individuals

EMR, The BSMART Checklist, Patient Cases, Pilot Programs & Results

Identify Poor Adherence - Ask or Use EMR Indicators

Medication Refill Adherence Ratio
Days Supply Remaining

<table>
<thead>
<tr>
<th>Date</th>
<th>Drug</th>
<th>Mrar</th>
<th>Dsr</th>
<th>Qty</th>
<th>Rfd</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/17/09</td>
<td>KPHC SELF-REPORTED ASPIRIN</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>07/07/09</td>
<td>NIFEDIPINE ER 90MG TAB “XL”</td>
<td>65</td>
<td>38</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td>07/07/09</td>
<td>ATENOLOL TAB 50MG</td>
<td>100</td>
<td>53</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>07/02/09</td>
<td>METFORMIN HCL TAB 500MG</td>
<td>100</td>
<td>33</td>
<td>300</td>
<td>1</td>
</tr>
<tr>
<td>07/02/09</td>
<td>SIMVASTATIN TAB 80MG</td>
<td>67</td>
<td>23</td>
<td>90</td>
<td>3</td>
</tr>
<tr>
<td>06/25/09</td>
<td>POTASSIUM CL ER TAB 10MEQ</td>
<td>67</td>
<td>23</td>
<td>90</td>
<td>3</td>
</tr>
<tr>
<td>06/24/09</td>
<td>AMLODIPINE 10MG TABS</td>
<td>100</td>
<td>53</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>06/24/09</td>
<td>ENALAPRIL MALEATE TAB 5MG</td>
<td>81</td>
<td>40</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>06/17/09</td>
<td>FEXOFENADINE HCL TAB 180MG</td>
<td>30</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06/17/09</td>
<td>CLOBETASOL PROPIONATE CRE 0.05%</td>
<td>120</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06/16/09</td>
<td>HYDROXYZINE HCL TAB 25MG</td>
<td>30</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05/29/09</td>
<td>HYDROCHLOROTHIAZIDE TAB</td>
<td>100</td>
<td>3</td>
<td>100</td>
<td>3</td>
</tr>
</tbody>
</table>
Mr. MT – multiple barriers

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Solutions - multifaceted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of understanding of the benefit vs. risk</td>
<td>- Value and Benefit of Therapy: Physician &amp; provider emphasis and reinforcement – in provider office</td>
</tr>
<tr>
<td>Forgetfulness</td>
<td>- Educate to focus on the markers of the disease (LDL, BP, etc) instead of symptoms of the disease to predict how well they are doing (many diseases have no symptoms) &amp; set goals</td>
</tr>
<tr>
<td>Side effects</td>
<td>- Modify his regimen</td>
</tr>
<tr>
<td>Financial</td>
<td>- Cost / Financial issues</td>
</tr>
<tr>
<td>Belief system</td>
<td></td>
</tr>
</tbody>
</table>

Motivate / Adherence Tools / Triage to other services

The B-SMART Medication Adherence Checklist

A Tool to make it easier for Physicians and Providers to do the right thing when addressing America’s other drug problem – Medication Non Adherence

- **Barriers**: Identify barriers and assess readiness to change
- **Solutions**: Provide targeted solutions to adherence challenges
- **Motivation**: Help patients to help themselves (goal setting & self management
- **Adherence Tools**: Provide tools, including pill boxes, reminder calls, refill reminders, etc
- **Relationships**: Establish / maintain positive patient-provider relationships
- **Triage**: Direct patients to other resources in the broader health care system for support, education, and monitoring (health education, care management, etc)

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Rules for Barrier Busting

➢ You will not likely get adherence unless you remove the barriers

➢ Overcome YOUR problem: TELLING them what to do
**Rules for Barrier Busting:**
**Ask 75% of the time**

**ASK - EDUCATE - ASK**

- **ASK** about the barriers (example of 2 questions that can be used)
  - “In order to start taking your medication regularly tomorrow, what problems questions or concerns do you need to deal with now?”
  - “Based on your prescription refill pattern, it appears that you are not taking your Losartan (blood pressure) medication as prescribed. **What gets in the way of you taking your medication?**”

- **EDUCATE** around the point (provide a targeted solution to the barrier(s) identified) then:

- **ASK** about their next steps [talk back]
  - “What would work for you?
  - What will you do now to make that happen?
  - What else?”

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**Case #2: Mrs. PT**

**Identify Barrier: ASK**

“Based on your prescription refill pattern, it appears that you are not taking your Losartan (blood pressure) medication as prescribed. **What gets in the way of you taking your medication?** OR Use the Adherence Estimator / Morisky Scale

- **Answer** (from patient): "I can’t remember to take my medications twice a day, especially in the evenings.”

**Barrier – Forgetfulness**

**Solution: Value & EDUCATION to support routine**

“Some find it helpful to take it with something you do every day, like with your breakfast and dinner”

- **ASK** “But I’m curious, what would work for you? Tell me what you will do now to make that happen? What else?”

**Motivate:** at EVERY point of contact – Encourage / Empathize / Congratulate

**ART:** Adherence tools / Relationship / Triage to health education and other programs as needed
**Lets Practice!**
**Ask – Educate – Ask:**

- The group breaks up into pairs
- One person assumes the role of patient, the other assumes the role of provider - then switch roles (use tip sheet as a guide)

<table>
<thead>
<tr>
<th>Teams</th>
<th>Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Mr. Hayes: “I am doing better...I don’t think I need it” or “I don’t feel sick, I feel fine”</td>
</tr>
<tr>
<td>2</td>
<td>• Ms. Colburn: “I read about all these side effects that I could get when I use this medication”</td>
</tr>
<tr>
<td>3</td>
<td>• Mrs. Sanchez: “I am taking too many medications or I cannot remember how to take them”</td>
</tr>
<tr>
<td>4</td>
<td>• Mr. Chen: “My family says I don’t need it and I should take herbal medications instead”</td>
</tr>
<tr>
<td>5</td>
<td>• Ms. Hall: “This is expensive!”</td>
</tr>
<tr>
<td>6</td>
<td>• Ms. James: “Lactic acidosis”? What does that mean?”</td>
</tr>
<tr>
<td>7</td>
<td>• Mr. Gonzalez: “Qué dijo usted?” (What did you say?)</td>
</tr>
</tbody>
</table>

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The B-SMART Checklist

- Support – a marathon not a sprint
- Motivate at every point of contact:
  - Encourage,
  - Congratulate,
  - Empathize
- Set Goals

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**Dear Mr. [Name],**

Your cholesterol is much improved! Congratulations! Continue your cholesterol medicine to help keep your arteries open.

**Component** | **Latest Ref Range** | **1/11/2011** | **3/17/2011**
--- | --- | --- | ---
CHOL <200 | 330 (H) | 179 |
TRIG <150 | 268 (H) | 184 (A) |
HDL >50 | 49 | 48 |
LDL CALC <100 | 235 (H) | 84 |
CHOL/HDL <5.0 | 6.9 (H) | 3.7 |
ALT 17-60 units/L | 64 (H) | 46 |

Be well.

[Provider’s Name]

How do we motivate patients?

- Understand why will take or not take medications
- Find motivation
  - “What matters to you?”
- Address concerns/fears
- Develop schedule to fit patient convenience

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**What matters to you?**

Develop schedule to fit patient convenience
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Tools for patients to keep on track
Visual reminders
A Picture is worth a thousand words
eTools
example: Smartphones with apps
Automated Outreach

For Primary Nonadherence

- Rx Prescribed: 100%
- Rx Filled: 88% (13% not filled)
- Rx Taken: 76% (13% not started)
- Rx Continued: 47% (37% Rx not followed)

60% improvement in fills following outreach.

N = 2,651 control arm
N = 2,500 intervention arm

For Refill Nonadherence

- Rx Prescribed: 100%
- Rx Filled: 85% (15% not filled)
- Rx Taken: 76% (14% not started)
- Rx Continued: 47% (53% Rx not followed)

Increased Refills with Automated Reminder Outreach

N = 15,254 in the control group and 15,356 in the outreach group

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Engaging the Patient:
A positive patient-provider relationship is one of the strongest predictors of whether a patient will take his or her medications as prescribed.

Suggested interventions for Office Practice to build the Patient - Provider Relationship

- Build trust
  - Patient more likely to take medication if trust that you are prescribing in their best interest
  - Address cultural barriers
- Ask “What matters to you?”
- Engage patients in the decision making process
  - Selection, price, schedule
- Use “Teach Back”
- Address ability to access medications
- Explain how the medication works and what side effects to expect
  - Encourage to contact physician’s office when experiencing side effects
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The B-SMART Checklist

Barriers • Solutions • Motivation • Adherence Tools • Relationships & Roles • Triage

- Denial
- Health Literacy issues
- Difficult Patients
- Financial
- Others

**Triage/Referral Resources**
- Care / Case Management
- Behavioral and Social Medicine
- Health Education Classes
- Patient’s Provider (for Care Managers and pharmacists)
- Pharmacist (for Care Managers and Providers)
- Community Programs
- Financial Assistance Programs
- Website Tools & Coaching
- KP.org: Drug encyclopedia and health encyclopedia
- http://kphealtheducation.org

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Mr. MT after 6 months...
HbA1c = 7.7, LDL = 101, BP = 124/80

- **Barriers & Solutions**
  - Takes his Metformin with breakfast and dinner
  - Takes his Beta blocker at night to reduce dizziness
  - For Blood pressure: Changed to combo medication (prinide)
  - Uses a pill box to keep track
  - Also on Glipizide once daily (& pill box)

- **Adherence Tools**
  - Uses pill boxes to stay on task
  - Sometimes gets an IVR call to remind him to pick up his medications

- **Relationship**
  - Is encouraged by his provider to keep him on track at every visit
  - Very satisfied with care from his doctor and staff

- **Motivation**
  - Has action plans with goals to improve his health:
    - Weight loss plan – has lost 15 pounds
    - Reduced smoking – now down to one cigarette a day
    - Tips to develop healthy eating habits and lifestyle

- **Triage**
  - Attended Health Education class where he learned to control his chronic conditions and better understand the disease process

Interventions Designed By Integrated Health Delivery Systems

GroupHealth

**DRAFT**
Interventions

Geisinger Health System

- Collect patients’ medication preferences through an electronic survey completed before a physician sees the patient.
- Medical home model, nurses actively follow up with patients to monitor medication use and address any questions or concerns the patient might have.
- Reducing copayments and deductibles for medications for chronic conditions. Geisinger reports that it has achieved a 5 to 7% reduction in monthly costs.

Group Health Cooperative

- Nurse case manager approach
- Interview patients to assess whether they are managing their medical conditions.
- Patient education about their conditions
- Patient referral to programs that help them find more affordable medications.
- The Group Health Cooperative reports that the results have included annual savings — of more than $476 per participant.

The Outpatient Pharmacy Clinical Services (OPCS) Service

OPCS: Cohort and patient identification

- MRN entry into PIMS

MRAR<80% and labs not in control...

- MRAR<80%
- DM or Antiretroviral drugs
- ASC or DNA 100

The B-SMART Consultation

- Improved adherence
  - Over 11,000 non-adherent patient interventions
  - Consultation by OPCS pharmacist yielded 88% improvement in meds restart
  - 52% improvement in subsequent refill rate among restarted meds
  - Forgetting, denial of conditions, lack of knowledge, side effects among top 4 adherence barriers

- Improved outcomes
  - 47% patients reached their ASC and LDL clinical goals
  - 0.6% decrease in ASC
  - 20.3 mg/dL decrease in LDL-C
  - 60% completed missing ASC or LDL screening rates
Mayo Clinic: Diabetes Visit Cards

Montori

1. What is my risk of having a heart attack in the next 10 years?

NO STATIN
- The risk for 100 people like you who do not take statin.
- 50 people do NOT have a heart attack (green)
- 50 people DO have a heart attack (red)

YES STATIN
- The risk for 100 people like you who take statin.
- 50 people still DO NOT have a heart attack (green)
- 12 people EXPERIENCED a heart attack (yellow)
- 38 people still DO have a heart attack (red)
- 8 people experienced NO BENEFIT from taking statin

2. What are the downsides of taking statins (cholesterol pill)?
- Statins need to be taken every day for a long time (maybe forever)
- Statins cost money (to you or your drug plan)
- Common side effects: nausea, diarrhea, constipation (most patients can tolerate)
- Muscle aching/myalgias: 5 in 100 patients (some need to stop statins because of this)
- Liver blood test goes up (no pain, no permanent liver damage): 2 in 100 patients (some need to stop statins because of this)
- Muscle and kidney damage: 1 in 20,000 patients (requires patients to stop statin)

3. What do you want to do now?
- [ ] Take (or continue to take) statin
- [ ] Not take (or stop taking) statin
- [ ] Prefer to decide at some other time

Victor Montori, Arch Intern Med 2007
Medication Choice Cards

<table>
<thead>
<tr>
<th>Weight Change</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other Cards</strong></td>
<td></td>
</tr>
<tr>
<td>Low Blood Sugar (hypoglycemia)</td>
<td>Metformin (Generic available)</td>
</tr>
<tr>
<td>Blood Sugar (A1c Reduction)</td>
<td>$0.30 per day</td>
</tr>
<tr>
<td>Side Effects</td>
<td>Insulin (no generic available - price varies by dose)</td>
</tr>
<tr>
<td>Daily Routine</td>
<td>Levo: per 100 units: $10</td>
</tr>
<tr>
<td>Daily Sugar Testing</td>
<td>Pen: per 100 units: $4.94</td>
</tr>
<tr>
<td>Montori</td>
<td></td>
</tr>
</tbody>
</table>

Common Medication Bottles

Photo credit: Davies + Starr

http://nymag.com/nymetro/health/features/11700/
USP Prescription Container Labeling

- Organize the prescription label in a patient-centered manner
- Emphasize instructions and other information important to patients
- Simplify language
- Give explicit instructions
- Include purpose for use
- Limit auxiliary information
- Address limited English proficiency
- Improve readability

Engaging Underserved Populations: Multi-Cultural Approaches to Non-Adherence

Our Objectives

We intend to identify the essential few interventions to improve medication adherence in the African-American hypertensive population. We will work with a pilot area and determine if the interventions for this segment of the key members can be spread to other segments.
Our Process

Scan and Literature Search
- ASHP literature on medication adherence
- Patient and family centered care recommendations
- AMA recommendations
- Impact of literacy on medication adherence

Interviews performed by Team Members to identify effective interventions...
- Victor Montori, Mayo Health System and Shared Decision Program
- Robert Keegan, Professor in Adult Learning and Professional Development, Harvard
- Goran Henricks, Qulturum, Sweden (Impact of Esther Program on med. adherence)
- Weight Watchers
- NAACP
- Community benefits: community organizations that play a role in improving health
- Safety Net Organization
- KP Bedford Ohio Center - Contact: Pam Murphy
- Individuals involved in home successful West LA BP monitoring
- AARP
- Julia Braverman PhD Harvard Medical School Division on Addiction medication adherence, Cambridge Health
- Regina Benjamin’s (Surgeon General) Office
Role of Motivation

- Why is it some people adhere and others do not?
- How many work out?
  - What motivates you to go to the fitness center?
  - Ever get ‘lazy’?
  - How do you get yourself back into gear?
- “Immunity to Change”

Our Theory

- Understanding the patient’s motivation is fundamental to improving adherence, especially in the case of chronic medication therapy.
The IHI-KP Equitable Care Medication Adherence Driver Diagram

**Outcomes**
- Improve Medication Adherence
- Improve Clinical Performance and Outcomes
- Reduce Health Care Costs

**Key Drivers**
- Effective Provider-Patient Relationship
- Managing Pharmacy Dispensing
- Effective Medication Management Consultation
- Easing Burden of Taking Medication
- Patient and Family Engagement

**Initiatives**
1. Improving Provider-Patient Communication
2. Building Trust
3. Identifying their barriers to medication adherence and addressing these (solutions)
4. Increased Shared Decision Making
5. Understanding the patient’s motivation and motivating patients at each point of contact

---

The IHI-KP Equitable Care Medication Adherence Proposed BUNDLE

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THE First FIVE (5) INITIAL Components of the BUNDLE FOR SPREAD:
1. Building Trust at every point of contact
2. Identifying their barriers to medication adherence and addressing / providing targeted solutions
3. Understanding the patient’s motivation and motivating patients at each point of contact
4. Self Care: Self-Monitoring, Management, & Self Care including story telling
5. Reminder Tools – IVR Calls / Pill Boxes / others

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1. Self Care: Self-Monitoring, Management, & Self Care including story telling
2. Cultivating a Support System
3. Tracking Medication Refills, Reminders, and Schedule
4. Sustainable Integration of Medications into Lifestyle and Habits
We Need Your Input

Improved Cost Per Capita
By addressing drug costs and total overall health care costs

Enabling Performance Through People
Regional and local leadership, accountabilities, and collaborations across entities and organizations
**Better Cost Per Capita**

Impact of Medication Adherence in Chronic Vascular Disease
On Health Services Spending, 2005-2008
Targeted, Higher Pharmacy Spending Can Bend the Health Cost Curve

The Benefit-Cost Ratios

- The average benefit-cost ratios from adherence for the four conditions were:
  - 8.4:1 for CHF,
  - 10.1:1 for hypertension,
  - 6.7:1 for diabetes,
  - 3.1:1 for dyslipidemia

Health Care Cost Savings: Adherent vs. Non-Adherent ($PMPM): All Individuals

<table>
<thead>
<tr>
<th>Condition</th>
<th>Adherent Cost Savings</th>
<th>Non-Adherent Cost Savings</th>
<th>Added Rx Spend</th>
<th>Health Care Cost Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyslipidemia</td>
<td>$601</td>
<td>$1,860</td>
<td>$429</td>
<td>$4,337</td>
</tr>
<tr>
<td>Hypertension</td>
<td>$656</td>
<td>$4,413</td>
<td>$1,058</td>
<td>$8,881</td>
</tr>
<tr>
<td>CHF</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

New literature definitively shows that additional drug spend will result in lower health care costs.
**Medicare 5 Star Quality Measures:**
Revenue Generation & Financial Opportunity for the Organization:

<table>
<thead>
<tr>
<th>FIGURE 1 Quality Bonus Payment by Star Rating</th>
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</thead>
<tbody>
<tr>
<td>YEAR</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015+</td>
</tr>
</tbody>
</table>

**Potential Payout for 4 Stars vs. 5 Stars Plans**

<table>
<thead>
<tr>
<th>Budget</th>
<th>STAR Rating</th>
<th>Payout</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000,000</td>
<td>5</td>
<td>$50,000.00</td>
</tr>
<tr>
<td>$1,000,000</td>
<td>4</td>
<td>$40,000.00</td>
</tr>
<tr>
<td><strong>$10,000.00</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100,000,000</td>
<td>5</td>
<td>$5,000,000.00</td>
</tr>
<tr>
<td>$100,000,000</td>
<td>4</td>
<td>$4,000,000.00</td>
</tr>
<tr>
<td><strong>$1,000,000.00</strong></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>FIGURE 2 Rebate Percentage by Star Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
</tbody>
</table>

**Enabling Performance through People**

- **Allies**
  - A sense of urgency
  - Leadership
  - Regional and Local Sponsorship
  - Partnerships (not just a pharmacy initiative)

- **Communication**
  - Presentations
  - Newsletters
  - Emails
  - All modes of communication

- **Accountability: Reports to track performance**

- **External collaborations**
Example  
KPSCal Medication Adherence Dashboard

Making it easier to do the right thing

TECHNOLOGIES
So... Where Can Technology Play a Role?

<table>
<thead>
<tr>
<th>REASONS</th>
<th>TECHNOLOGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
<td></td>
</tr>
<tr>
<td>Does not understand what to do</td>
<td></td>
</tr>
<tr>
<td>Underestimates risks of non-adherence</td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
</tr>
<tr>
<td>Feels embarrassed or in denial</td>
<td></td>
</tr>
<tr>
<td>Wants to save money</td>
<td></td>
</tr>
<tr>
<td>Has opposing cultural beliefs</td>
<td></td>
</tr>
<tr>
<td>Subjective experience</td>
<td></td>
</tr>
<tr>
<td>Stops med because feels better</td>
<td></td>
</tr>
<tr>
<td>Stops med because feels worse</td>
<td></td>
</tr>
<tr>
<td>Has or fears side effects</td>
<td></td>
</tr>
<tr>
<td>Takes too much, addicted</td>
<td></td>
</tr>
<tr>
<td>Capability, literacy</td>
<td></td>
</tr>
<tr>
<td>Cannot read or understand instructions</td>
<td></td>
</tr>
<tr>
<td>Forgets which med for which condition</td>
<td></td>
</tr>
<tr>
<td>Forgets to take medication</td>
<td></td>
</tr>
<tr>
<td>Is unable to follow complex regimen</td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td></td>
</tr>
<tr>
<td>Cannot access pharmacy, refill process</td>
<td></td>
</tr>
</tbody>
</table>

Education & Motivation

- Cash or gift cards
  - $5 per med visit to $1,000 in 24 weeks (AJM, July 16, 2012)
  - HIV, TB, schizophrenia
- Mobile apps
  - Gout Channel (disease education)
  - Pillboxie (game-like)
    - Design/drag pills into virtual pillbox
  - HealthPrize (game-based)
    - Earn points/prizes for refilling meds, answering quizzes on one’s medical condition
    - Education, reminders, financial incentives, and fun
Education & Motivation

Reminders

- Text message reminders
- Mobile apps (122 iOS, 40 Android)
  - Care4Today by J&J
  - Dosecast
  - MedCoach
- Rx Timer Cap, Vitality GlowCap
- Watches, alarm clocks, pillboxes
  - Vibration / sound / light alerts
- Human-based reminder services
- Automated messages
Dispensers

Automated medication dispensers
- MedMinder – locked
- CompuMed – locked
- MedSmart – locked
- Senticare PillStation
- TabSafe – locked
- Philips – locked
- Filled by pharmacist or caregiver
- Sends alert over Internet if meds are not dispensed

Monitoring

- Reminder, dispenser systems
- Smart environments
  - Home, workplace, car
  - Appliances, TV, furniture
  - Mobile devices
    - AsthmaMapolis
    - MedBump
- Robots
  - Fujitsu Bear Cub
  - MIT
  - iRobot ConnectR
Monitoring

- Proteus Raisin microchip pill
  - Every pill has digestible emitter
  - Wireless body sensor patch confirms pill ingestion to provider
- MagneTrace necklace
  - Every pill has magnet
  - Necklace sensors confirm pill ingestion to provider
- Xhale
  - Every pill coated with tracer
  - Tracer released by stomach acid
  - Tracer detected in exhaled breath

Social Tech

- iReminder
  - Social network alerted if patient reacts negatively to med question
- ShareTheVisit
  - Family present virtually at visit
- WellDoc
  - Family, community connections
- PatientsLikeMe, CureTogether, WEGO Health
  - Network with similar others
- CDC Peer Support – HIV
- Clinician coaching (21-25% Δ)
Internal KP Efforts

- Where vendor options do not fit, KP has developed its own apps
  - Pharmacy BIO: **Mobile app for medication adherence**

But for every success, we still have challenges:

A real patient letter...

06-29-10 Explain Coreg

In the past the list of prescription drugs I was taking got so long that I got confused and didn’t know whether I had taken one or not. There is also a problem of constipation, whether from a particular drug or the combination.

I am trying radical solutions. One is to try Coreg in different strengths either once or twice a day. I am doing this in combination with exercising for two 30-minute periods, for a total of 60 minutes per day.

I also tried Diovan, since it is supposed to need taking only once a day, and without food. It resulted in a severe nosebleed. When I read that it relaxes blood vessels and they enlarge, I was turned away. Since I have had bad nosebleeds and necessary cataractizations all my life.

In recent times I have taken 6.25 mg Coreg pills, but in the beginning eight years ago I took only 3.12 mg and I find that they are adequate for bringing blood pressure down to about 140/90. That results me to lead an active life. A lower blood pressure might prolong my life longer, but it would be a life without meaningful activities.

For cholesterol, I am using Corna l margarine. I use it on bread, and potatoes, and in soups.

Until traces of the nosebleed have disappeared, I am skipping the 91 mg of enteric coated aspirin. I do please have children’s chewable 81 mg aspirin in my pocket, for if I should ever feel faint.
Our Challenge...Our Opportunity...

No Needless Harm or Deaths from Medication Use:
We will ensure that every patient we know who gets a prescription uses their medications effectively and appropriately to achieve optimal health outcomes.

No Needless disease progression and adverse outcomes related to medication non-adherence in members with chronic conditions by addressing adherence and appropriate medication use management at every point of contact.

Right Utilization of SMART Tools and Alignment of Resources - making it easier for us to do the right thing for our patients.

Our commitment today...and moving forward
Each of us here today will contribute to the Local, Regional, & National efforts - looking for solutions to improve Medication Adherence and Appropriate Medication Use.

A Call to Action: Improve Health by Improving Patient Adherence & Make the Triple AIM a Reality for All
Better Health * Better Care & Medication Use Experience * Reduced Cost per Capita

"Increasing the effectiveness of interventions to improve adherence could have a far greater impact on population health than any other advancement in medical treatment."


Frank Federico
ffederico@ihli.org

Elizabeth Oyekan
elizabeth.a.oyekan@kp.org
APPENDIX

**Medication-Related Barrier: Side Effects**

Ask: “In order to start taking your medication regularly tomorrow, what problems, questions or concerns do you need to deal with now?”

Answer: “I got muscle pain when I took that cholesterol medicine”

Educate: “Tell me about the muscle pain. For many, it helped to stop it for a week, then restart at half the dose. But I’m curious, for you to not go off it in the long run…

Ask:

- What would work for you?
- What you will do now to make that happen?
- What else?”
Incomplete instructions

- Instructions provided do not include all information
  - Take with food or without food
  - Take with other medications or space out
  - What to do if miss a dose
  - Crush or not to crush
  - Impact of acidic juices on medication
  - What to avoid (medications/foods)
  - Who to call if have a problem

Access and Cost

- No pharmacy nearby
- Not able to walk or drive to pharmacy
- Even with co-pay cost may be high
- Medicare Part D (some improvement)
- Not on formulary
- Expensive therapeutic alternative selected
Auxiliary Labels

http://healthresources.caremark.com/topic/printview
Auxiliary Labels

Auxiliary Labels
Use of label color

Many patients attributed the use of color to the severity of the label’s message. Patients reported that:

- RED meant danger;
- YELLOW translated to caution; and
- BLUE, WHITE and GREEN labels were viewed as "recommendations" that were not as severe or important as the instructions on red labels.

Medication Reconciliation

In its simplest form:

- Ensuring that we know what the patient is taking,
- Including that information in our decision making, and
- Letting the patient and other providers who need the information know of the changes
Medication Reconciliation

- What are your challenges?
- Who has stories of a successful model?
- Is it the same for all patients?

Why so much push back?

- The process is challenging
- Feels like rework
- Patients do not know all of their information
- Delivery of health care is fragmented
- If we only had a technological solution
- Medication reconciliation is a band-aid to a broken system of handovers and patient engagement
Medication Reconciliation

- Engage the patient
- Engage the person best able and suited to complete the process
- For the long lists, have to start somewhere to get the list as close as possible to complete and accurate
- Segment the population: some will need more investment than others
- Perfection is the enemy of good

Knowing what you now know….

- Let’s revisit the scenarios…
- What would you do differently?
Suggested interventions for patients and families

- Suggest that associate medication administration be associated with a daily activity to serve as a reminder.
- Participate in the selection of medications and schedules.
- Question when a new medication is added to your treatment plan, no matter who adds.
- If experience side effects, do not change dosing or discontinue medication without contacting the doctor.
- Know the names and doses of the medications you are taking.
- Carry a medication list with you.

References

### References

- Wagner EH. Chronic disease management: What will it take to improve care for chronic illness? Effective Clinical Practice. 1998;1:2-4

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Schillinger et al, Association of Health Literacy with Diabetes Outcomes. JAMA, July 2002; V288: No 4: 475-82</td>
</tr>
<tr>
<td>UNC: Managing Your Health With Heart Failure</td>
</tr>
<tr>
<td><a href="http://www.hsl.unc.edu/Services/Guides/focusonhealthlit.cfm">http://www.hsl.unc.edu/Services/Guides/focusonhealthlit.cfm</a></td>
</tr>
<tr>
<td>Health Literacy</td>
</tr>
<tr>
<td>IOM Health Literacy report  <a href="http://www.nap.edu/catalog/10883.html">www.nap.edu/catalog/10883.html</a></td>
</tr>
<tr>
<td><a href="http://www.healthliteracy@ama-assn.org">www.healthliteracy@ama-assn.org</a></td>
</tr>
<tr>
<td><a href="http://gsweb.harvard.edu/~ncsall/">http://gsweb.harvard.edu/~ncsall/</a></td>
</tr>
<tr>
<td>Informed Consent <a href="http://www.naph.org">www.naph.org</a></td>
</tr>
</tbody>
</table>
References

- Health Literacy continued:
  - Partnership for Clear Health Communication
    - [www.clearlanguagegroup.com](http://www.clearlanguagegroup.com)
    - [www.AskMe3.org](http://www.AskMe3.org)
  - Value
    - [www.literacynet.org/value](http://www.literacynet.org/value)
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---

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    - [www.literacynet.org/value](http://www.literacynet.org/value)
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  - Health Literacy (NALS) Data
    - [www.nifl.gov](http://www.nifl.gov)
  - [www.micropowerandlight.com/rdplus.html](http://www.micropowerandlight.com/rdplus.html)
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  - [http://www.hsph.harvard.edu/healthliteracy/](http://www.hsph.harvard.edu/healthliteracy/)

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