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

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“Drugs don’t work in patients who don’t take them.” – C. Everett Koop, MD
Case #1: 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
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
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

<table>
<thead>
<tr>
<th>Adherence Challenges in the following conditions:</th>
<th>3 months</th>
<th>6 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol / Dyslipidemia</td>
<td>40%</td>
<td>40 – 55%</td>
<td>50 – 67%</td>
</tr>
<tr>
<td>Depression</td>
<td>70%</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>Diabetes Type 2</td>
<td>47%</td>
<td>59%</td>
<td>62%</td>
</tr>
<tr>
<td>Erectile Dysfunction</td>
<td></td>
<td></td>
<td>55%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>53%</td>
<td>51 – 63%</td>
<td>65%</td>
</tr>
<tr>
<td>Obesity</td>
<td>52%</td>
<td>76%</td>
<td>92%</td>
</tr>
<tr>
<td>Osteoporosis (HRT)</td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td><strong>Ave. Reported</strong></td>
<td><strong>52%</strong></td>
<td><strong>55%</strong></td>
<td><strong>65%</strong></td>
</tr>
</tbody>
</table>

AT Kearney / Medco 2010 presentation
The Impact
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** → increased risk of death from breast cancer (Thompson et al., 2007).

Poor adherence to **hypertensive medications** → heart disease, kidney disease and other complications
Decrease in Population Health

By having unnecessary deaths

Causes of Death in the United States (CDC 2002 & CMSA)
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 simvastatin survival study

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

The average benefit-cost ratios from adherence for the four conditions were: CHF=8.4:1; HTN=10.1:1; DIABETES=6.7:1; DYSLIPIDEMIA=3.1:1

Higher adherence = lower Medicare spending: A 10% point increase in statin MPR = $832 lower Medicare spending per capita. A 10% point increase in MPR = $285 lower Medicare costs
With this level of impact on our healthcare system – what can we do to make it easier for physicians & providers to help patients use their medications effectively and safely to achieve the best health outcomes

• Better Health for our Population
  – Break down the problem into manageable components
  – Proactive Solution: what can we do proactively 100% of the time

• Better Care & Medication Use Experience
  – Reactive 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 Performance through People

• Summary
Better health for our population

Barriers . Where Medication Adherence breaks down . Proactive solutions
Because there are many reasons why patients are not taking their medications (MT had at least 3), the solutions have to multi-faceted.

1. 20% of the barriers that affect 80% of the people (Pareto’s principle)
2. Model to ID where the 20% barriers occur

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

Address every barrier possible in each member (over 260 barriers identified in the literature) – not realistic.
Where medication adherence breaks down
Breaking Medication Non-Adherence up into manageable components

Figure 1. Medication-taking behavior over the MEDICATION USE CONTIUM (AHA, American Heart Association 2009).
Where medication adherence breaks down

Breaking Medication Non-Adherence up into manageable components

[Diagram showing the percentage breakdown of medication adherence issues.]

- **Not Filled**: 12%
- **Not Started**: 12%
- **Not Finished**: 29%

**Common Barriers**

- **Medication Prescriptive Process**
  - Understanding the benefits of therapy
  - Denial
  - Financial
  - Health literacy

- **Medication Dispensing Process**
  - Perceived side effects
  - Not understanding the benefit:side effect ratio
  - Taking too many meds
  - Denial

- **Medication Taking Process**
  - Forgetfulness
  - Side effects
  - Financial
  - Taking too many meds
  - Minimal provider feedback ongoing reinforcement

Source: Adapted from American Heart Association, 2009 Statistics You Should Know.  www.americanheart.org/presenter.jhtml?identifier=107
**Proactive:** what can we do proactively 100% of the time to improve Medication Adherence in our population?
Physician and Provider's Office:

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

Value and Benefit of Therapy: Physician & provider emphasis and reinforcement – in Physician and Provider's 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

Kaiser Permanente
## Identify Poor Adherence - Ask or Use EMR Indicators

<table>
<thead>
<tr>
<th>Date</th>
<th>Drug</th>
<th>Mrar %</th>
<th>Dsr</th>
<th>Qty</th>
<th>Rfd</th>
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</thead>
<tbody>
<tr>
<td>08/17/09</td>
<td>KPHC SELF-REPORTED ASPIRIN</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>07/07/09</td>
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<td>65</td>
<td>38</td>
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<td>2</td>
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<tr>
<td>07/07/09</td>
<td>ATENOLOL TAB 50MG</td>
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<td>53</td>
<td>100</td>
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<tr>
<td>07/02/09</td>
<td>METFORMIN HCL TAB 500MG</td>
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<td>800</td>
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<tr>
<td>07/02/09</td>
<td>SIMVASTATIN TAB 80MG</td>
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<td>23</td>
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<td>3</td>
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<tr>
<td>06/25/09</td>
<td>POTASSIUM CL ER TAB 10MEQ</td>
<td>100</td>
<td>25</td>
<td>100</td>
<td>1</td>
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<tr>
<td>06/24/09</td>
<td>AMLODIPINE 10MG TABS</td>
<td>81</td>
<td>40</td>
<td>100</td>
<td>3</td>
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<tr>
<td>06/17/09</td>
<td>FEXOFENADINE HCL TAB 180MG</td>
<td>30</td>
<td>1</td>
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<tr>
<td>06/17/09</td>
<td>CLOBETASOL PROPIONATE CRE 0.05%</td>
<td>120</td>
<td>1</td>
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<tr>
<td>06/16/09</td>
<td>HYDROXYZINE HCL TAB 25MG</td>
<td>30</td>
<td>1</td>
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<tr>
<td>05/29/09</td>
<td>HYDROCHLOROTHIAZIDE TAB 25MG</td>
<td>100</td>
<td>31</td>
<td>100</td>
<td>3</td>
</tr>
</tbody>
</table>

**Medication Refill Adherence Ratio**

**Days Supply Remaining**
Case #1: Mr. MT – multiple barriers

**Barriers**
- Lack of understanding of the benefit vs. risk
- Forgetfulness
- Side effects
- Financial
- Belief system

**Solutions - multifaceted**
- **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** to predict how well they are doing (many diseases have no symptoms) & set goals
- **Cost / Financial issues**

Motivate / Adherence Tools / Triage to other health care services
• Is a Systematic Mental Adherence Checklist for Physician and Provider's to improve concordance at the beginning of therapy, compliance to the regimen, and persistence over time

• Consistent (standardized way) to address medication non adherence at every point of patient contact – Secondary Non Adherence
The B-SMART Checklist

**CORE**

- **Barriers:** Identify barriers and assess readiness to change
- **Solutions:** Provide targeted solutions to adherence challenges
- **Motivation:** Help patients to help themselves – goal setting and self management

**Augment the CORE**

- **Adherence Tools:** Provide tools, including pill boxes, reminder calls, kp.org refill reminders, alarm systems, 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)
Case #2: Mr. GS

Identify **Barrier**: **ASK**

“Based on your prescription refill pattern, it appears that you are not taking your high cholesterol medication as prescribed. *What gets in the way of you taking your medication?*”

– **Answer (from patient)**: “My family says I don’t need it” or “I don’t believe in taking medication.”

**Solution**: **Value & EDUCATION** Using the L.E.A.R.N framework to explore and understand patients’ beliefs

– L – Listen with empathy and understanding to the patient’s perception of the problem.
– E – Explore and understand the patient’s beliefs (utilize an interpreter when needed) and explain your perceptions of the problem.
– A – Acknowledge and discuss the similarities and differences between the provider and patient’s beliefs.
– Be respectful of the patient’s beliefs; do not discount what the patient is saying, especially if he or she believes it’s working.
– R – Recommend treatment. Based on these insights, develop a medication plan that will minimize these conflicts. Whenever possible, offer patients the counsel and information necessary to maintain both their faith and their health.
– N – Negotiate an agreement. When appropriate, include family members in medication discussions and stress the importance of family support in long-term chronic conditions.

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

**ART**: Adherence tools / Relationship / Triage to health education and other programs as needed

**Barrier – Cultural biases**
The B-SMART Checklist

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

• Support – a marathon not a sprint

• Motivate at every point of contact: Encourage, Congratulate, Empathize

• Set Goals

Encouraging letter

Dear Mr. ,

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

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>CHOL &lt;200</td>
<td>338 (H)</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>TRIG &lt;150</td>
<td>268 (H)</td>
<td>184 (A)</td>
<td></td>
</tr>
<tr>
<td>HDL &gt;/=40</td>
<td>49</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>LDL CALC &lt;100</td>
<td>235 (H)</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>CHOL/HDL &lt;5.0</td>
<td>6.9 (H)</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>ALT 17 - 63 units/L</td>
<td>64 (H)</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

Be well,
Ron Scott, MD

kp.org
800-954-8000
Reminder Outreach:

- **Primary Non-Adherence Call**: within 1-2 weeks:
  
  16% improvement in Rx fills

- **Secondary Non-Adherence**: for refills overdue by 2 – 6 weeks
  
  41% improved refill rate; improved A1c and LDL

- **Medication adherence reminder messages** and health education classes
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 Physician and 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://kphealthiseducation.org
Outpatient Pharmacy Clinical Services (OPCS) PILOTS using BSMART Methodology

- Outpatient Pharmacists intervening on diabetic patients and/or CAD with HbA1c > 8 and/or LDL >100 and MRAR is <80

- CAD / DM Medication Adherence pilots in 13 pharmacies N = 3800+ pts

- Persistent use of beta-blocker treatment after heart attack pilot

- Medication Adherence pilot - Patients (age 18 and older) who were hospitalized and discharged after an acute MI who received treatment with beta-blockers for six months after discharge
RESULTS: OPCS Regional Diabetes and CAD medication adherence pilots

In 13 pharmacies (n=3800+ patients touched and 7000+ interventions):

Clinical Outcomes

- Over 3800+ non adherent patients interventions
- Consultation by OPCS pharmacist yielded 67% improvement in meds restarts
- 41% improvement in subsequent refill rate
- 0.7% decrease in A1c and improved screening rates
- 18.5 mg/dL decrease in LDL-C and improved screening rates
Medication Adherence Barriers
Among OPCS DM and Hyperlipidemia pts

- Forgetfulness: 38%
- Denial of Conditions: 16%
- Lack of Knowledge (Med & Use): 16%
- Side Effects: 14%
- Other: 14%
- Financial Challenges: 14%
- Complex Medication Regimen: 4%
- Language Barrier: 14%
- Lack of Social Support: 14%
- Poor Health Literacy or Poor Vision: 4%
- Cultural and/or Religious Beliefs: 4%

6279 barriers reported
N=5133 pts
RESULTS: Post MI Beta Blocker Pilot Project:

Beta Blocker Adherence Program at South Bay

Project started

South Bay

SC REGION
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
• There’s evidence that by spending a bit more on medication and bolstering prescription drug adherence among patients, total health spending can be lowered for vascular medical conditions. The study and data which leads to this conclusion is published in Medication Adherence Leads to Lower Health Care Use And Costs Despite Increased Drug Spending appears in the January 2011 issue of Health Affairs.

• 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

• Furthermore, improving medication adherence as described in this study would avert hospital admissions for patients with vascular conditions, which would enhance millions of Americans’ quality of life and productivity.

• Higher adherence = lower Medicare spending: A 10% point increase in statin MPR = $832 lower Medicare spending per capita. A 10% point increase in MPR = $285 lower Medicare costs (HSR: Health Services Research 46:4 August 2011).
Enabling Performance through People: PACE

• **Partnership & Allies**
  – A sense of urgency / Leadership / Regional and Local Sponsorship / Physician & Non-Physician Champions

• **Accountability: Quarterly Reports to track performance**

• **Communication**
  – Presentations / Newsletters / Emails / All modes of communication

• **External collaborations**
  • National Consumer’s League, Institute of Healthcare Improvement, Pharmacy Quality Alliance, National Coalition for Patient Involvement in Education (NCPIE), NEHI, others
Case #1: 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 (prinzide)
  – Uses a pill box to keep track
  – Also on Glipizide once daily (& pill box)

• 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

• Adherence Tools
  – Uses pill boxes to stay on track
  – 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

• Triage
  – Attended Health Education class where he learned to control his chronic conditions and better understand the disease process
But for every success, we still have challenges:
A real patient letter...

08-29-10

Explain Limitation to Coreg to Dr. [Name]

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 was 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 immediately turned away, since I have had bad nosebleeds and necessary cauterizations all my life.

In recent times I have taken 6.25 mg Coreg pills, but in the beginning eight years ago I took only 3.125 mg, and I find that that is adequate now to bring blood pressure down to about 144/92. That permits 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 Canola margarine. I use it on bread, and potatoes, and in soups.

Until traces of the nosebleed have disappeared, I am skipping the 81 mg enteric-coated aspirin. I do always 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 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 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.”


- Joel Hyatt, MD:
  - Joel.d.hyatt@kp.org

- Elizabeth Oyekan, PharmD:
  - elizabeth.a.oyekan@kp.org

- Kelley Green, PhD:
  - kelley.r.green@kp.org

- Abir Makarem, PharmD:
  - Abir.f.makarem@kp.org
Questions for you to ponder on...

✓ What is your vision to improve medication adherence in your organization?

✓ What adherence tools are readily available to make it easier for the patient to do the right thing?

✓ Is it just a pharmacy initiative or an organization initiative?
Appendix

“Drugs don’t work in patients who don’t take them.” – C. Everett Koop, MD
## Reinforcing Mechanisms & Framework to support Medication Adherence in Kaiser Permanente

### Phase 1: Leadership
- **Identifying Populations** with potential medication non-adherence (MNA)
  - Multidisciplinary Leadership Infrastructure
  - Committee / subcommittee / Local Champions

### Phase 2: Tools
- **Tools** to identify at Risk Populations

### Phase 3: Tools & Education to support Provider Engagement
- **Define Critical Points of Contact to Address MNA**

### Phase 4: Data & Reports
- **Systems & Infrastructure to assess interventions & performance**
- **MARTS** (Medication Adherence, Reconciliation, Titration, and Safety)

### Phase 5: Integration & Alliances
- Fully Functional Medication Adherence Systemwide Infrastructure

### Tools to aggregate population data to identify MNA trends - National / Regional / Local
- **Target & Benchmarks**
- **Regional and National Patient Databases**
- **Pay for Performance Practices**
- **Research & Demonstration Opportunities & Projects**
- **Tracking & Trending Cohorts**
  - Performance Reports in population cohort at various levels

### 1. Alignment Opportunities: Strengthen Internal Collaborations
- **Tools to support adherence**
- **Access to Reports timely**
- **2. External Opportunities**
**Tools and Resources currently available to support**

Building a Successful Organizational Approach to Improve **Medication Adherence** in Kaiser Permanente

### Phase 1: Leadership

**Identifying Populations with potential MNA:**
1. A Medication Adherence Tool that can capture patients' refill history and flag or run reports on this cohort of patients (this list can then be given to care managers or support staff to contact patients)

**Provider Education Programs** to make it easier for providers to do the right thing at each point of contact:
1. CMRs on medication non-adherence - that focuses on Provider Tools to address and overcome barriers & tips
2. The AHA Medication Taking Behavior Model

### Phase 2: Tools To Identify at Risk Populations

**Define Critical Points of Contact to Address MNA:**
1. Physician or Provider office
2. Pharmacy
3. Care Management
4. Health Education
5. Others

**Regional and National Patient Databases**

### Phase 3: Tools & Education to Support Provider Engagement

**Addressing Adherence at the point of contact**

**Target & Benchmarks:**
1. Medicare Stars
2. Pharmacy Quality Alliance & National Quality Forum
3. HEDIS

**Tool to aggregate population data to identify MNA trends - National / Regional / Local**

### Phase 4: Data & Reports

**Systems & Infrastructure to assess interventions & performance**

**Integrating Medication Adherence into the LARGER picture of Medication Management -**
- MARTS (Medication Adherence, Reconciliation, Titration, and Safety)

### Phase 5: Integration & Alliances

**Fully Functional Medication Adherence Systemwide Infrastructure**

**Pay for Performance Practices**

**Research & Demonstration Opportunities & Projects:** to test and validate tools / assumptions / processes

- 1. Alignment Opportunities: Strengthen internal collaborations - example IMARS (Interregional Medication Adherence, Reconciliation, & Safety)
- 2. External opportunities & collaborations: National Consumers League, Institute of Healthcare Improvement, Pharmacy Quality Alliance, Others