Adherence to Prescription Medications
Medication adherence is the extent to which patients take medications as prescribed by their health care provider.\(^1\)

The terms *adherence* and *compliance* often are used interchangeably. However, *adherence* is now the preferred term.\(^1\)

- The term *compliance* implies a hierarchical relationship between the physician and the patient (for example, the patient passively obeys and follows the physician’s orders).\(^1\)
- The term *adherence* implies active collaboration between the physician and the patient (for example, the patient follows a mutually agreed-on treatment plan) and is more aligned with patient-centered care. The term is intended to be a nonjudgmental statement of fact rather than an implication of blame against patients, providers, or treatments.\(^1,2\)

There are 2 types of medication-taking behaviors.

- **Intentional non-adherence**
  - An active decision on the part of patients to forego prescribed therapy.

- **Unintentional non-adherence**
  - A passive process in which patients fail to adhere to prescribing instructions through carelessness, forgetfulness, or circumstances out of their control (e.g., health literacy).

Intentional non-adherence is one of the major reasons why patients fail to reach clinical goals.

There are a variety of ways in which people can be non-adherent.

- Non-fulfillment refers to a patient who never fills a prescription\(^1\);
- Non-persistence refers to a patient who stops taking the medication without the advice of the health care provider\(^1\); and
- Poor adherence, which can be demonstrated in a variety of ways:
  - Taking lower than prescribed doses or taking medication less frequently than prescribed (eg, 5 mg instead of 10 mg)\(^2\)
  - Taking medication less frequently than prescribed (eg, every other day instead of every day)\(^2\)
  - Not following the medication instructions (eg, taking it at the wrong times)\(^3\)
  - Taking it with substances that are prohibited\(^3\)

Non-adherence to Prescription Medications

The Non-adherence Epidemic\textsuperscript{1–3}

- \( \approx 15\% \) of new prescriptions are never filled.\textsuperscript{4}
- Of prescriptions filled, most patients stopped filling their prescriptions within the first 6 months.\textsuperscript{5}

Non-adherence to prescription medications is "America’s Other Drug Problem"\textsuperscript{6}

# Impact of Non-adherence

## Public Health Implications

- Non-adherent patients with chronic disease have a significantly higher risk of mortality.  
- Non-adherent patients with chronic disease have a significantly higher risk of hospitalization and emergency-department utilization.  
  5.  
- Regardless of disease, patients who are non-adherent to their medicines may not be able to reach their treatment goals.

## Societal-Economic Implications

- Direct costs of non-adherence for the United States are up to $290 billion each year in unnecessary or excessive outpatient visits, hospitalizations, emergency-department use, nursing-home admissions, and diagnostic testing.

---

The Non-fulfillment and Non-adherence Epidemics

"A Worldwide Problem of Striking Magnitude"¹

Non-fulfillment and Non-adherence

- Transcend geographic and political boundaries²
- Are observed across all demographic groups²,³
- Are observed across all therapeutic areas and all medications²,⁴
- These non-fulfillment and non-adherence rates have not changed appreciably over the last 25 years⁵,⁶

“Drugs don’t work in patients who don’t take them.”

C. Everett Koop, MD
We know that medication non-adherence is
  • A public health issue
  • A major inefficiency in our health care system
  • An expressed need across multiple customer segments

But what do we know about strategies and interventions to improve adherence? I thought this was a helpful schematic from the 2005 *New England Journal of Medicine* article by Osterberg and colleagues. It identifies hypothesized barriers to medication adherence and indicates where they occur. Barriers to medication adherence occur at the patient, provider, and health care system levels.²

At the patient level, hypothesized barriers that are related to poor patient–provider communication include poor patient understanding of disease, poor health literacy, poor understanding of medication risks and benefits, poor understanding of proper use of medication, and complex drug regimens.²

At the health care system level, Osterberg and colleagues hypothesized that barriers to medication adherence that were related to patient interaction with the health care system included poor access or missed appointments, poor treatment by clinical staff, poor access to medications, switching of formularies, and high medication cost.²

At the provider level, hypothetical barriers include inadequate knowledge of drug costs and of coverage of different insurance formularies.²

“Many [adult] patients stop adhering to treatment recommendations intentionally when the perceived hazards outweigh the benefits. More effort must… be directed toward identifying those contemplating stopping medications.”

—Dr. Alex J Mitchell, 2006

Self-Reported Adherence Screeners

- Over 2 dozen medication adherence screeners have been published in the peer-reviewed literature.\(^1\)

- Four-fifths (79%) of published adherence screeners were developed specific to certain chronic diseases while one-fifth (21%) were developed to be used across multiple therapeutic areas.\(^2\)

- Disease-specific measures have been developed for schizophrenia/psychosis (5), HIV (5), hypertension (5), rheumatology (1), asthma (1), diabetes (1), depression (1), acne (1), systemic lupus erythematosus (1), and pediatrics (1).\(^{1,2}\)

Merck’s Adherence Research

- Conceptualization, development, and validation of a patient-based survey to segment patients on their propensity to adhere to prescription medications for chronic disease.¹,²

The Adherence Estimator®¹,ᵃ


The Adherence Estimator has been validated for oral medications prescribed for certain chronic, asymptomatic conditions (eg, high cholesterol, diabetes). The Adherence Estimator has not been validated for symptomatic conditions (eg, asthma). For symptomatic conditions, even medications that should be taken continuously may be prescribed or taken on an as-needed basis.

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Segmentation Is Placing Like-minded People Into Nonoverlapping Buckets (Typologies)
Consumers Within a Given Segment Should Look More Like One Another Than Consumers in Different Segments
Consumer Segmentation

- Construct theoretically relevant and homogeneous typologies (groups of consumers)

- Fundamental to efficient, tailored health messages that are specific to the needs and beliefs of homogeneous patient subgroups
The Adherence Estimator®: Development Process

Continuum of increasing evidence

- Comprehensive review of the theoretic/empiric literature on adherence to prescriptions
- Focused on mutable patient drivers
- Expert Input Forums on adherence
- Inventory of potential drivers and barriers to adherence
- Focus groups with adults with chronic disease who were adherent and non-adherent to their prescriptions
- Assessed reasons for adherence and non-adherence using rating and ranking exercises
- Two rounds of quantitative testing of items and scales (N = 2,000)
- Subjected items to a psychometric analysis using the Harris Interactive Chronic Disease Panel
- Study diseases
  - Asthma
  - Diabetes
  - Hyperlipidemia
  - Hypertension
  - Osteoporosis
  - Other CVD
- Predictive validation study identifying new prescription starts, segmenting them, and tracking longitudinal pharmacy claims for 9 months

CVD: cardiovascular disease.
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Adherence Segmentation: Development Process

- Comprehensive review of the theoretic/empirc literature on adherence to prescriptions
- Focused on mutable patient drivers
- Inventory of potential drivers and barriers to adherence

# Evidence-Based Patient Drivers of Adherence

<table>
<thead>
<tr>
<th>Weak Evidence</th>
<th>Moderate Evidence</th>
<th>Strong Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Locus of control</td>
<td>Side effects</td>
</tr>
<tr>
<td>Gender</td>
<td>Self-efficacy</td>
<td>Perceived need for Rx</td>
</tr>
<tr>
<td>Race</td>
<td>Coping skills</td>
<td>Perceived Rx concerns</td>
</tr>
<tr>
<td>Education</td>
<td>Trust in MD</td>
<td>Perceived Rx efficacy</td>
</tr>
<tr>
<td>Income</td>
<td>Patient involvement</td>
<td>Rx costs</td>
</tr>
<tr>
<td>Personality</td>
<td>Patient knowledge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information-seeking</td>
<td></td>
</tr>
</tbody>
</table>

MD=physician; Rx=prescription medication.
Medication Decision Making
Propensity to Adhere: 10 Operating Tenets Based on Peer-Reviewed Literature

Merck's 10 Tenets were identified from reviewing the extensive literature on medication adherence and are used to frame our research strategy

1. **Patients do not actively communicate** their adherence intentions to their health care professional.¹
   - Among 1,100 adult patients in 6 states²:
     - 68% said they would never tell their health care provider that they did not want to take a medication.
     - 83% said they would never tell their health care provider if they didn’t plan to fill their medication.

2. **Health care professionals assume that their patients are adherent.**¹
   - In a study of 138 adult patients receiving treatment, 74% of physicians believed their patients to be highly adherent.³
   - In fact, in typical interactions with patients, health care providers cannot predict adherence with any more efficiency than tossing a coin.⁴ ⁵

---

Propensity to Adhere: 10 Operating Tenets Based on Peer-Reviewed Literature

Merck's 10 Tenets were identified from reviewing the extensive literature on medication adherence and are used to frame our research strategy.

3. There is no such thing as a “non-adherent personality”
   - Medication adherence has not been consistently linked to personality, temperament, or other character dimensions.2

4. Adherence to prescription medications is largely unrelated to lifestyle and self-care recommendations.1
   - Self-care behaviors are not reliably or consistently associated with a patient’s propensity to adhere to prescription medications.1

Propensity to Adhere: 10 Operating Tenets Based on Peer-Reviewed Literature

Merck's 10 Tenets were identified from reviewing the extensive literature on medication adherence and are used to frame our research strategy.

5. There is no consistent relationship between demographic characteristics and medication adherence.¹
   - Research shows that the effects of demographic characteristics such as age, gender, education, and income on adherence were small.²
   - Medication adherence cannot be assumed just by looking at the patient.¹

6. Patients want to know about their prescription medications and feel frustrated when they don’t receive enough information.¹

---

Propensity to Adhere: 10 Operating Tenets Based on Peer-Reviewed Literature

Merck's 10 Tenets were identified from reviewing the extensive literature on medication adherence and are used to frame our research strategy.

7. **Health care professionals communicate inconsistently about prescription medications.**

8. **Taking medication is a decision-making process.** Patients actively make decisions about their medications.
   - It is very important to ensure that information about medication and treatment is clearly conveyed to, and understood by, the patient.

Propensity to Adhere: 10 Operating Tenets Based on Peer-Reviewed Literature

Merck's 10 Tenets were identified from reviewing the extensive literature on medication adherence and are used to frame our research strategy.

9. **Non-adherent patients believe their non-adherence is rational behavior.** It is driven by patient beliefs about their treatment, diseases, and prognosis as well as their objective experiences with their treatment and disease.¹
   - Perceived affordability and other personal considerations also factor into the patients' value decision.²
   - Multiple factors influence patient medication decisions, and many patients make their medication decisions outside the physician's office. For these reasons, a patient's personal considerations should be determined and addressed at each prescribing visit.¹

10. Patients can **faithfully adhere** to one medication, **non-fulfill** another, and **non-persist** to another.¹
    - Patients also may make decisions about each medication based on the information they possess about that medication and the conditions it treats.¹

Proximal-Distal Continuum of Medication Adherence Drivers

Demographic → Generic Beliefs, States, and Skills → Disease-Related Beliefs and Skills → Treatment-Related Beliefs → Adherence

Distal
- Far removed from Rx decision-making
- The product of myriad factors unrelated to medication taking
- Impact on adherence is small

Proximal
- Specific to Rx decision-making
- The product of disease-related beliefs
- Impact on adherence is large

Model is consistent with accumulated knowledge about adherence interventions

### Proximal-Distal Continuum of Adherence Drivers

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Psychosocial Beliefs and States</th>
<th>Generic Health Beliefs and Skills</th>
<th>Disease-Related Beliefs and Skills</th>
<th>Treatment-Related Beliefs</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Trust in PCP</td>
<td>Side-effect proneness</td>
<td>Perceived severity</td>
<td>Rx Concerns</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Engagement in care</td>
<td>Information seeking</td>
<td>Dx/Rx knowledge</td>
<td>Rx Commitment</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>Social support</td>
<td>Health locus of control</td>
<td>Perceived Rx safety</td>
<td>Rx Affordability</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Desire for control</td>
<td>Perceived value of Rx</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>Self-efficacy</td>
<td>Perceived value of supplements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PCP=primary care provider, Dx=physician, Rx=prescription medication.

Merck Conceptual Model: Commitment-Concerns-Costs Framework

Three medication adherence barriers emerged across the data sets as the best predictors of self-reported adherence.¹

- None of the other 15 proposed medication adherence barriers added to predictive ability of the survey once these items and scales were in the models.

The 3 domains most accurate in predicting adherence were the 3 C’s¹:

- **Commitment:** the perceived need for prescription medications
- **Concerns:** the perceived concerns about prescription medications
- **Cost:** the perceived prescription affordability


Three medication adherence barriers emerged across the data sets as the best predictors of self-reported medication adherence. None of the other 15 medication adherence barriers proposed in the study added to the predictive ability of the survey once these items and scales were in the models.¹

The 3 domains of most accurate drivers in predicting medication adherence are the “3 C’s”¹:

- **Commitment:** the perceived need for prescription medications
- **Concerns:** the perceived concerns about prescription medications
- **Costs:** the perceived prescription affordability

## Reasons for Non-fulfillment Among Adults With Chronic Disease (n=265)\(^1\)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying for Rx a financial hardship</td>
<td>56%</td>
</tr>
<tr>
<td>Fear of side effects</td>
<td>46%</td>
</tr>
<tr>
<td>Concerns about taking the Rx</td>
<td>32%</td>
</tr>
<tr>
<td>Did not think needed the Rx</td>
<td>25%</td>
</tr>
<tr>
<td>Change in health insurance/benefit</td>
<td>18%</td>
</tr>
<tr>
<td>Did not believe condition was life-threatening</td>
<td>17%</td>
</tr>
<tr>
<td>Fear of drug interactions</td>
<td>11%</td>
</tr>
<tr>
<td>Did not think Rx would work for me</td>
<td>8%</td>
</tr>
<tr>
<td>Inconvenient/complex dosing regimen</td>
<td>6%</td>
</tr>
<tr>
<td>Did not understand purpose of the Rx</td>
<td>3%</td>
</tr>
</tbody>
</table>

## Reasons for Non-persistence Among Adults With Chronic Disease (n=2,935)\(^1\)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying for Rx a financial hardship</td>
<td>43%</td>
</tr>
<tr>
<td>Experience or fear of side effects</td>
<td>35%</td>
</tr>
<tr>
<td>Concerns about taking the Rx</td>
<td>23%</td>
</tr>
<tr>
<td>Did not think needed the Rx</td>
<td>23%</td>
</tr>
<tr>
<td>Change in health insurance/benefit</td>
<td>18%</td>
</tr>
<tr>
<td>Did not believe condition was life-threatening</td>
<td>13%</td>
</tr>
<tr>
<td>Problems remembering to take Rx</td>
<td>12%</td>
</tr>
<tr>
<td>Did not see evidence Rx was working</td>
<td>11%</td>
</tr>
<tr>
<td>Experience or fear of drug interactions</td>
<td>8%</td>
</tr>
<tr>
<td>Did not think Rx would work for me</td>
<td>6%</td>
</tr>
<tr>
<td>Inconvenient/complex dosing regimen</td>
<td>4%</td>
</tr>
<tr>
<td>Did not understand purpose of the Rx</td>
<td>1%</td>
</tr>
</tbody>
</table>

# The Adherence Estimator®—Self-Scoring Survey

Please read each statement and check the box that best applies to you at the present time.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree completely</th>
<th>Agree mostly</th>
<th>Agree somewhat</th>
<th>Disagree somewhat</th>
<th>Disagree mostly</th>
<th>Disagree completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am convinced of the importance of my prescription medication.</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>I worry that my prescription medication will do more harm than good to me.</td>
<td>14</td>
<td>14</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I feel financially burdened by my out-of-pocket expenses for my prescription medication.</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**ADD UP THE TOTAL NUMBER OF POINTS FROM THE CHECKED BOXES**

<table>
<thead>
<tr>
<th>Score</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Low likelihood for nonadherence (&gt;75% probability for adherence)</td>
</tr>
<tr>
<td>2−7</td>
<td>Medium likelihood for nonadherence (32%−76% probability for adherence)</td>
</tr>
<tr>
<td>8+</td>
<td>High likelihood for nonadherence (&lt;32% probability for adherence)</td>
</tr>
</tbody>
</table>


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The Adherence Estimator®—Self-Scoring Survey

Please read each statement and check the box that best applies to you at the present time.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Agree completely</th>
<th>Agree mostly</th>
<th>Agree somewhat</th>
<th>Disagree somewhat</th>
<th>Disagree mostly</th>
<th>Disagree completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am convinced of the importance of my prescription medication.</td>
<td>Low Risk</td>
<td>Low Risk</td>
<td>Medium Risk</td>
<td>Medium Risk</td>
<td>High Risk</td>
<td>High Risk</td>
</tr>
<tr>
<td>I worry that my prescription medication will do more harm than good to me.</td>
<td>High Risk</td>
<td>High Risk</td>
<td>Medium Risk</td>
<td>Medium Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
</tr>
<tr>
<td>I feel financially burdened by my out-of-pocket expenses for my prescription medication.</td>
<td>Medium Risk</td>
<td>Medium Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
</tr>
</tbody>
</table>


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# The Adherence Estimator®—Interpretation Guide

<table>
<thead>
<tr>
<th>Score</th>
<th>Adherence</th>
<th>Adherence Rate</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>0</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11, 21, 24, 34</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13, 23, 26, 36</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


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Merck’s Adherence Estimator®

- Resulted from extensive qualitative and quantitative research\(^1\)
- Identifies 3 key medication beliefs that influence adherence\(^1\)
- Segments adult patients based on their propensity to adhere to prescription medications for chronic disease\(^1\)
- Evidence of cross-sectional discriminant validity and longitudinal predictive validity\(^1,2\)


The Adherence Estimator® is a patient-based, validated survey that is the result of extensive research. The Adherence Estimator segments adult patients into 3 categories, based on a numeric value calculated from a patient’s responses to survey questions.\(^1\)

The Adherence Estimator® is a patient-based, validated survey that is the result of extensive research. The Adherence Estimator segments adult patients into 3 categories, based on a numeric value calculated from a patient’s responses to survey questions.¹

The Adherence Estimator® has very short and concise features for ease of use for patients and health care providers¹:

- It takes about 1 minute to complete
- Is self-scoring
- Is patient centered and evidence based
- Supports efficient, tailored health solutions that are specific to the needs and beliefs of homogeneous patient subgroups

Given the rapid drop-off in medication persistence rates observed in the first 6 months of therapy, the Adherence Estimator should be used as soon as possible after the initiation of new therapy.¹

The Adherence Estimator was designed to be completed separately for each new medication prescribed.¹

The Adherence Estimator can be used as a patient engagement tool. Simply engaging the patient in an active discussion and asking questions to gauge his or her likelihood of adherence may ensure adherence.

Potential Adherence-Enhancement Strategies

- Simplify the regimen (dosing frequency, combination therapy) and take patient preferences into account when choosing formulations and regimens.¹ ²
- Reconcile prescribing across multiple prescribers, settings, and systems.¹
- Prescribe with confidence.³
  - Share success stories with other patients³
  - Offer positive comments about the prescribed therapy³ ⁴
  - Do not say “Let’s try this and see if it works” (uncertainty conveyance)⁵
- Avoid reflexive prescribing.³ ⁶
  - When appropriate, prescribe at the second or third visit after imparting knowledge about the condition, rationale for the therapy, and its benefits.⁶
  - Patients may more readily accept treatment if they feel decision to start therapy is their choice rather than the provider’s directive.⁶
- Involve patients.¹ Ask permission to prescribe.

Potential Adherence-Enhancement Strategies

- Teach back – ask patients to repeat the rationale for the therapy, its benefits and risks, and the consequences of untreated disease.1,2
- Emphasize the benefits of adherence and explain the risks and consequences of non-adherence.1,3
- Underscore adherence as a means of maximizing the effectiveness of the therapy.3
- Nonjudgmentally explore patients’ uncertainty, ambivalence, fears, expectations, and beliefs about the diagnosis and medication.1
- Ask the patients their assessment of the pros and the cons of taking the medication1 – patients take medications because of their beliefs, not yours.
- Take “small moments with patients.” Ask patients their goals and hopes for the future and then share with them the role of the medication in enabling (or undermining) their goals.4,5
- Do not overestimate patients’ understanding of the disease or treatment. Continuously reinforce rationale for therapy and consequences of non-adherence.2,6

Potential Adherence-Enhancement Strategies

- Seek the patient’s commitment to adherence.\(^1\) Enter into a verbal “adherence contract”.\(^2\)
- Encourage patients in a nonjudgmental way to inform you if they are thinking about stopping the prescribed therapy so you can work together toward an optimal solution.\(^3\)
- With the patient’s approval, involve family members in treatment discussions and enlist their assistance as adherence “partners.”\(^4\)
- Praise and positively reinforce adherence.\(^4\)
- Balance information on side effects with a discussion of the benefits of the prescribed therapy.\(^1,4\)
- Share with the patient a management plan should side effects occur.\(^1\)

Potential Adherence-Enhancement Strategies

- Take incremental steps toward clinical goal attainment. Avoid prescribing medications and behavior change at the same time.
- Have office staff reach out to the patient within a week of newly prescribed therapy to review the treatment plan and the importance of adherence.
- Avoid scolding, finger shaking, and lecturing – they are rarely effective.
- Schedule a follow-up visit in the 6 weeks after prescribing new therapy.
  - Benner et al reported a 45% enhancement in adherence for patients with a follow-up visit and lipid test in the first months of lipid-lowering therapy.
- Improve your communication skills.
  - 19% greater risk of non-adherence among patients whose prescribers communicate poorly.
- Do not make any assumptions about adherence. Routinely screen for non-adherence. Consider non-adherence as a rule-out diagnosis.
- Discuss the importance of adherence nonjudgmentally.

Strategies for Unintentional Non-adherence

- Encourage home-based reminder tools and triggers.¹
  - Eg, pill boxes, calendars, diaries, mirror stickers, refrigerator magnets, cell-phone alarms, alarm watches
- Recommend tailoring medication-taking to daily habits, routines, and lifestyle.¹
- Promote the use of automated pharmacy refill reminders.¹
- Recruit family as medication supporters/advocates.²
- Encourage blister-packaged drugs (prepackaged medications).¹
- Simplify the regimen when appropriate.¹
  - Consider prescribing once-daily dosing and/or combination therapy.

Commitment-Concerns-Costs Framework

Rx Commitment → Adherence → Rx Concerns → Adherence → Rx Costs
Structural Equation Modeling of Predictors of Perceived Need for Medication (Commitment)

- The 5 most important predictors of greater perceived need for medications:
  - Greater perceived disease severity
  - Less value placed on nutraceuticals
  - Greater knowledge about the treatment
  - Greater patient trust in physician and engagement in care
  - Less perceived susceptibility to side effects

Potential Strategies for Perceived Need for Medications (Commitment)

- Rereview diagnosis and treatment rationale in lay terms and assess understanding using teach-back or ask-tell-ask techniques.\(^1\)
- Provide patient-education materials about the diagnosed condition.\(^1\)
- Reinforce the **importance** and **benefits** of the medication.\(^2\)
- Address consequences of untreated disease.\(^1\)
- Elicit patient perceptions of their condition and treatment.\(^2\)
- Solicit and nonjudgmentally address doubts about the therapy.\(^1\)
- Ensure that patient beliefs are informed by fact rather than misplaced concerns or misinformation.\(^1\)

Structural Equation Modeling of Predictors of Perceived Medication Concerns

- The 5 most important predictors of fewer medication concerns¹:
  - Less perceived susceptibility to side effects
  - Less value placed on nutraceuticals
  - More knowledge about the treatment
  - Greater patient trust in physician and engagement in care
  - Less perceived disease severity

Potential Strategies For Medication Concerns

- Provide clear information about possible side effects. Multiple studies have demonstrated that side effect forewarning does not increase patient reports or experience of side effects.
- Educate patients about the signs and symptoms of common side effects.
- Balance information on side effects with a discussion of the benefits of the prescribed therapy.
- Develop a plan for what patients should do if a side effect occurs. Emphasize that the 2 of you together will work toward minimizing or managing any side effects.
- Elicit and address patients’ perceived susceptibility toward side effects.
- Ensure that patient concerns are informed by fact rather than misplaced concerns or misinformation.

Structural Equation Modeling of Predictors of Perceived Medication Affordability

- The 4 most important predictors of better perceived medication affordability¹:
  - Higher income
  - Less perceived disease severity
  - Less value placed on nutraceuticals
  - Better self-rated health

Potential Strategies for Medication Affordability

- Generic substitution
- Encourage use of mail-order pharmacy
- Switch to a less-expensive brand within the same class
- Consider prescribing once-daily dosing or combination therapy when appropriate
- Perform medication reconciliation across prescribers, settings, and systems
- Refer patient to assistance programs
  - TogetherRxAccess.com
  - rxoutreach.com
  - rxassist.com
- Suggest manufacturer coupons and rebates

Conclusions

- Non-adherence undermines the best clinical intentions of evidence-based care.\(^1\)

- Preventing non-adherence is easier, more effective, and less costly than “treating” it.\(^2\)

- View discussing medication adherence as an opportunity for an exchange of information – your clinical expertise and the patients’ perspective on the diagnosis and prescribed therapy.\(^3\)

- Adherence is a marathon, not a sprint. Patients can become non-adherent at any point.
  - \(\approx 15\%\) of patients do not fill a new prescription\(^4\)
  - \(\approx 20\%\) of patients do not obtain the first refill\(^5\)
  - Of prescriptions filled, most patients stopped filling their prescriptions within the first 6 months.\(^6\)

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6. Data available on request from Merck. Professional Services-DAP. WP1-27 PO Box 4 West Point PA 18946-0004. N001-1584242-0002.
Conclusions

- There is no such thing as an “adherent patient.”
  - Every patient should be considered as potentially non-adherent.¹
  - Rule out non-adherence routinely.²
  - Patients can be adherent to one medication, not fill a different medication, and be non-persistent to yet another medication. Adherence is medication specific, not patient specific.³

- Adherence is largely a function of patients’ beliefs about the condition and the prescribed medication, and these beliefs can be elicited and addressed with empathy⁴

- Physicians’ assumption of their patients’ adherence is one of the most common errors in clinical practice.

“[R]esistance to taking medicine seems to be quite profound and pervades different cultures and categories of disease. It is instinctual and complex.”¹

“To write prescriptions is easy, but to come to an understanding with people is hard.”

Franz Kafka
*The Country Doctor*¹

Traditional Vital Signs

Body Temperature
Pulse Rate
Blood Pressure
Respiration Rate

Revised Vital Signs (Revised Circa 1999)

Future Vital Signs?

- Body Temperature
- Pulse Rate
- Blood Pressure
- Respiration Rate
- Pain
- Medication Adherence

Propensity to Adhere: 10 Operating Tenets

Merck’s 10 Tenets were identified from reviewing the extensive literature on medication adherence and are used to frame our research strategy:

1. Patients do not actively communicate their adherence intentions to their health care professional.
2. Health care professionals assume that their patients are adherent.
3. There is no such thing as a “non-adherent personality”.
4. Adherence to prescription medications is largely unrelated to lifestyle and self-care recommendations.
5. There is no consistent relationship between demographic characteristics and medication adherence.
6. Patients want to know about their prescription medications and feel frustrated when they don’t receive enough information.
7. Health care professionals communicate inconsistently about prescription medications.
8. Taking medication is a decision-making process. Patients actively make decisions about their medications.
9. Non-adherent patients believe their non-adherence is rational behavior. It is driven by patient beliefs about their treatment, disease, and prognosis, as well as their objective experiences with their treatment and disease.
10. Patients can faithfully adhere to one medication, non-fulfill on another, and non-persist to another.

Ongoing Adherence Development

- Development of a library of adherence improvement messages related to Rx commitment, Rx concerns, and Rx affordability
  - Evaluated 46 message kernels with 1,968 adults with chronic disease¹
  - Evaluated message framing (loss framed or gain framed) with 1,108 adults with chronic disease²
  - Evaluated temporal orientation (present vs future consequences) with 1,624 adults with chronic disease

- Predictive validity study (ability of the segmentation tool to predict persistence to Rx using a prospective longitudinal design with pharmacy claims)³

- Second predictive validity study assessing optimal timing of the Adherence Estimator® post index fill and test-retest stability

- Transcreation and transvalidation of low-literacy, Spanish, and Asian-Pacific versions


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Advancing Adherence Interventions With Guidance From the Proximal-Distal Continuum\textsuperscript{1}

Distal \hspace{1cm} Intermediate \hspace{1cm} Proximal

Past Interventions \hspace{5cm} Future Interventions

Generic
One size fits all

Tailored
based on individual needs/beliefs