



## **Clinical Pharmacology & Toxicology Pearl of the Week**

### **~ Medication Adherence ~**

#### **Case:**

- A 50-year-old male with newly diagnosed hypertension is started on a new antihypertensive by his physician. On repeat visits over the next several weeks, the patient's blood pressure does not improve when checked in the physician's office on multiple occasions, using an appropriately sized cuff, and with the patient at rest.
- In addition to assessing other reasons for this patient's apparent lack of response to medication, how will you assess medication adherence?

#### **Definitions:**

- Medication adherence is defined as the extent to which a patient's medication behaviors are congruent with the recommendations and instructions of his/her healthcare provider regarding timing, dose, and frequency. It is a positive, proactive behavior that emphasizes patient autonomy and seeks behavior change.
- Medication compliance is the extent to which the patient's behavior matches the prescriber's recommendations. Compliance is a passive behavior in which the patient "does as they are told" in following a list of instructions.
- Medication persistence refers to the duration of time patients take prescribed medications and is defined as the duration of time from initiation to discontinuation of therapy

#### **Background:**

- Medication nonadherence and non-persistence are serious public health problems. They are associated with increased morbidity and mortality rates, higher utilization of medical resources, increased direct and indirect medical costs, decreased productivity, and diminished quality of life.
- Adherence to long-term therapy for chronic illnesses in developed countries averages 50%. In developing countries, the rates are even lower.
- There are three steps in medication adherence:
  - initiation (healthcare provider prescribes a medication and the patient fills prescription)
  - implementation (patient takes the prescribed medication according to directions)
  - discontinuation (patient continues medication use as long as indicated without premature termination)
- Medication nonadherence is often hidden. Patients often do not tell their health care providers that they are not going to fill a prescription.
- Medication adherence and compliance are often used interchangeably, although adherence is the preferred term.
- Most patients are non-adherent as opposed to non-compliant when it comes to their medications.

#### **Factors affecting medication adherence:**

##### Patient factors

- Higher adherence = older age (up until about the age of 70, after which time adherence decreases)
- Lower adherence
  - Cognitive, memory, or physical deficits (e.g., impaired vision, arthritis)
  - Cultural or religious barriers
  - Negative perceptions or attitudes about the pharmaceutical industry and health care system
  - Mistrust of medications or negative beliefs about medications (e.g., medications are no longer needed when symptoms resolve)

### Disease factors

- Higher adherence = increasing severity and chronicity of disease with greater perceived threat to health (cancer, HIV)
- Lower adherence:
  - Psychiatric disorders such as depression
  - Development of disease complications
  - Other chronic diseases (COPD, diabetes)
  - Hospitalization (increased risk of medication changes, multiple providers, lack of communication with patient)

### Medication factors

- Lower adherence:
  - Polypharmacy (3-4 or more medications)
  - Increased dose frequency (e.g., two or three times a day versus once a day)
  - Complex medication regimen
  - Patient has trouble taking medication (e.g., swallowing a capsule)
  - Medication side effects

### Social factors

- Higher adherence = support from family members and health care providers
- Lower adherence:
  - Living alone
  - Being unmarried
  - Homelessness
  - Poverty
  - Member of ethnic or racial minority group
  - Higher medication cost
  - No or partial medication cost coverage in health benefits
  - Longer wait times for medications
  - Lack of transportation to pharmacies
  - Low health literacy

### Health care system factors

- Higher adherence:
  - Trust and effective communication between patients and their healthcare providers
  - Verbal behaviors by healthcare providers that convey empathy, reassurance and support, and time taken to summarize and clarify issues discussed.
- Lower adherence:
  - Not having a usual source of care (i.e., a “medical home”)

## Methods to Assess Medication Adherence:

- Direct
  - Direct observation of the patient taking the medication
  - Measurement of medication concentration or metabolite in blood or urine
  - Measurement of a biologic marker
- Indirect
  - Patient self-report and/or diary review
  - Patient questionnaires
  - Assessment of clinical and physiologic response
  - Pill counts
  - Use of pharmacy or claims database to determine refill rates and intervals
  - Electronic medication monitors (e.g., medication-event monitoring system, or MEMS)

## Signs of possible medication nonadherence:

- Nonaligned pill counts
- Missed refills
- Missed appointments
- Escalating therapies without improvement in clinical measures
- Use of complementary/alternative medications

## How to Improve Medication Adherence:

There is no single intervention strategy, or package of strategies that has been shown to be effective across all patients, conditions, and settings. Consequently, interventions that target adherence must be tailored to the illness-related demands experienced by the patient.

1. Strengthen the relationship between patient and healthcare provider
  - Patients are more likely to follow treatment plans when they trust their healthcare provider
2. Help patients understand how and why to take each prescribed medication
  - Clear written and verbal instructions. Use teach-back methods if necessary (i.e., patient explains how they will take medication or explains how the medication will be helpful)
3. Simplify the medication regimen
  - With each additional daily dose, adherence decreases by 10%
  - Have patients take all medications at the same time of day if possible (or match medication taking times to patients' activities of daily living)
  - Have patients set reminders to take their medications
  - Use combination pills
4. Place all doses for each day in a pill box or have the pharmacy blister pack the medications
5. Minimize the use of different pharmacies and prescribers
6. Use mail order pharmacies for chronic medications
7. Understand the importance of drug cost
  - Helpful references for drug costs in Alberta include:
    - i. Alberta College of Family Physicians: [Home - Pharmaceutical Pricing](#)
    - ii. Alberta Health – Drug Benefit List: [Alberta Health - Drug Benefit List](#)
    - iii. Study Buffalo Drug Price Calculator: [Study Buffalo](#)
8. Involve clinical pharmacists at the time of hospital admissions and discharges for medication reconciliation and to help reduce hospital readmission
9. Reassess medications at each visit
10. Enlist the help of community organizations (including faith-based organizations) to help with messaging about medications
11. Advocate for improved affordability and adaptation of medications

**References:**

1. Mir. Adherence Versus Compliance. HCA Healthcare Journal of Medicine 2023.
2. World Health Organization. Adherence to Long-Term Therapies. Evidence for Action. 2003.
3. Bussell et al. Ways Health Care Providers Can Promote Better Medication Adherence. Clinical Diabetes Journal 2017.
4. Aremu et al. Medication Adherence and Compliance: Recipe for Improving Patient Outcomes. Pharmacy 2022.
5. Neiheisel et al. Medication Adherence Part One: Understanding and assessing the problem. J Am Assoc Nurse Practitioners. 2014.
6. Neiheisel et al. Medication Adherence Part Two: Predictors of nonadherence and adherence. J Am Assoc Nurse Practitioners. 2014.
7. Neiheisel et al. Medication Adherence Part Three: Strategies for improving adherence. J Am Assoc Nurse Practitioners. 2014.

**The Clinical Pharmacology (CP) physician consultation service is available Mon-Fri, 8am-5pm, excluding stat holidays. The on-call physician is listed in ROCA on the AHS Insite page. CP consultations are also available through Netcare e-referral, Specialist Link, and RAAPID. You can also find us in the [Alberta Referral Directory](#) (ARD) by searching “Pharmacology” from the ARD home page. Click [HERE](#) for more details about the service.**

**The Poison and Drug Information Service (PADIS) is available 24/7 for questions related to poisonings. Please call 1-800-332-1414 (AB and NWT) or 1-866-454-1212 (SK). Information about our outpatient Medical Toxicology Clinic can be found in [Alberta Referral Directory](#) (ARD) by searching “Toxicology” from the ARD home page.**

**More CPT Pearls of the Week can be found [HERE](#).**

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From Bussell et al. Questions health care providers can ask in a blame-free environment to assess patients' medication adherence.

- These are difficult to take every day. How often do you skip one?
- There are quite a few medications; how many of these do you take?
- Most people don't take all their meds every day. How about you?
- Have you stopped taking any of your medications when you feel well?
- Are you worried about any side effects from your medications?
- When was the last time you took drug A? Drug B?