



**PHARMACY
VISION
20/20**

CSHP SEMINAR 20 • SEPTEMBER 24-27

Disneyland
RESORT

ORAL ADHERENCE IN THE ONCOLOGY SETTING

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ONCOLOGY ASSOCIATES**

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DISCLOSURE

Vicky Law: No conflicts of interest in presenting this material today

David Jesitus: No conflicts of interest in presenting this material today

LEARNING OBJECTIVES

Pharmacist Objectives:

1. Define medication adherence. Discuss evaluation and measurement techniques including the Morisky Adherence Scale, and others.
2. Identify barriers to adherence and address the risk this creates with the oncology patient.
3. Evaluate and compare current best practices already in place that optimize adherence.
4. Successfully optimize patient adherence through the integration of current and new technologies.

LEARNING OBJECTIVES

Pharmacy Technician Objectives:

1. Define adherence. Become familiar with measurement techniques.
2. Identify barriers that reduce patient adherence in oncology.
3. Understand a technician's role in the medication delivery process. List specific actions a technician can perform to assist the pharmacist with the patient's adherence.
4. Familiarize self with new technologies. Recognize opportunities to implement them.

PRE TEST QUESTIONS

1. Which statement is TRUE?

- A. There is strong evidence that elevated anxiety levels lead to nonadherence
- B. The Morisky Medication Adherence Scale (MMAS) started out as a 4 item questionnaire (MMAS-4), and the newer 8 question survey (MMAS-8) delves further into the emotional aspects of adherence
- C. Self-reported adherence has been shown to underestimate adherence levels
- D. Oncology Nursing Society (ONS) standards dictate that an oral chemotherapy package should contain patient name, full generic name of drug, diagnosis, duration, and schedule for each medication dispensed

PRE TEST QUESTIONS

2. Which statement most accurately reflects the findings of Greer, et al 2016 systematic review of oral antineoplastics?

- A. Breast cancer patients with adherence rates 90% or higher showed a 94.5% major molecular response (MMR) over two years
- B. Chronic myeloid leukemia (CML) patients with adherence rates 90% or higher showed a 94.5% MMR over six years
- C. Breast cancer patients with adherence rates under 90% were associated with 16% MMR over six years
- D. CML patients with adherence rates under 90% were associated with 94.5% MMR over six years

PRE TEST QUESTIONS

3. The World Health Organization has proposed five types of factors that impede adherence to therapy in chronic disease. These are: patient-related, condition-related, therapy-related, health care system-related, and _____

- A. Supervision-related
- B. Healthcare provider bias-related
- C. Social/economic-related
- D. Literacy-related

PRE TEST QUESTIONS

4. A good initiation checklist for a new start oral chemotherapy should include discussion with the patient regarding_____

- A. Proper administration
- B. Side effects and management
- C. Handling of oral chemotherapy as a hazardous substance
- D. Access and affordability
- E. All of the above

PRE TEST QUESTIONS

5. Which of the following functions can a Pharmacy Technician perform in a Community Based Adherence system?

- A. Discuss side effect management
- B. Convert intravenous to oral doses for homegoing treatment
- C. Fill synchronized medication refills
- D. Conduct the initial scheduling, reminder, and follow-up calls
- E. Two of the above are correct

PART 1: IDENTIFY AND MEASURE ADHERENCE

DEFINING ADHERENCE

"The extent to which a person's behavior in taking medications or executing lifestyle changes agrees with recommendations from a healthcare provider" ¹

~ World Health Organization

"The degree or extent of conformity to the recommendations about day-to-day treatment by the provider, with respect to the timing, dosage, and frequency." ²

~International Society
for Pharmacoeconomics and
Outcomes Research (ISPOR)

1. Adherence to long-term therapies: evidence for action. World Health Organization, 2003.

2. Spoelstra SL, Assessment and measurement of medication adherence: oral agents for cancer. *Clin J Oncol Nurs*.

COMPLIANCE

VS.

PERSISTENCE

Compliance³

- a term commonly used to describe what we now call "*adherence*"
- out of favor in the early 2000's
- suggested a passive patient approach, "doing what you're told"
- reported/measured as %

Persistence³

- a term which appears frequently in compliance/adherence literature
- the *opposite of discontinuation*. Staying on the medication, long term
- reported/measured in length of time (days, weeks, months)

3. <https://www.aao.org/eyenet/article/compliance-adherence-persistence>

ADHERENCE

- Suggests active patient/provider communication
- Patient taking a role in decision making
- Through collaboration, patient chooses to take medication as prescribed
- Reported/measured as percentage



Oral therapy is toxic, with lots of side effects and dosed accordingly with scheduled breaks so the regimen is essential. ⁴

4. Wimbiscus, Bill. Impact of Nonadherence to Cancer Therapy. Journal of Hematology oncology Pharmacy.

ADHERENCE BENEFITS ¹

- Improve QOL (quality of life)
- Alleviate treatment burden
- Impart sense of treatment control
- Prolong survival

1. Adherence to long-term therapies: evidence for action. World Health Organization, 2003.

CONSEQUENCES OF NONADHERENCE^{1,2}

- Drug resistance
- Suboptimal response to therapy
- Disease progression
- Death

1. Adherence to long-term therapies: evidence for action. World Health Organization, 2003.

2. Spoelstra SL, Assessment and measurement of medication adherence: oral agents for cancer. *Clin J Oncol Nurs*.

VARIOUS MEASUREMENTS OF ADHERENCE ⁵

- Plasma Drug level
- Medication pill count Electronic Monitoring system Devices
 - MEMS
- Medical chart review
- Patient/Caregiver/Family member report
 - MMAS, MARS, VAS
- Physician report
 - BAAS
- Pharmacy and insurance records
 - Medication possession ratio information include Rx claims, procedures, and when the Rx had been filled or refilled.

Legend:

MEMS = Medication event monitoring system

MMAS = Morisky Medication Adherence Scale

MARS = Medication adherence Report scale

VAS = Visual Analog Rating scale

BAAS = Basal Assessment of Adherence Scale

5. Joseph Greer, et al. A Systematic Review of Adherence to Oral Antineoplastic Therapies. The Oncologist. 2016

MORISKY MEDICATION ADHERENCE SCALE ⁶ (MMAS)

Widely used assessment medication adherence scale

1980's- MMAS-4

2006 - MMAS-8

- 8 question survey, multi-lingual, objective
- 7 "Yes/No" questions
- Last question self-ranks forgetfulness; Never to Always
- Provides emotional insights to adherence patterns
- Higher scores imply adherence and better outcomes
- Obtain permission or purchase rights to use

6. Sison. "The Morisky Medication Adherence Scale: An Overview" 12/2018

PART 2: BARRIERS AND RISKS SPECIFIC TO ONCOLOGY

STAGGERING NUMBERS

- **20%-30%** of (any) new prescriptions are never filled
- **50%** of medications are not taken as prescribed
- Nonadherence is estimated to cost the U.S. healthcare system **\$100 billion (+)** annually
- **125,000** people die annually from not taking medicines properly ⁷

"Drugs don't work in patients who don't take them"

-C.E. Koop



7. www.cureatr.com/medication-adherence

A COMPREHENSIVE LITERATURE SEARCH ⁵

Found rates of **46%-100%**
-->lower adherence led to poor response

Adherence
> 90%

• **94.5%** MMR
over 6 years

Adherence
< 90%

• **28.4%** MMR
over 6 years

MAJOR MOLECULAR RESPONSE (MMR)

MMR = the amount of abnormal gene in blood <1/1000th of that in an untreated patient.

MMR results in:

1. **improved clinical outcomes**
2. **reduced disease progression**
3. **improved tumor response**

WHAT LEADS TO NON-ADHERENCE

1. Patient Factors
2. Drug/Therapy Factors
3. Health Care System Factors
4. Disease Factors
5. Social/Economic factors

1. Adherence to long-term therapies: evidence for action. World Health Organization, 2003.

Factors Influencing Adherence ⁸

Personal and Patient	<ul style="list-style-type: none">• Emotional, mental, and physical status• Social supports• Feelings about disease and expectations
Treatment Related	<ul style="list-style-type: none">• Goal of therapy• Complexity of treatment regimen• Short- and long-term side effects• Evidence of benefits
Healthcare System	<ul style="list-style-type: none">• Relationship, communication with providers• Satisfaction and access to care• Costs: copay and insurance coverage

Factors Influencing Adherence ⁸

Disease Related	<ul style="list-style-type: none">• Duration of disease• Intent of treatment• Expectations of response
Social and Economic	<ul style="list-style-type: none">• Resources• Support Network• Ethnicity• Mobility

ANXIETY AND DEPRESSION

Anxiety

- across all regimens, has little effect on adherence⁹
- in cancer, anxiety and adherence ARE positively related
- 5% incidence in general public
- 10% incidence in cancer

Depression

- More universally thought to decrease adherence
- leads to more reported Adverse Drug Reactions (ADR's)
- 7% incidence in general public
- 20% incidence in cancer

9. [Oncol Rev.](#) 2012 Mar 5; 6(1): e5.

NEW THERAPEUTIC OPTIONS –

LESS INVASIVE ALTERNATIVE TO INFUSION CHEMOTHERAPY

OLDER ORAL MEDICATIONS: ⁴

- Capecitabine (1998)
- Imatinib (\$350/dose)
- Everolimus (\$518/dose)
- Lenalidomide (\$726/dose)

FUTURE PIPELINE MEDS

At least 25% of all cancer treatments in development are oral agents, and likely to increase in future medication developments. ²

2. Spoelstra SL, Assessment and measurement of medication adherence: oral agents for cancer.

4. Wimbiscus, Bill. Impact of Nonadherence to Cancer Therapy. Journal of Hematology oncology Pharmacy website.

Methods to encourage patient adherence to oral anticancer therapy ^{11, 12}

Physical	Supportive	Electronic Reminder tools
Calendar or daily checklist	Patient education	Smartphone applications
Pill diary	Family education	Text messages
Pillbox	Establish routine	Electronic Alarms
	Home psychological support	Glowing pill bottles

11. Burhenn PS, Smuddle J (2015). Using Tools and Technology to promote education and adherence to oral agents for cancer.

12. Ruddy K, Mayer E, Partridge, A (2009). Patient adherence and persistence with oral anticancer treatment.

PART 3: CURRENT BEST PRACTICES

ASSESSMENT TOOLS ²

Acronyms	Oral agents for cancer adherence tools	Use
MMAS	Morisky medication Adherence Scale and Adherence Estimator	Predict risks of nonadherence
ASK-12	Adherence Starts With Knowledge	Predicts nonadherence and measures adherence rates
BARS	Brief Adherence Rating Scale	

2. Spoelstra SL, Rittenberg CN. Assessment and measurement of medication adherence: oral agents for cancer. *Clin J Oncol Nurs.* 2015;19(3 Suppl):47-52. doi:10.1188/15.S1.CJON.47-52

Oncology Nursing Society (ONS)

CHEMOTHERAPY STANDARDS FOR LABELING

2016: Association for Clinical
Oncology (ASCO)¹³ updated
Chemotherapy Administration
Safety Standards to include
self-administered treatments

1. Name
2. Second identifier
3. Full generic name
4. Date of order
5. Dose
6. Route of administration
7. Quantity
8. Schedule
9. Duration
10. Refill information

ONS (ONCOLOGY NURSING SOCIETY) TOOLKIT

Discuss #1-5
(minimum)

1. How to obtain medication
2. Potential side effects
3. Handling and Storage
4. Disposal of unused supply
5. Food and drug interactions

Our practice
includes #6-10

6. Diagnosis, goal, duration of treatment
7. Drug appearance and packaging
8. Missed dose plan
9. Monitoring appointments
10. When to call a provider

Our Oral Medication Initial Checklist

Performed by Nurse
Practitioner/Educator or
Dispensing Pharmacist

- ✓ Diagnosis, goal, duration of treatment
- ✓ Drug Name
- ✓ Drug appearance and packaging
- ✓ how the drug will be obtained
- ✓ Dose schedule and calendar, ("days on, days off")
- ✓ Side effects and side effect management
- ✓ Long term effects
- ✓ Food and drug interactions
- ✓ Missed dose plan
- ✓ Monitoring appointments
- ✓ Safe handling and storage
- ✓ Disposal
- ✓ Refill process and timetable
- ✓ When to call a physician

OncoEMR®-Regimen Edit

Edit

Associated
Disease(s):

Add a disease...

Type to add additional diseases

Cycle Lengths and Count (cLen1,cNum1,cLen2,cNum2,...):

1,1

Update Calendar

Regimen type: Chemotherapy Premed Premed (High Emetogenic Risk Only) Followup Orderset

Add: Drug, Test, Radiology, Activity, RuleSet, Regimen, Linked Regimen, Label, PreTreat, GradeScale, CDG Tools

Action: Reorder Items Collapse All Copy from cycle

Cycle		Pre Treat	1
Diagnosis, goal, duration of treatment	All Insurers		
Drug Name	All Insurers		
Drug appearance and packaging	All Insurers		
how the drug will be obtained	All Insurers		
Dose schedule and calendar, reiterating on and off days	All Insurers		
Side effects and side effect management	All Insurers		
Long term effects	All Insurers		
Food and drug interactions	All Insurers		
Missed dose plan	All Insurers		
Monitoring appointments	All Insurers		
Safe handling and storage	All Insurers		
Disposal	All Insurers		
Explain refill process and timetable	All Insurers		
When to call a physician	All Insurers		

MEDICATION EVENT MONITORING SYSTEM

90 patients measured adherence via self-reported electronic pill cap...

- Results: 89.3% took their prescribed oral chemotherapy properly over 12 weeks ¹⁴

Improvements in

- Symptom distress
- Depressive symptoms
- Quality of life
- Satisfaction with treatment
- Perceived burden to others

POOR ADHERENCE is associated with

- Risk for recurrence and mortality
- Diminished therapeutic efficacy
- Ineffective patient-clinician communication
- Higher outpatient and hospitalization rates
- Longer inpatient stays

14. Jacobs J, Pensak N Treatment Satisfaction and Adherence to Oral Chemotherapy in Patients With Cancer
[2017 Journal of Oncology Practice](#) Volume: 13, Issue: 5 [DOI: 10.1200/JOP.2016.019729](#)

PART 4: THE **FUTURE** OF MEDICATION ADHERENCE

New Responsibilities for the Pharmacy Technician¹⁵

Take medication histories

Administer adherence assessments

Setting up initial appointments

Reminder calls

Run refill reports

Establish strong relationships

Synchronize refills

ANTICIPATE THE NEED

Putting Evidence Into Practice (PEP) ONS Guidelines ¹⁶

Text messaging

Monitoring and feedback

Use of automated voice response (Telehealth)

Treatment of underlying depression

Face to face positive reinforcement

PUTTING METHODS INTO (OUR) PRACTICE

Software system (QS1) provides refill reminder

Take it ONE WEEK at a time

Fill only what is requested

Ship to home when indicated

Create own reminder (Outlook calendar, etc.)

Intake coordinators take history. Pharmacy follows up.

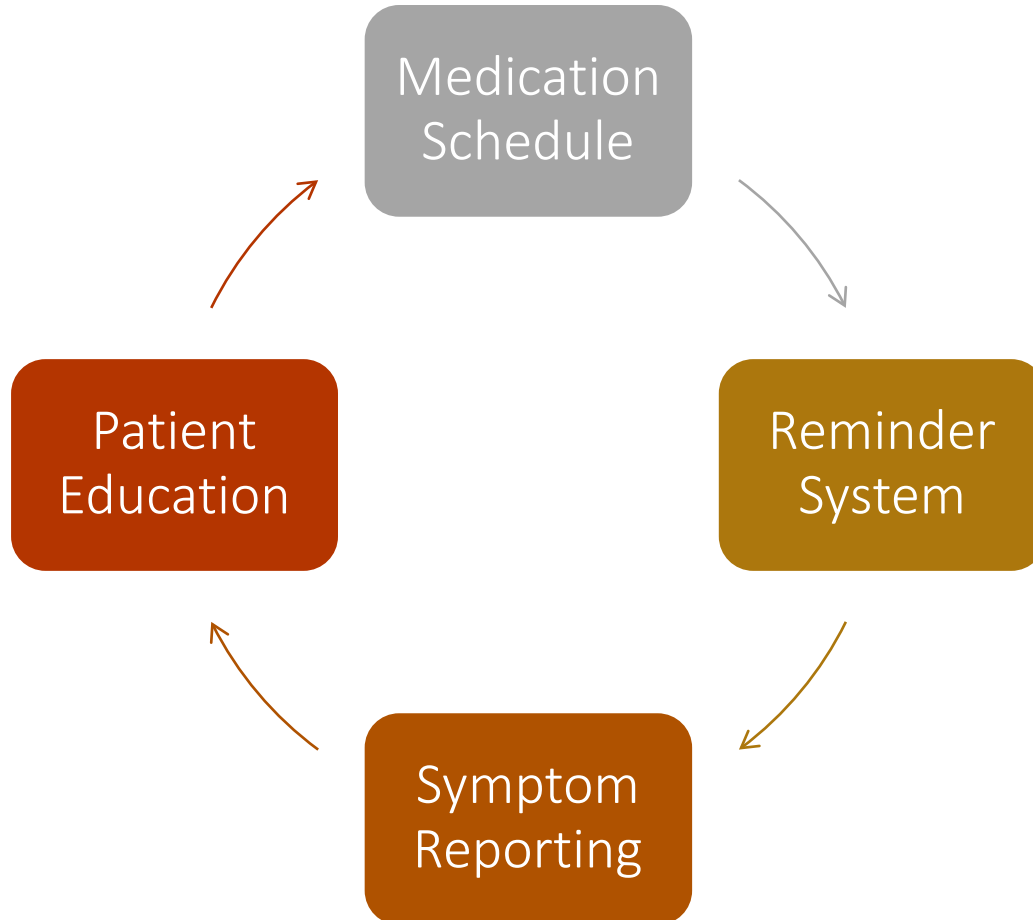
Dispensing
technicians biggest
barrier?

**PATIENT
COMPREHENSION**

APPS



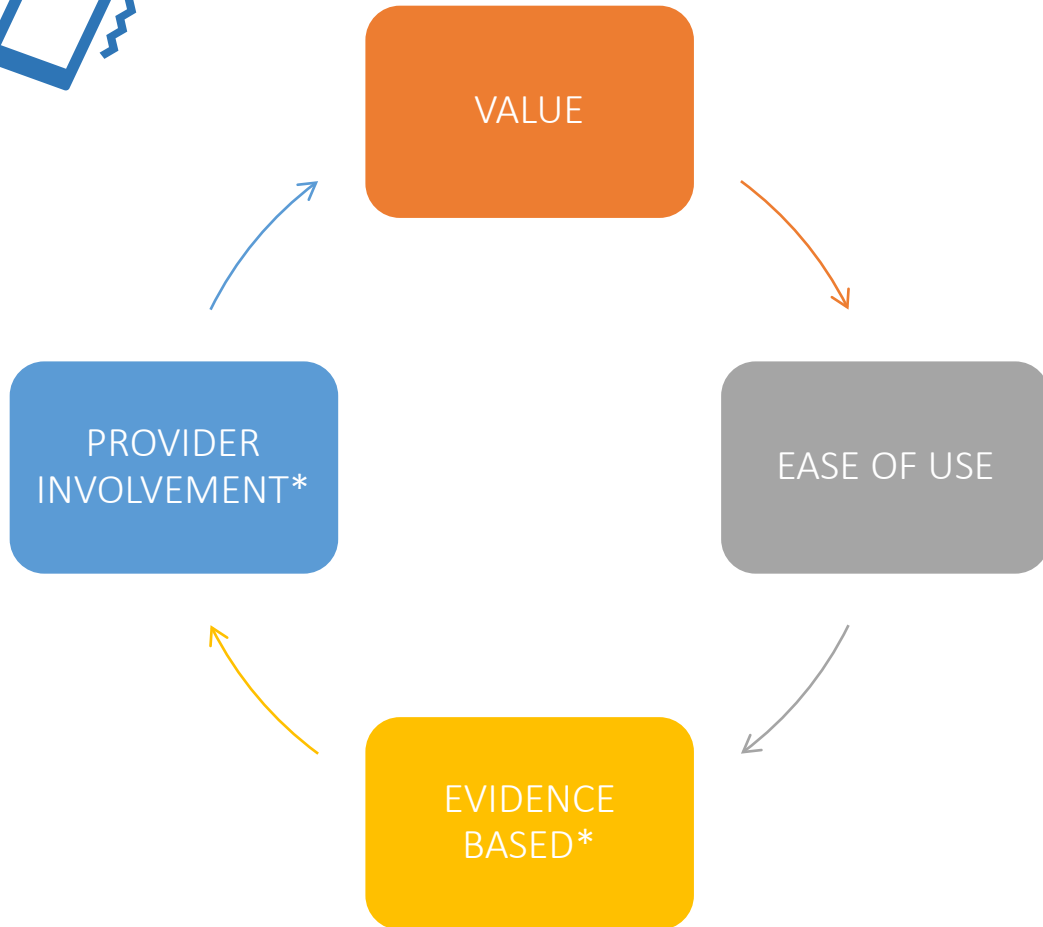
Four features of a preferred app ¹⁷



DRAWBACKS

1. equity of access
2. tech savvy
3. "stickiness"
4. provider involvement*
5. evidence based*

APPS 5,800 (+) available through Apple Store and Google play ⁷



- **Medisafe** diary, coupons
- **Mango Health** rewards
- **Round Health** simplest
- **Wellth** financial incentive
- **Dosecast** customizable
- **MyMeds** Circle of Care
- **Groove Health** family share
- **ScalaMed** prescription interface

TECHNOLOGY IMPLEMENTATIONS ¹⁴

- Medication Event Monitoring System pill cap and bottle (MEMS Cap)
- Electronically monitors date and time of bottle opening
- Tracks patient's drug taking behavior



14. Jacobs J, Pensak N Treatment Satisfaction and Adherence to Oral Chemotherapy in Patients With Cancer [2017 Journal of Oncology Practice](#) Volume: 13, Issue: 5 [DOI: 10.1200/JOP.2016.019729](#)

SELF-REPORTED ADHERENCE tools¹⁴

- Cancer Therapy Satisfaction Questionnaire (CTSQ)
 - ❑ 21 item questionnaire that evaluated belief about medical care and aspects of non-adherence.
 - ❑ Example: "On a scale of 1-5 with 5 being every day, how often did you have trouble remembering to take your cancer therapy pills."

14. Jacobs J, Pensak N Treatment Satisfaction and Adherence to Oral Chemotherapy in Patients With Cancer [2017 Journal of Oncology Practice](#) Volume: 13, Issue: 5 [DOI: 10.1200/JOP.2016.019729](#)

THE FUTURE



(Pilot) InPOWER MEDICATION DISPENSER

- 📍 alerts when it's time to take medications
- 📍 syncs cellular information to pharmacy giving providers real time adherence data
- 📍 dispenser also gathers other home health records such as BP and glucometer readings, and confirms weight-based dosing

IMBEDDED INGESTIBLE SENSOR

- 📍 currently one available²⁰ (psychotropic)
- 📍 ingestible event marker sends signal to topical patch
- 📍 edible ingredients
- 📍 effectiveness unknown
- 📍 can it apply to other therapies?

POST TEST QUESTIONS

1. Which statement is TRUE?

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**SESSION
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