Issues in adherence (health literacy, etc.)

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Faculty Disclosures

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Objectives

- 1. Describe the prevalence and impact of non-adherence to asthma-self-management behaviors

- 2. Compare and contrast the factors associated with non-adherence

- 3. Employ evidenced-based strategies in the development of comprehensive and customizable asthma self-management plans

Good therapies → Human behavior → Treatment outcomes

Historical perspective of adherence

"keep aware of the fact that patients often lie when they state that they have taken certain medications"

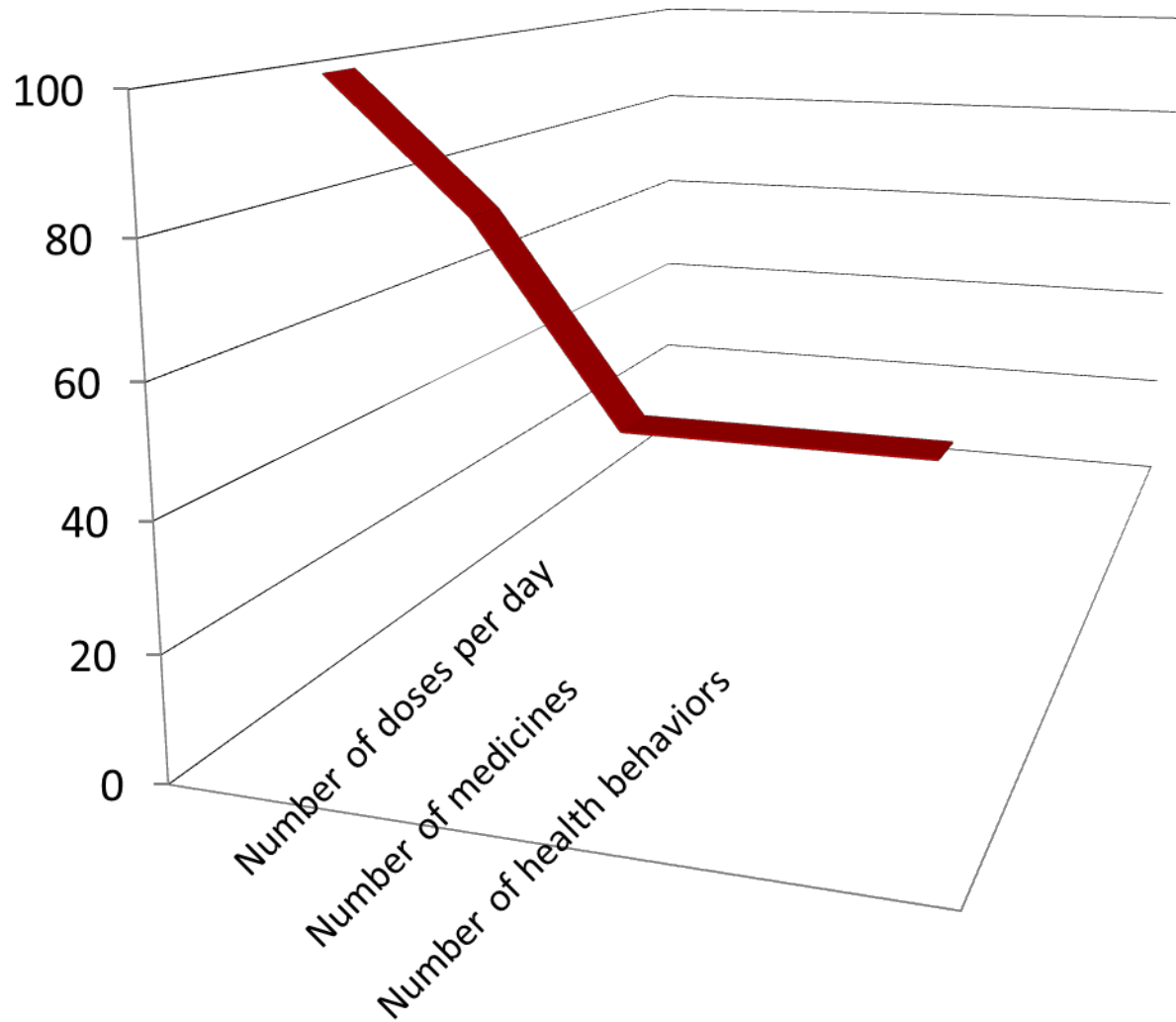Hippocrates

Adherence: A process and an outcome

- DEFINITION:
  - Willingness to start, and how closely one follows, the treatment regimen
- Adherence is not a dichotomy
  - Chronic underuse
  - Erratic patterns of use
  - Mixed
  - Administration technique
  - Primary vs. secondary
  - Unwitting (unintentional) vs. deliberate (intentional)
- No factors reliably predict adherence

Adherence falls as time and complexity increase

Across all diseases and all populations, adherence averages 50%

First transplanted hand amputated

Patient didn't follow treatment, doctors say

Summary of Cost of Illness for Drug-Related Morbidity and Mortality

	No. of Events (millions)	Cost per Event	Total Cost (billions)	% Increase Since 2000
Total Physician Visits	156.9	$155	$24.2	57%
Total Hospital Admissions	11.5	$17,271	$197.8	61%
Total ED Visits	23.5	$993	$23.3	24%
Total LTC Facility Admissions	4.3	$13,761	$58.8	56%
Total Additional Prescriptions	100.3	$58,49	$5.9	60%
Total Deaths	1.1	--	--	--
Total	--	--	$289.0	161%

Thinking Outside the Pillbox A System-wide Approach to Improving Patient Medication Adherence for Chronic Disease A NEHI Research Brief – August 2009

Asthma treatment adherence
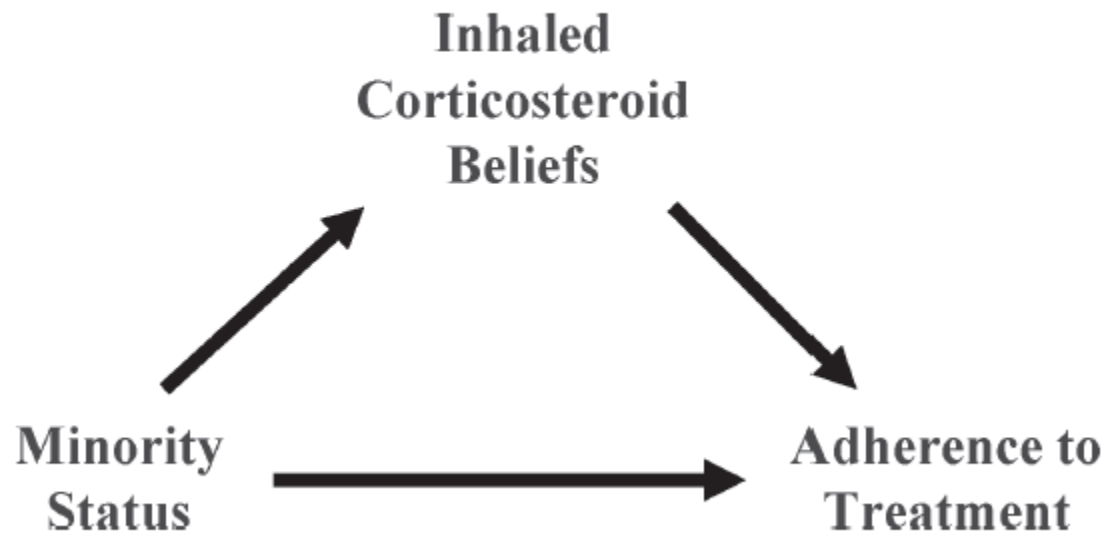
- TREATMENT REGIMEN:
  - Medications
    - Quick relief
    - Controller
    - Devices
  - Self monitoring
    - Peak flow
    - Symptoms
  - Asthma action plan

- TREATMENT REGIMEN:
  - Appointment keeping
    - Primary care
    - Immunotherapy
    - Immunomodulators
  - Environmental remediation and trigger avoidance
  - Exercise
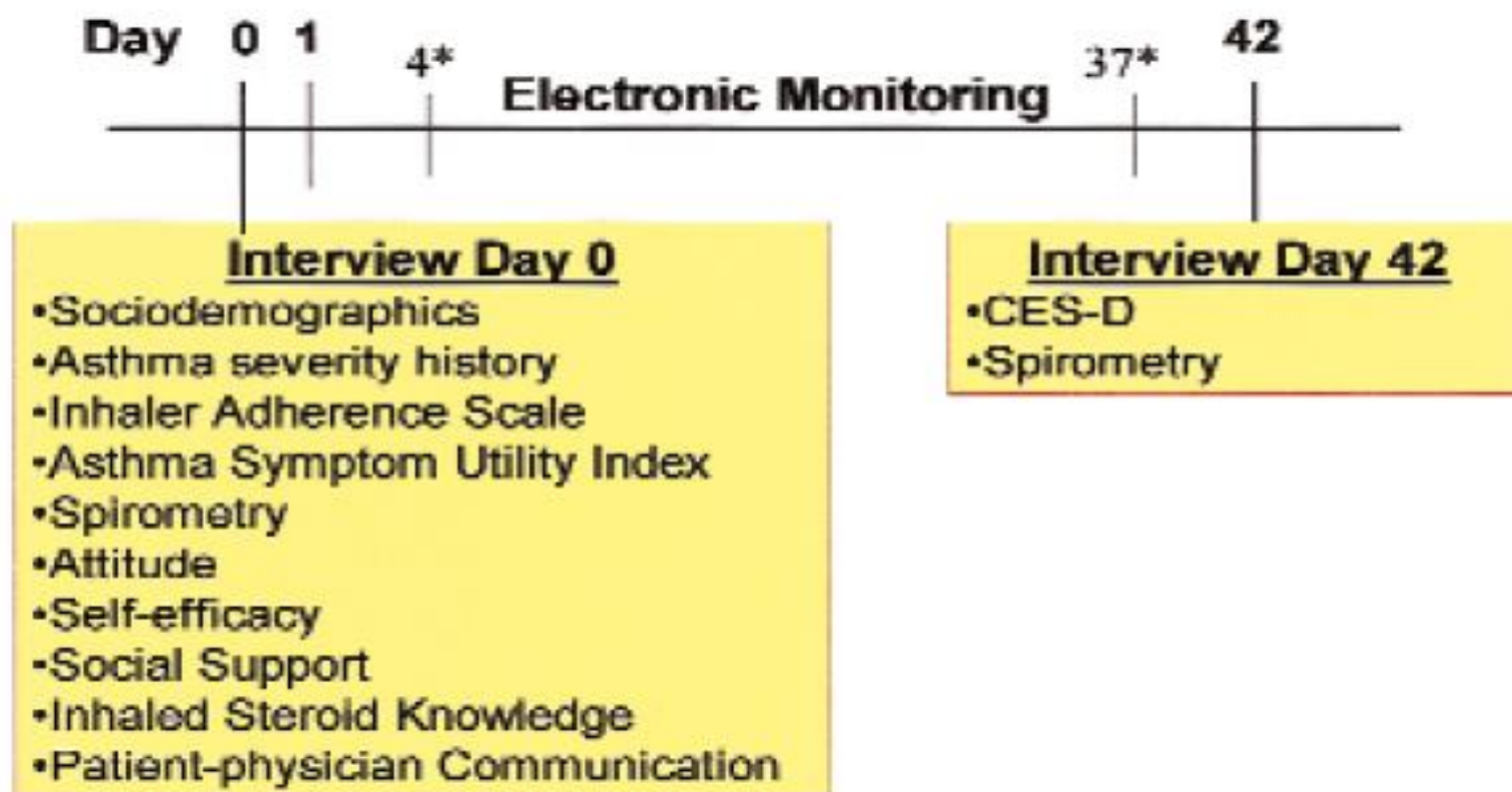 - Diet

Non-adherence in asthma

- 64-91% adhere to PFM in clinical trials
- 27% perform environmental remediation
- Poor ICS adherence in all groups
  - Only 8-13% continue to refill ICS after 12 months
  - Low ICS adherence even when given free as part of a clinical trial
  - ICS adherence falls to < 50% by 7 days post-discharge
  - African Americans demonstrate lower rates of ICS adherence even when income and insurance are equal

Modifiable barriers to adherence to inhaled steroids among adults with asthma: It's not just black and white Apter, Boston, George et al Journal of Allergy and Clinical Immunology 111. 6; 2003,1219-1226
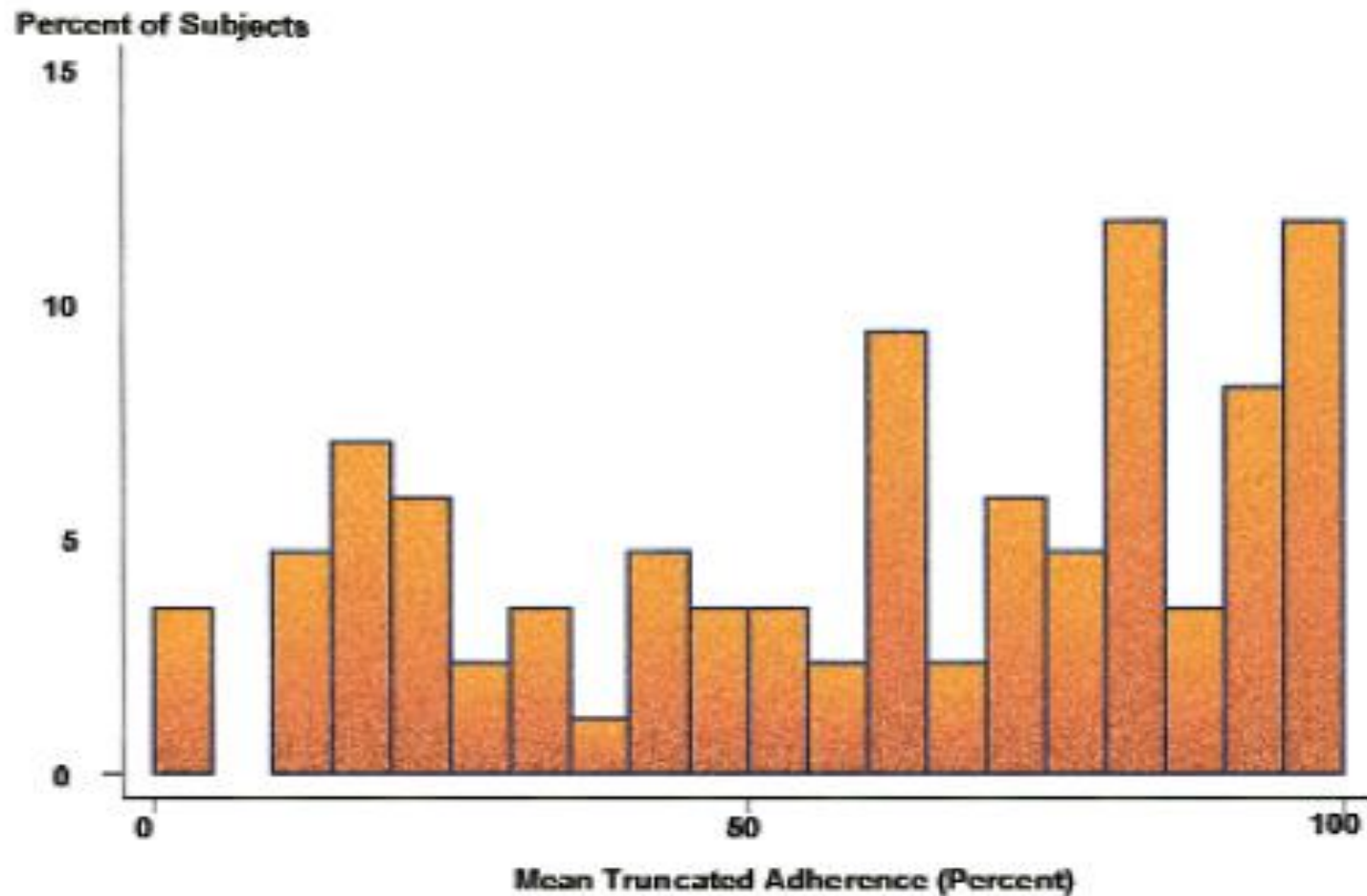
MDI Log

Day   0 1   4*   37*   42

Electronic Monitoring

Interview Day 0
- Sociodemographics
- Asthma severity history
- Inhaler Adherence Scale
- Asthma Symptom Utility Index
- Spirometry
- Attitude
- Self-efficacy
- Social Support
- Inhaled Steroid Knowledge
- Patient-physician Communication

Interview Day 42
- CES-D
- Spirometry

*Telephone calls days 4, 37

Mean truncated adherence 60%; 52% for AAs; 74% for Caucasians

Percent of Subjects

Mean Truncated Adherence (Percent)

Apter, Boston, George et al Journal of Allergy and Clinical Immunology 111. 6; 2003,1219-1226

Lower ICS adherence

- Lower ICS use in diverse African American communities has been attributed, in part, to negative beliefs
  - About prescription asthma medicines
    - Beliefs about inhaled steroids causing serious side effects; resulting in addiction or tolerance
  - About providers
    - Belief that providers over-diagnose and over-prescribe, sometimes for personal gain
  - About integrative medicine
    - Substitute IM for ICS and SABAs

George Patient Educ Couns 2012

Non-adherence in asthma

- Is associated with
  - Greater morbidity
    - More symptoms
    - More ED visits and hospitalizations
    - More OCS use

The challenges of adherence in children and adolescents

- Adherence to treatment *averages 58%*
- The adherence of infants and toddlers is largely determined by the ability of the parent to understand the recommended management.
  - As age increases, children have the cognitive ability to carry out treatment tasks, but continue to need parental supervision.
  - Increasing numbers of single and working parents have shifted more of the responsibility to the child.
  - Children and adolescents who assume early sole responsibility for their treatment regimen are less adherent and in poorer control of their disease.
  - Non-adherence is a developmental expectation for teens.
  - The more conflict in the home, the worse the adherence.

Ways to measure adherence

- Provider estimate

- Biologic assay

- Electronic records

  – Prescription utilization

  – Appointment keeping

- Electronic monitoring

- Self-report

Ways to measure adherence

- Provider estimate
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- Electronic monitoring
- Self-report

Asthma controllers
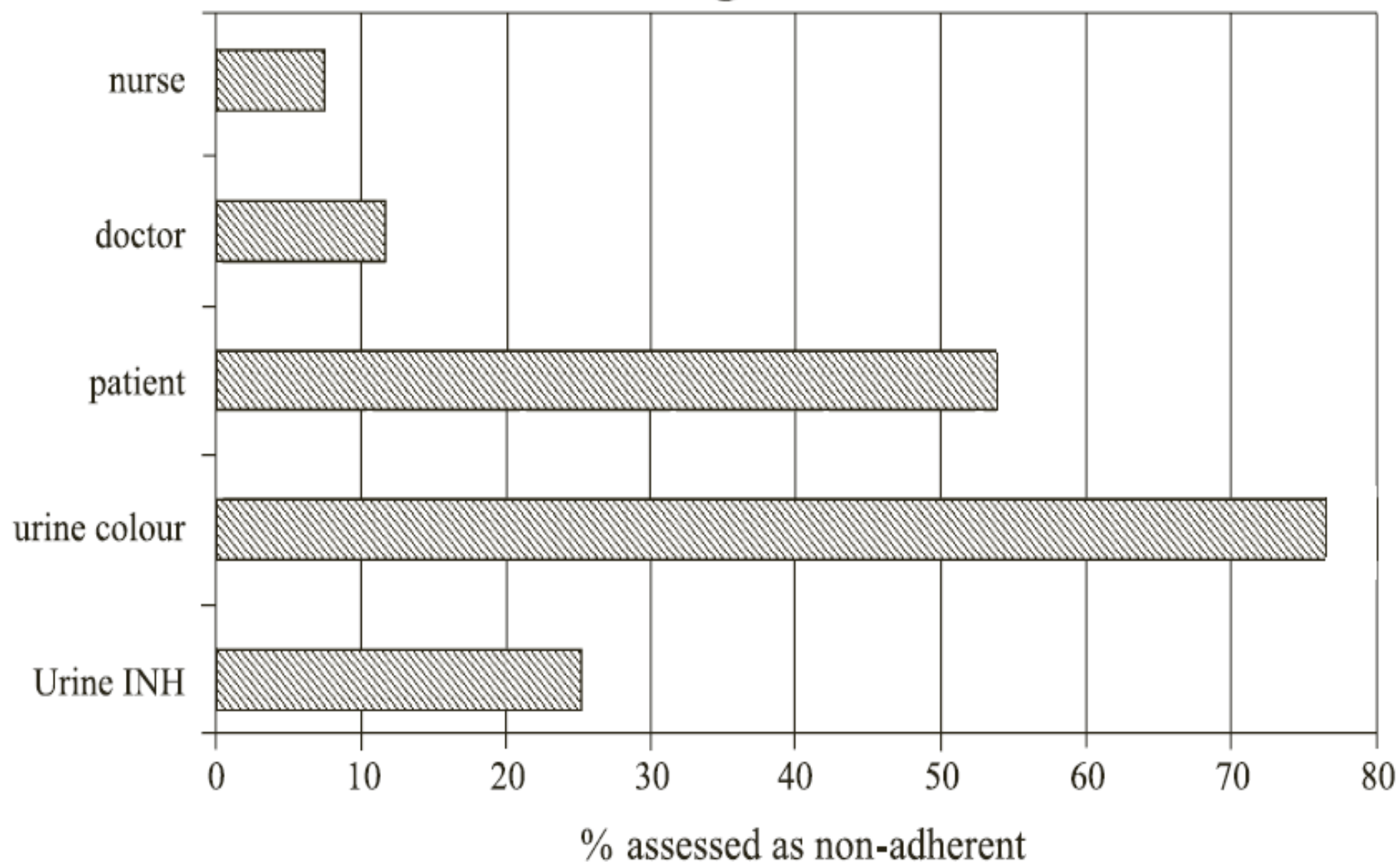
Telephoning the patient's pharmacy to assess

Sherman, James MD; Hutson, Alan PhD; Baumstein, Sandra PharmD; Hendeles, Leslie PharmD
Journal of Pediatrics. 136(4):532-6, 2000 Apr

Ways to measure adherence

- Provider estimate

- Biologic assay

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- Electronic monitoring

- Self-report

Patient knows best: blinded assessment of nonadherence with antituberculous therapy by physicians, nurses, and patients compared with urine drug levels[☆]

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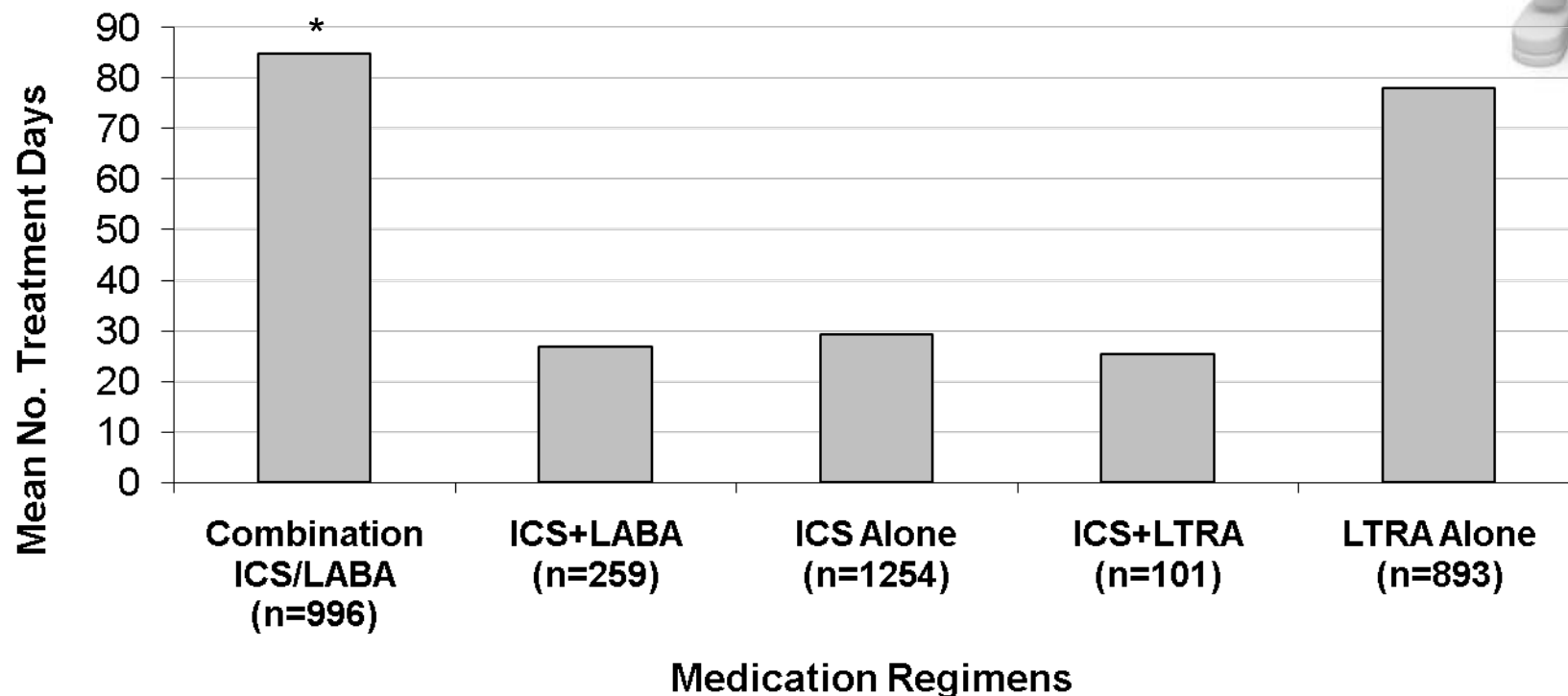
Ways to measure adherence

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Adherence and Asthma Controller Medications-Adults and Adolescents

ICS = Inhaled corticosteroid; LTRA = Leukotriene Receptor Antagonist; LABA=Long Action Beta$_2$ Agonist
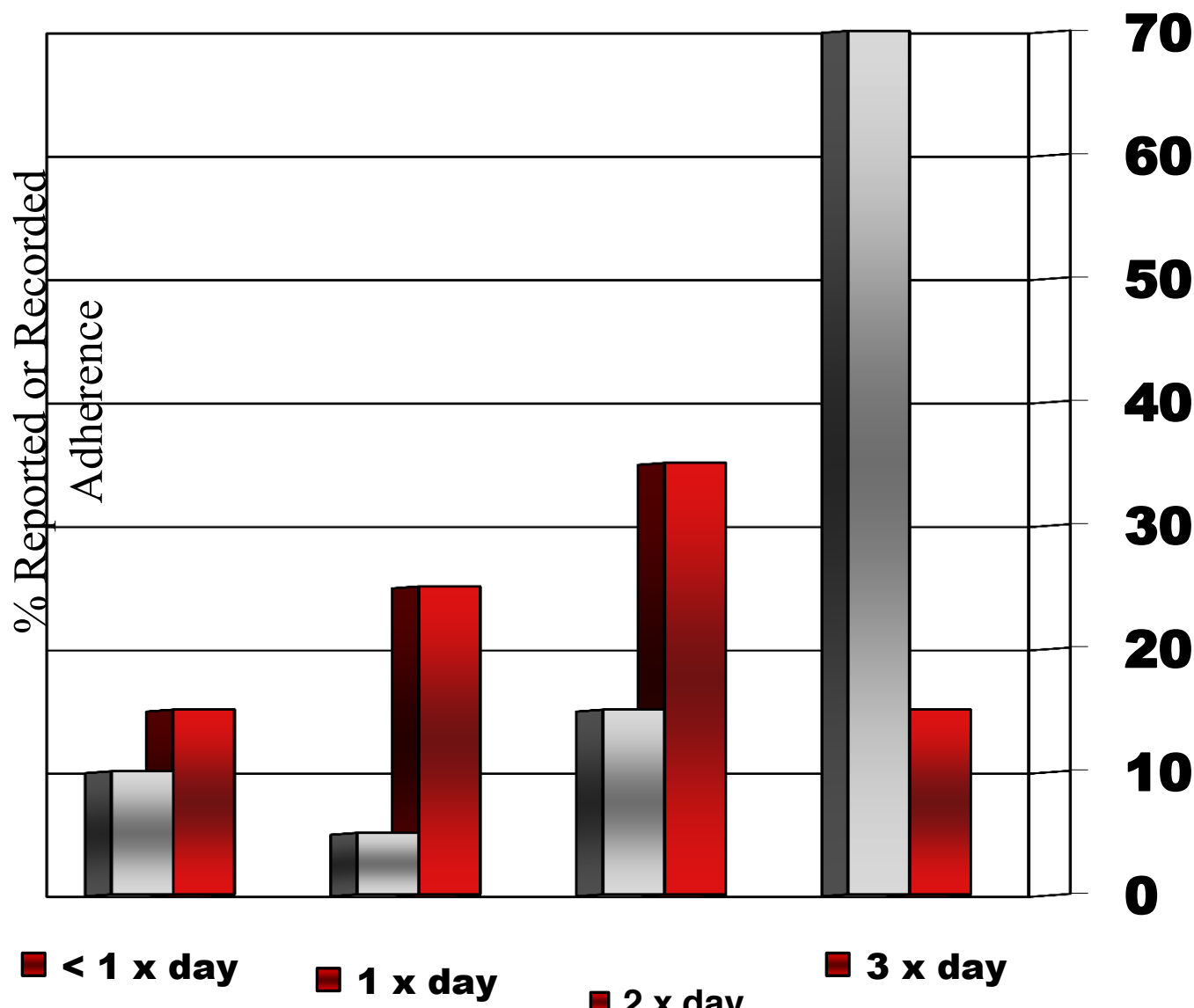* P<.0001 versus ICS+LABA, ICS Alone, ICS+LTRA

Stempel DA. *Respir Med*. 2005;99:1263-1267.

Ways to measure adherence

- Provider estimate

- Biologic assay

- Electronic records
  - Prescription utilization
  - Appointment keeping

- Electronic monitoring

- Self-report

Adherence to TID Inhaled Bronchodilator in COPD

% Reported or Recorded Adherence

Legend:
- Self-Report
- Monitor

X-axis categories:
- < 1 x day
- 1 x day
- 2 x day
- 3 x day

Y-axis: 0, 10, 20, 30, 40, 50, 60, 70

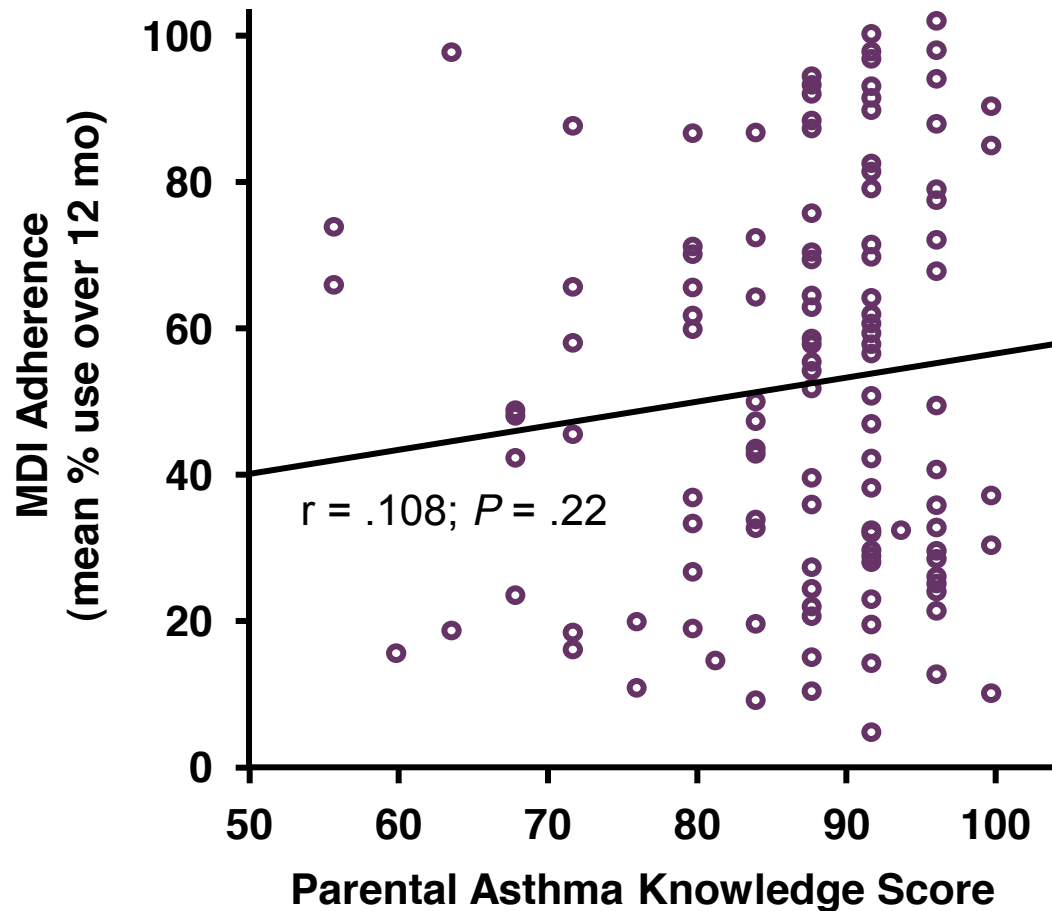Rand, et al (1992). AJRCCM,

- Patients who reveal they have not followed treatment advice

  - tend to describe their behavior accurately

- whereas patients who deny their failure to follow recommendations

  - report their behavior inaccurately

Patient education is necessary but not sufficient

- EPR-3 asthma education would require 5.5 hours of patient contact
  - Cabana and Le. JACI(2005)

Patient education is necessary but not sufficient

Figure: Scatter plot of MDI Adherence (mean % use over 12 mo) versus Parental Asthma Knowledge Score. r = .108; P = .22

Reprinted from Relations among asthma knowledge, treatment adherence, and outcome, *J Allergy Clin Immunol*. Vol 111, pp 498-502, Ho J, Bender BG, Gavin LA, O'Connor SL, Wamboldt MZ, Wamboldt FS, Copyright (2003), with permission from the American Academy of Allergy, Asthma, and Immunology.

Figure 1. Three Pillars of Improved Adherence

Improve Drug Regimen → **Reduce Cost Barriers** → **Address Patient Behavior** → **Appropriate Medication Use**

Improve Drug Regimen
- Follow up
- Make/ Recommend changes; share information with MD
  - Conduct comprehensive medication review
  - Understand patient experiences and preferences
- Create accurate medication use profile

Reduce Cost Barriers
- VBID
- Formulary compliance
- Generics
- Prescription Assistance Programs

Address Patient Behavior
- Follow up
- Engage patients in the care process
  +
- Address patient preferences, limitations and priorities
  +
- Educate patients about their condition, how and why to take medications
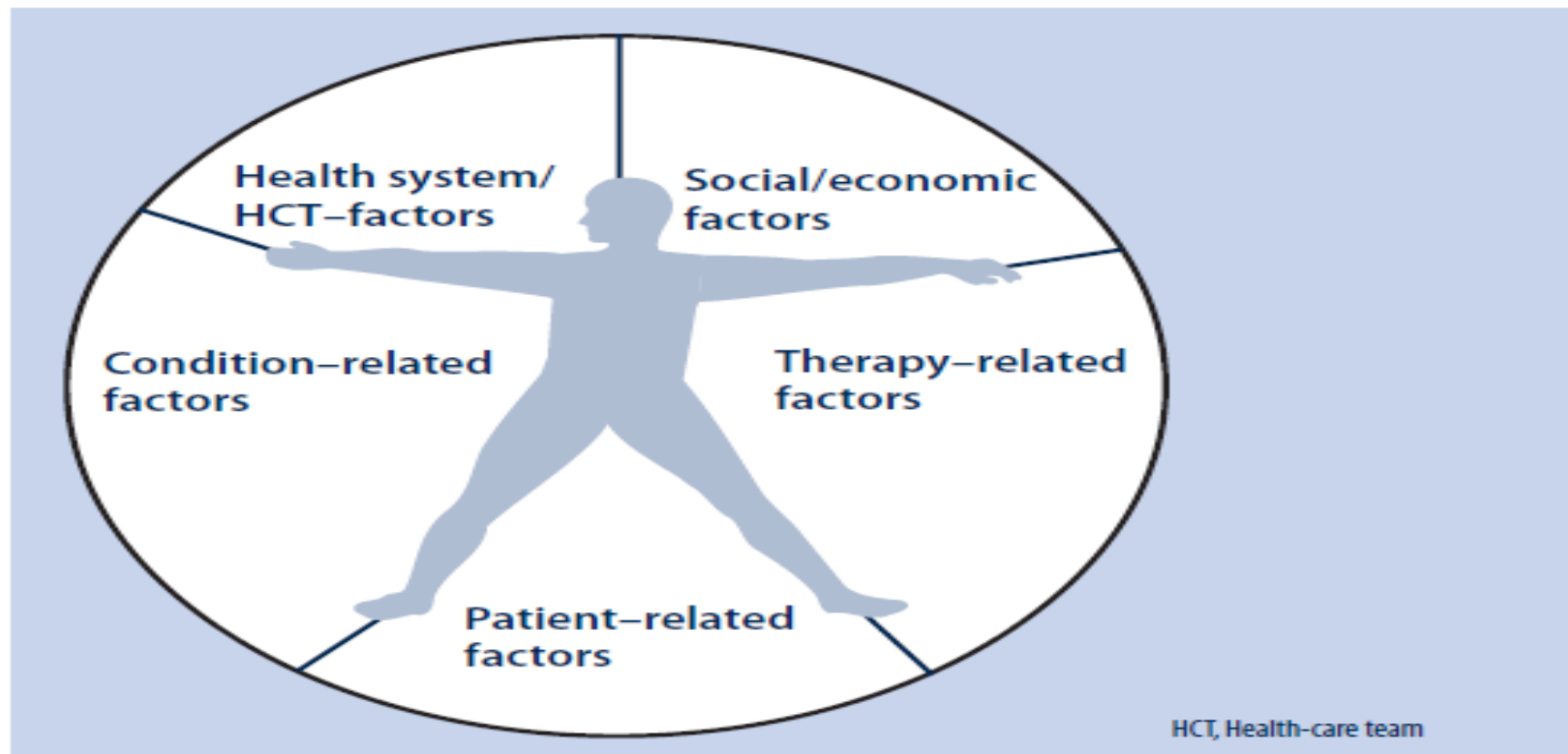
Source: Avalere Health, NEHI Analysis

ADHERENCE TO LONG-TERM THERAPIES
Evidence for action. WHO, 2003

Figure 3   The five dimensions of adherence

Health system/ HCT–factors

Social/economic factors

Condition–related factors

Therapy–related factors

Patient–related factors

HCT, Health-care team

So what works?

- – self-monitoring;
- – goal-setting;
- – stimulus control;
- – behavioral rehearsal;
- – corrective feedback;
- – behavioral contracting;
- – commitment enhancement;

- - creating social support;
- - reinforcement; and
- – relapse prevention.
- - A combination of patient education and behavioral skills
- – self-rewards
- – social support
- – telephone follow-up

How do we improve adherence?

- **Patients need to be supported, not blamed**

- **Patient-tailored interventions are required**

- **Health professionals need to be trained in adherence**

- **A multidisciplinary and multidimensional approach is needed**

    - **ADHERENCE TO LONG-TERM THERAPIES: Evidence for action.** WHO, 2003

Interventions to improve adherence

- Most effective
  - Complex, multi-faceted interventions that combine self management training with counseling, simplified regimens, reinforcement, reminders and supervision
  - Provide feedback
  - Reach agreement on overt monitoring
  - Tailor regimen and allow for incomplete adherence
  - Contract
  - Increase frequency and length of appointments

Why should we try to improve adherence?
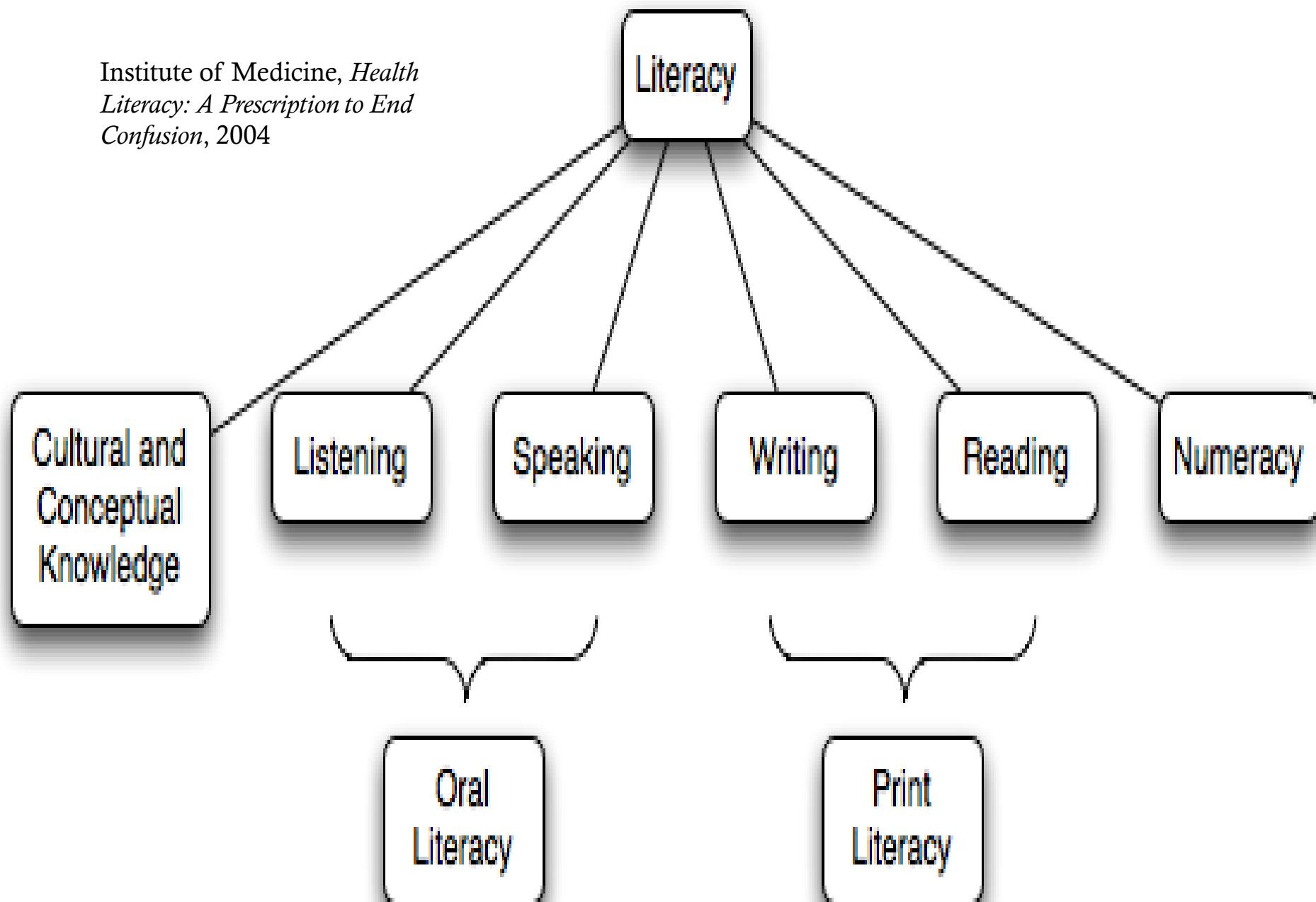
- **To achieve control**
  - Reduce impairment
  - Reduce risk

- **To enhances patient safety**
  - Fewer relapses
  - Less risk of unneeded intensification

Why should we try to improve adherence?

- **"Increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments"**
  - Haynes et al. Cochrane Database of Systematic Reviews 2001

Literacy

Cultural and Conceptual Knowledge

Listening

Speaking

Writing

Reading

Numeracy

Oral Literacy

Print Literacy

Literacy Levels of Adults in America

Reading Ability	NAAL Level	*Approx Grade Level	% of Pop.
- Below Basic	1	0-5	14
- Basic	2	6-8	29
- Intermediate	3	9-12	43
- Proficient	4	College	14

J O Frempong & Assoc

2003 National Assessment of Adult Literacy (NAAL)
* Estimates

The Patient Protection and Affordable Care Act of 2010, Title V

- **Defines _health literacy_ as *the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions.***

- **Specific tasks :**
  - **evaluating information for credibility and quality,**
  - **analyzing relative risks and benefits,**
  - **calculating dosages,**
  - **interpreting test results, or**
  - **locating health information**

- **Low health literacy skills increase annual health care expenditures by $73 billion**

- Low health literacy was consistently associated with
  - more hospitalizations
  - greater use of emergency care
  - lower receipt of mammography screening and influenza vaccine
  - poorer ability to demonstrate taking medications appropriately
  - poorer ability to interpret labels and health messages; and,
  - among elderly persons, poorer overall health status and higher mortality rates.
- Poor health literacy partially explains racial disparities in some outcomes.

Health literacy

- Cannot be reliably predicted by
  - Educational attainment
  - Occupation
  - How well a person speaks (oral literacy)
  - How well a person presents themselves

Health literacy tools

- ## Research Tools
    - Rapid Estimate of Adult Literacy in Medicine (REALM)
    - (Short)Test of Functional Health Literacy in Adults (s)TOFHLA
        - The IOM has concluded that the REALM and the TOFHLA assess reading ability and are therefore inadequate measures of health literacy
            - IOM *Health Literacy: A Prescription to End Confusion (2004)*

- ## Clinical Screening Tools
    - Newest Vital Sign

Newest Vital Sign

✖ Available in English and Spanish

✖ Patients typically complete it in about 3 minutes

✖ 6 questions based on reading an ice cream label

✖ 98% of patients find it acceptable assessment during a routine office visit.

✖ The NVS can be obtained online at no cost from

✖   http://www.pfizerhealthly.com/

The

Newest

Vital Sign

Nutrition Facts

| Serving Size | ½ cup |
| Servings per container | 4 |

Amount per serving

| Calories | 250 | Fat Cal | 120 |

	%DV
Total Fat 13g	20%
Sat Fat 9g	40%
Cholesterol 28mg	12%
Sodium 55mg	2%
Total Carbohydrate 30g	12%
Dietary Fiber 2g	
Sugars 23g	
Protein 4g	8%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

The Newest Vital Sign
A Health Literacy Assessment Tool

Score Sheet for the Newest Vital Sign
Questions and Answers

READ TO SUBJECT:
This information is on the back of a container of a point of ice cream.

	ANSWER CORRECT?	
	yes	**no**

1. If you eat the entire container, how many calories will you eat?
   Answer: 1,000 is the only correct answer

2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?
   Answer: Any of the following is correct: 1 cup (or any amount up to 1 cup), half the container. Note: If patient answers "two servings," ask "How much ice cream would that be if you were to measure it into a bowl?"

3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?
   Answer: 33 is the only correct answer

4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?
   Answer: 10% is the only correct answer

READ TO SUBJECT:
Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings.

5. Is it safe for you to eat this ice cream?
   Answer: No

6. (Ask only if the patient responds "no" to question 5): Why not?
   Answer: Because it has peanut oil.

Number of correct answers:

Interpretation
Score of 0-1 suggests high likelihood (50% or more) of limited literacy.
Score of 2-3 indicates the possibility of limited literacy.
Score of 4-6 almost always indicates adequate literacy.

Summary

- Literacy and health literacy are not the same thing
- The Newest Vital Sign is the best studied clinical tool to assess health literacy
- You can communicate information verbally and in written form more clearly if you follow some simple rules