UCSF
University of California
San Francisco

Optimizing Care for Patients with Limited Health Literacy

Dean Schillinger, MD
UCSF Professors of Medicine
Division of General Internal Medicine
UCSF Center for Vulnerable Populations,
Zuckerberg San Francisco General Hospital (ZSFGH)

Common Social Vulnerabilities

Violence

Uninsured

Literacy and Language

Neglect

Economic hardship/food insecurity

Race/ethnic discordance, discrimination

Addiction

Brain disorders, e.g. depression, dementia

Immigrant

Legal status

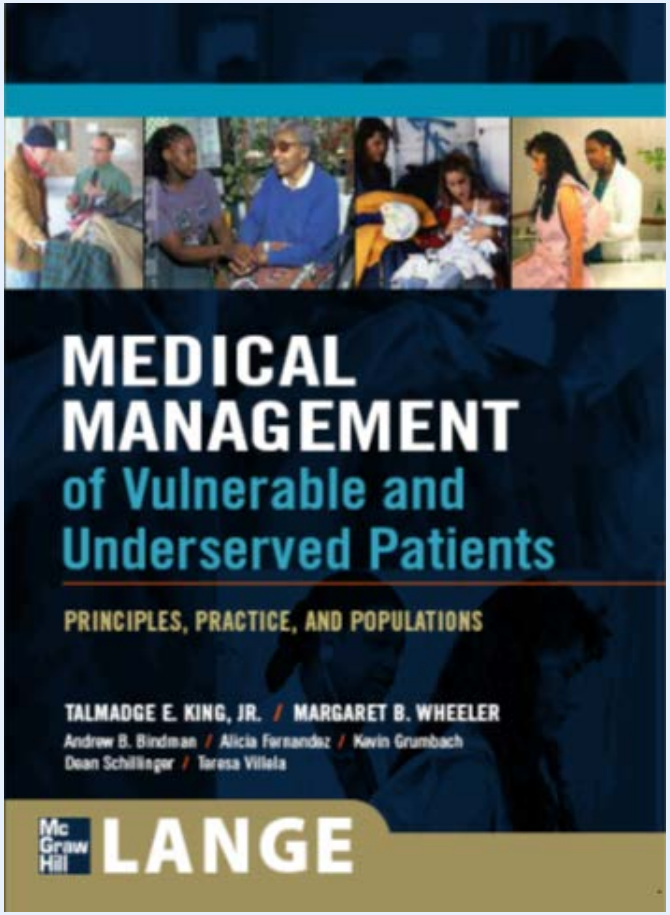
Isolation/Informal caregiving burden

Transportation problems

Illness Model

Eyes and Ears

Shelter



Schillinger 2007

UCSF

What is Health Literacy?

- "The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make [informed] health decisions."

- 3 domains:
  1. oral (speaking, listening)
  2. written (reading, writing)
  3. numerical (quantitative)

- Web? Patient portals?

- Capacity/Preparedness ←→ Demand Mismatch

Schillinger Am J Bioethics 2007

1st National Assessment of Health Literacy

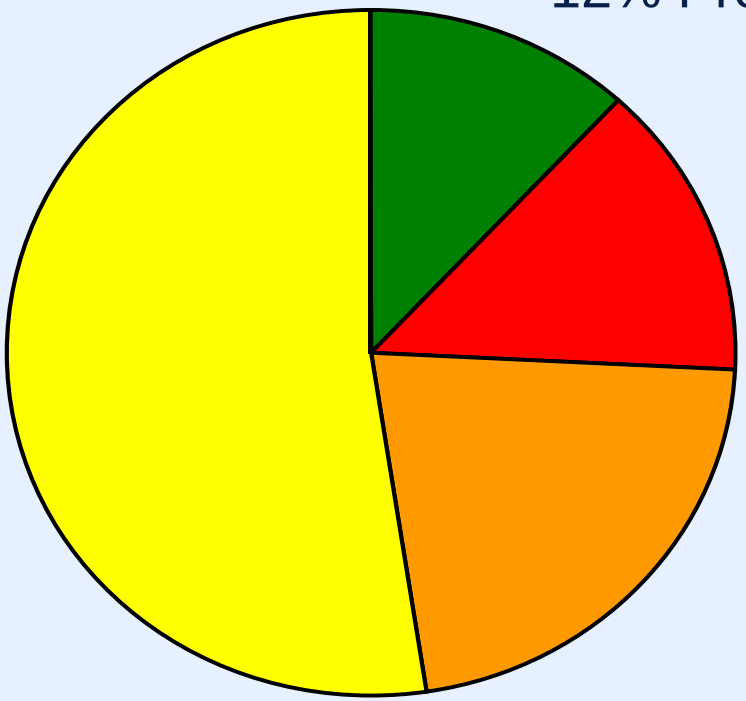
n=19,714 US Adults

- **Below Basic:** Circle date on doctor's appointment slip
- **Basic:** Give 2 reasons a person with no symptoms should get tested for cancer based on a clearly written pamphlet
- **Intermediate:** Determine what time to take prescribed medicine based on label
- **Proficient:** Calculate employee share of health insurance costs using table

National Center for Educational Statistics, U.S. Department of Education, 2003

1st National Assessment of Health Literacy

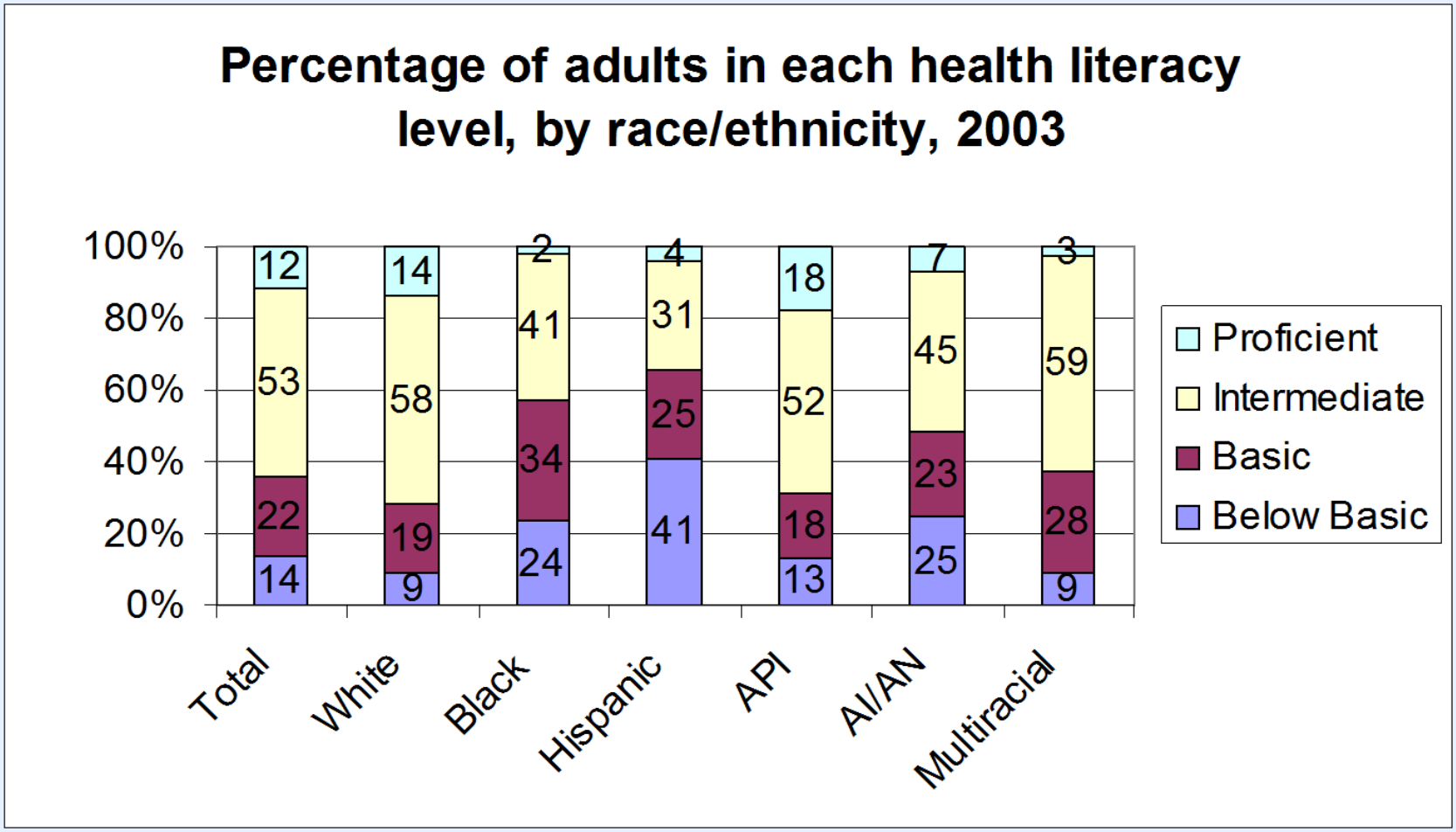
n=19,714 US Adults



National Assessment of Adult Literacy (NAAL): National Center for Educational Statistics, U.S. Department of Education, 2003.

UCSF

Prevalence & Disparities in Limited Health Literacy



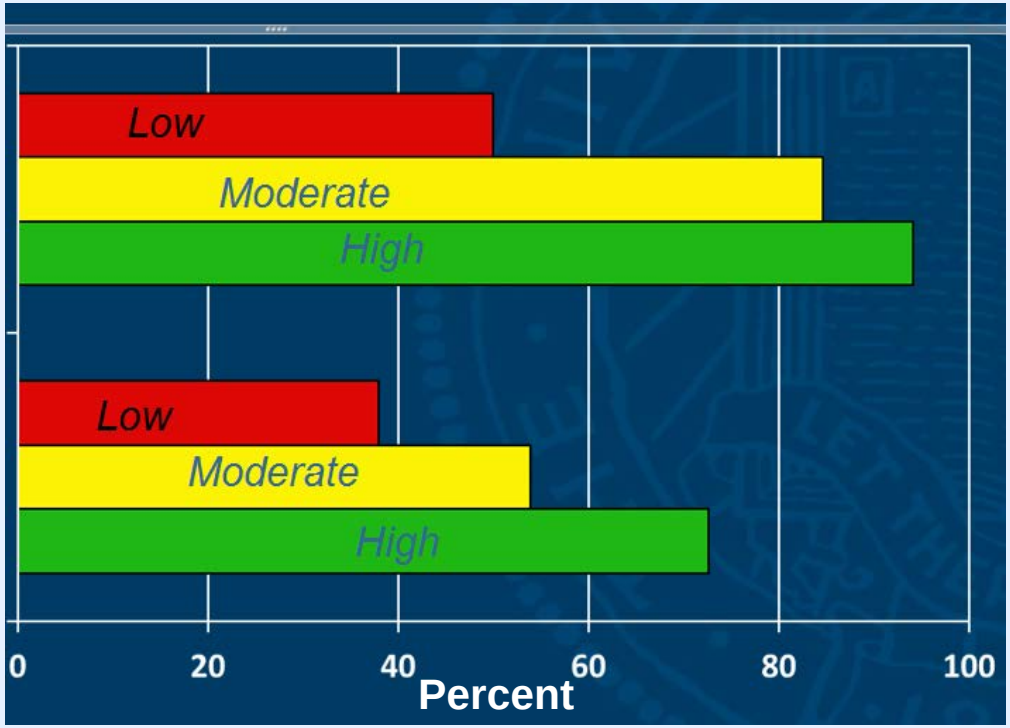
Source: NAAL

UCSF

Patients with Diabetes and Low Literacy Less Likely to Know Correct Management

Need to know:
Symptoms of low blood glucose (hypoglycemia)

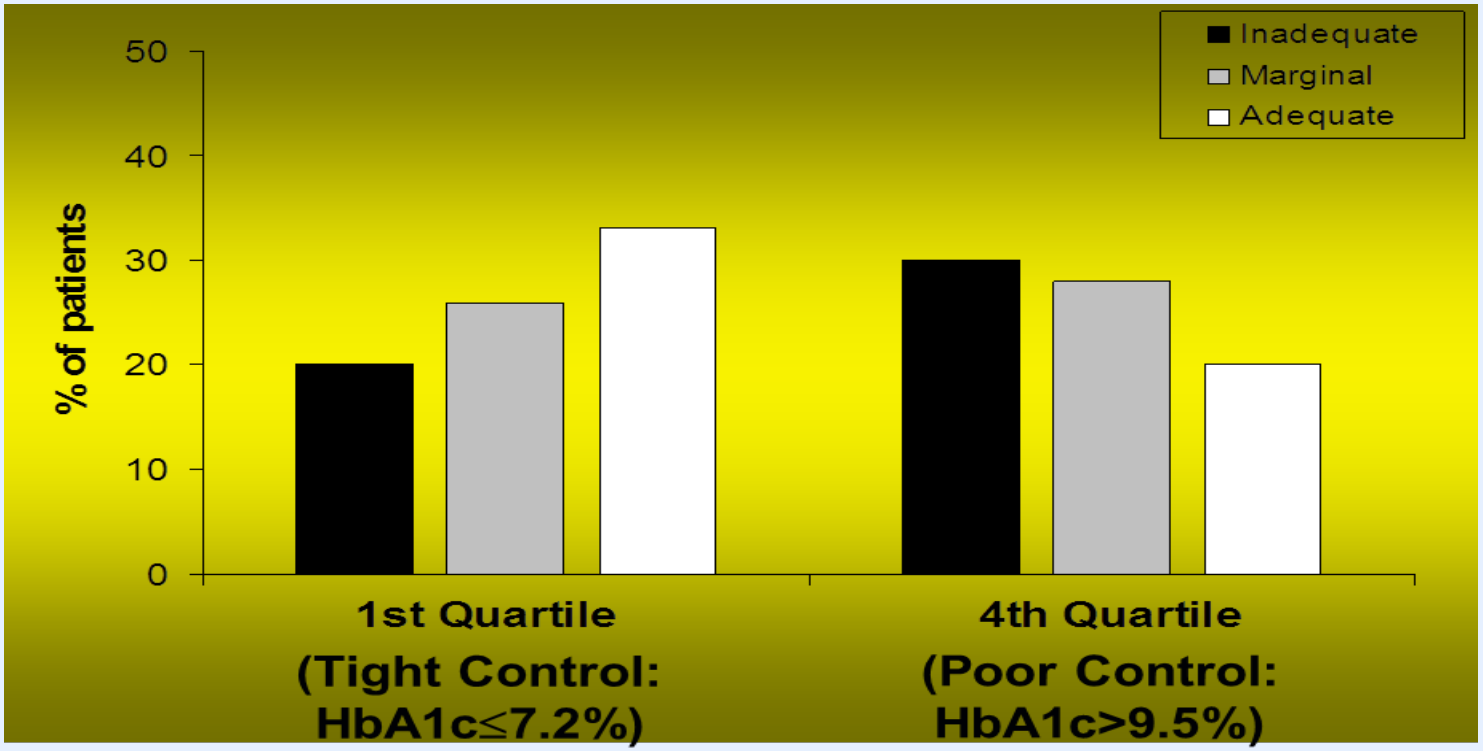
Need to do:
Correct action for hypoglycemic symptoms



Williams et al., Archive of Internal Medicine, 1998

Health Literacy is Associated w/Glycemic Control

N=408



Schillinger, D. JAMA. 2002;288(4):475-482

UCSF

Lower Health Literacy is Associated with Diabetes Complications

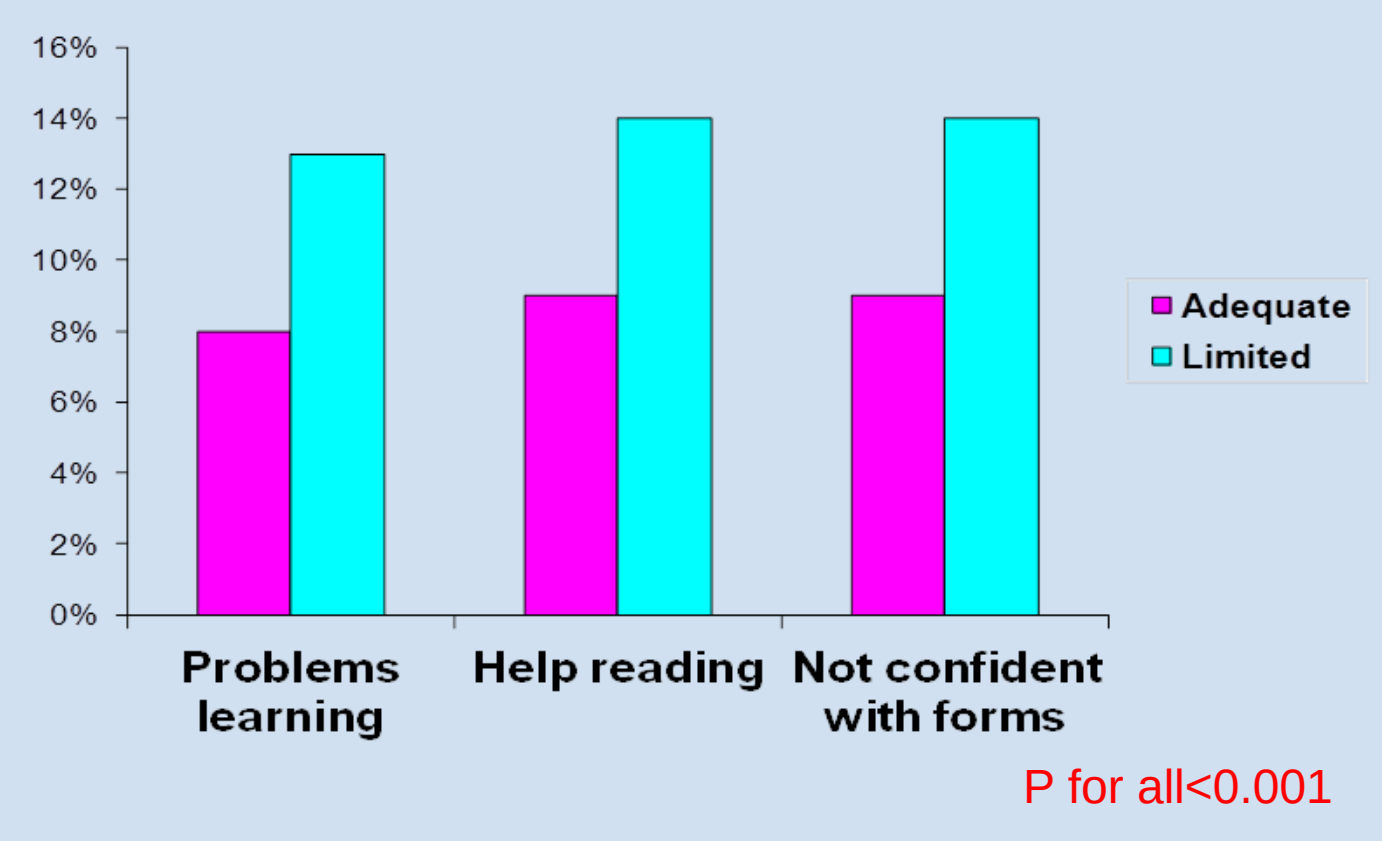
Complication	n**	AOR	95% CI
Retinopathy	111	2.33	(1.19-4.57)
Nephropathy	62	1.71	(0.75-3.90)
Lower Extremity Amputation	27	2.48	(0.74-8.34)
Cerebrovascular Disease	46	2.71	(1.06-6.97)
Ischemic Heart Disease	93	1.73	(0.83-3.60)

Schillinger, D. JAMA. 2002;288(4):475-482

UCSF

Limited Health Literacy Patients Experience More Serious Hypoglycemia/Year

N>14,000



Sarkar, Karter, Liu, Moffet, Adler and Schillinger. J Gen Intern Med. 2010 Nov;25(11):1258.

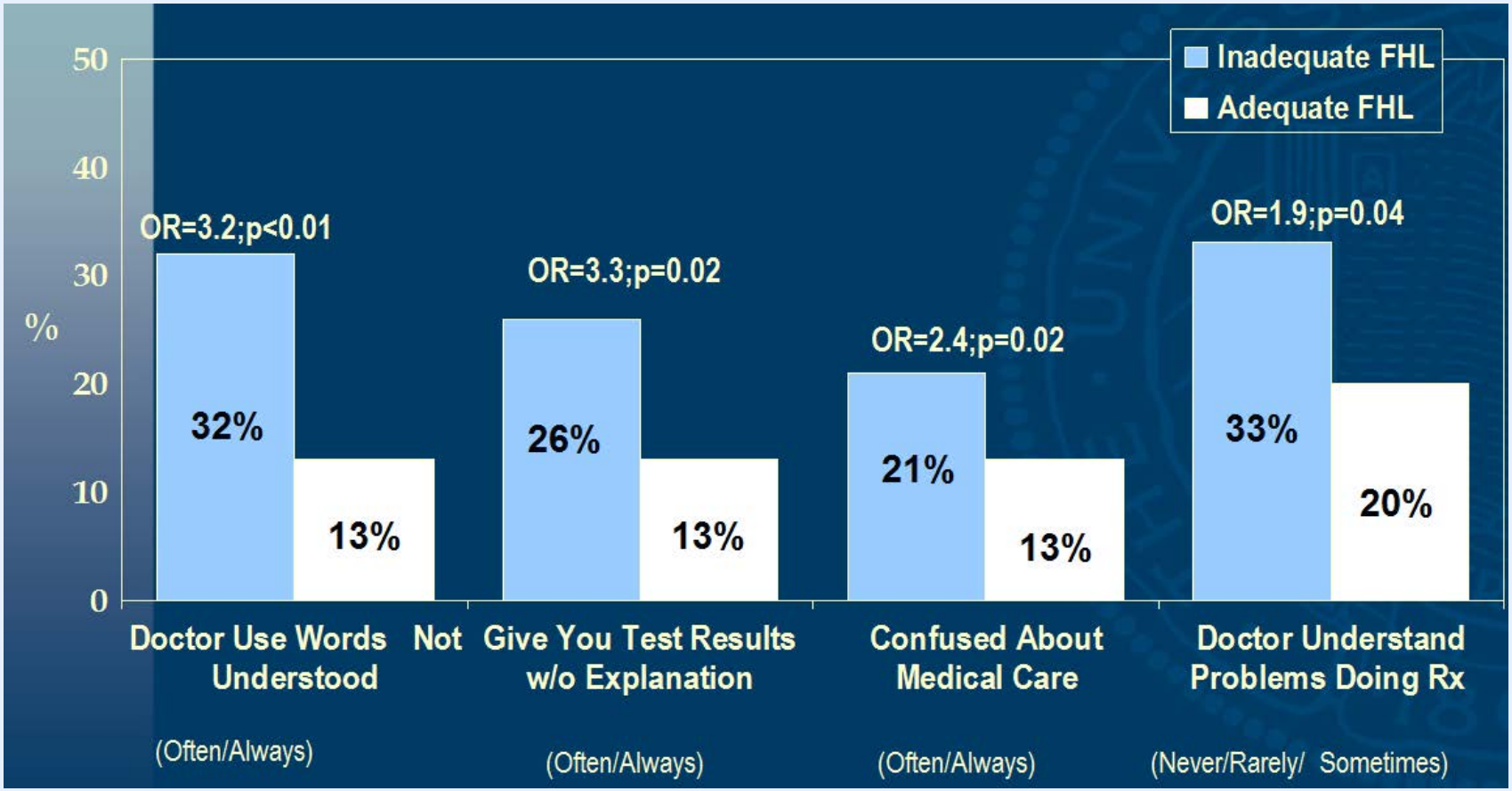
UCSF

My doctor said, “Only 1 glass of alcohol a day”. I can live with that.

“The problem with communication is the assumption that it has occurred.”

- GB Shaw

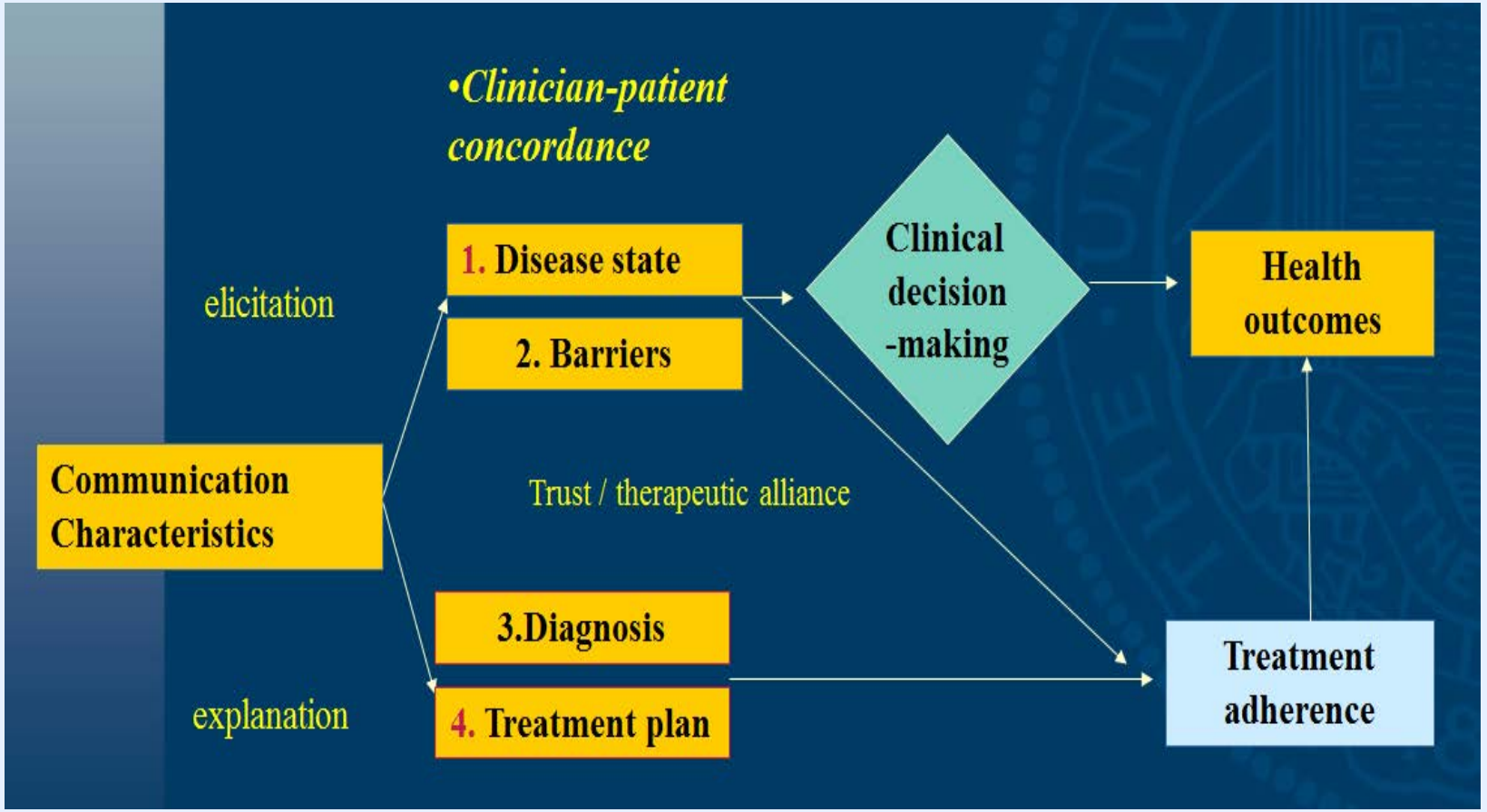
Diabetes Patients with Limited Health Literacy Experience Poorer Quality Communication, N=408



Schillinger D, Bindman A, Stewart A, Wang F, Piette J. Health literacy and the quality of physician-patient interpersonal communication. Patient Education and Counseling. 2004;3:315–323.

UCSF

Conceptual Framework: 4 Basic Functions of Communication in Outpatient Care



Schillinger, Am J Bioeth. 2007 Nov;7(11):15-8; discussion W1-2.

UCSF

Recommendation #1:
Eliminate Jargon (Use "Living Room Language")

GLUCOMETER

HEMOGLOBIN A1c

DIALYSIS

ANGINA

RISK FACTORS

CREATININE

UCSF

Jargon Terms

…unclarified

Glucometer
Immunizations
Weight is stable
Microvascular complication
System of nerves
HbA1c
EKG abnormalities
Dialysis
Wide Range
Risk factors
Kidney function
Interact

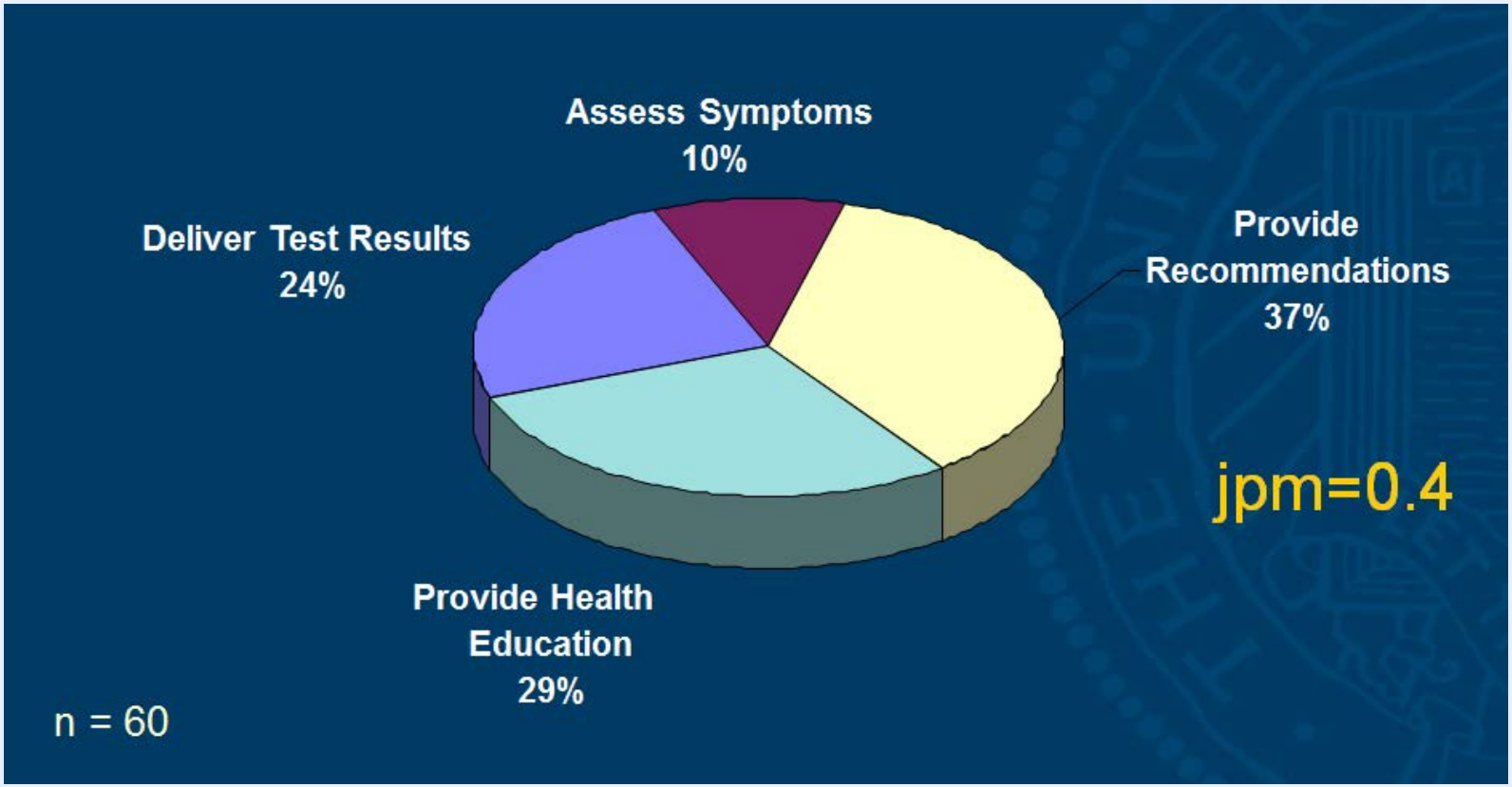
…clarified

Angina
Microalbuminuria
Ophthalmology
Genetic
Creatinine
Symptom

…from patient's own visit

Benign
Baseline
Blood drawn
Blood count
Vaccine
Increase your R
Correlate
Stool was negative
Respiratory tract
Washed out of your system
Receptors
Short course
Renal clinic
Blood cells
CAT scan
Screening
Polyp
Stool

Function of Clinician Jargon in Outpatient Visit



Castro, Wilson, Wang, Schillinger. Am J Health Behav. 2007 Sep-Oct;31 Suppl 1:S85-95.

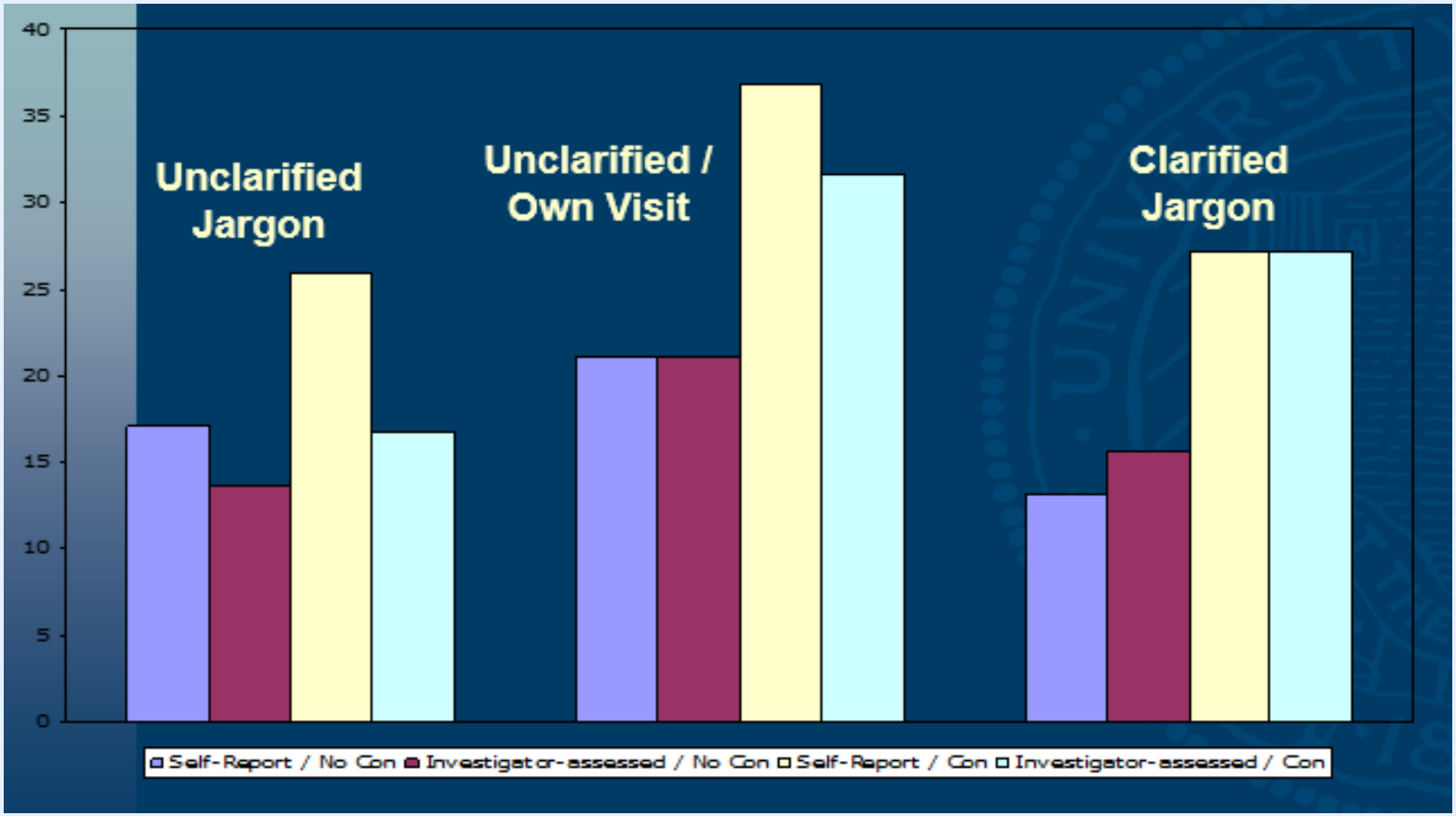
UCSF

Dialysis "Do you know what the number one cause for people in this country being on dialysis is? **Diabetes.**"

Would you please tell me in your own words what dialysis means?		In your own words, what do you think the doctor was trying to tell the patient?	
"Check something every day."	1	"Sugar is too high."	1
"What? Is that about you toes?"	1	"I can't say it."	1
"It means that your diabetes is going worse that you have to exercise to make diabetes."	1	"Means that more people are getting diabetes."	1
"You got to get on machine to pump.. redo blood to come up to par."	4	"That the sugar was not…hmm."	1
"…regarding kidney."	2	"Diabetes is one cause of kidney problems."	3
"That is a warning…about the kidney…my doctor told me about those side effects of the diabetes."	3	"About dialysis, because they are warning us, they are telling me about the complications…that if I'm having problems in my kidney, I'm going to have dialysis."	4
"It's a way to clean blood get off toxins out the blood."	4	"That you need to be on dialysis to cleanse blood or gonna die."	4

UCSF

Patient Comprehension of Jargon (% Some /Total Understanding)



UCSF

Recommendation #2: Assess Comprehension w/ "Teach-back" Method, AKA "Closing the Loop"

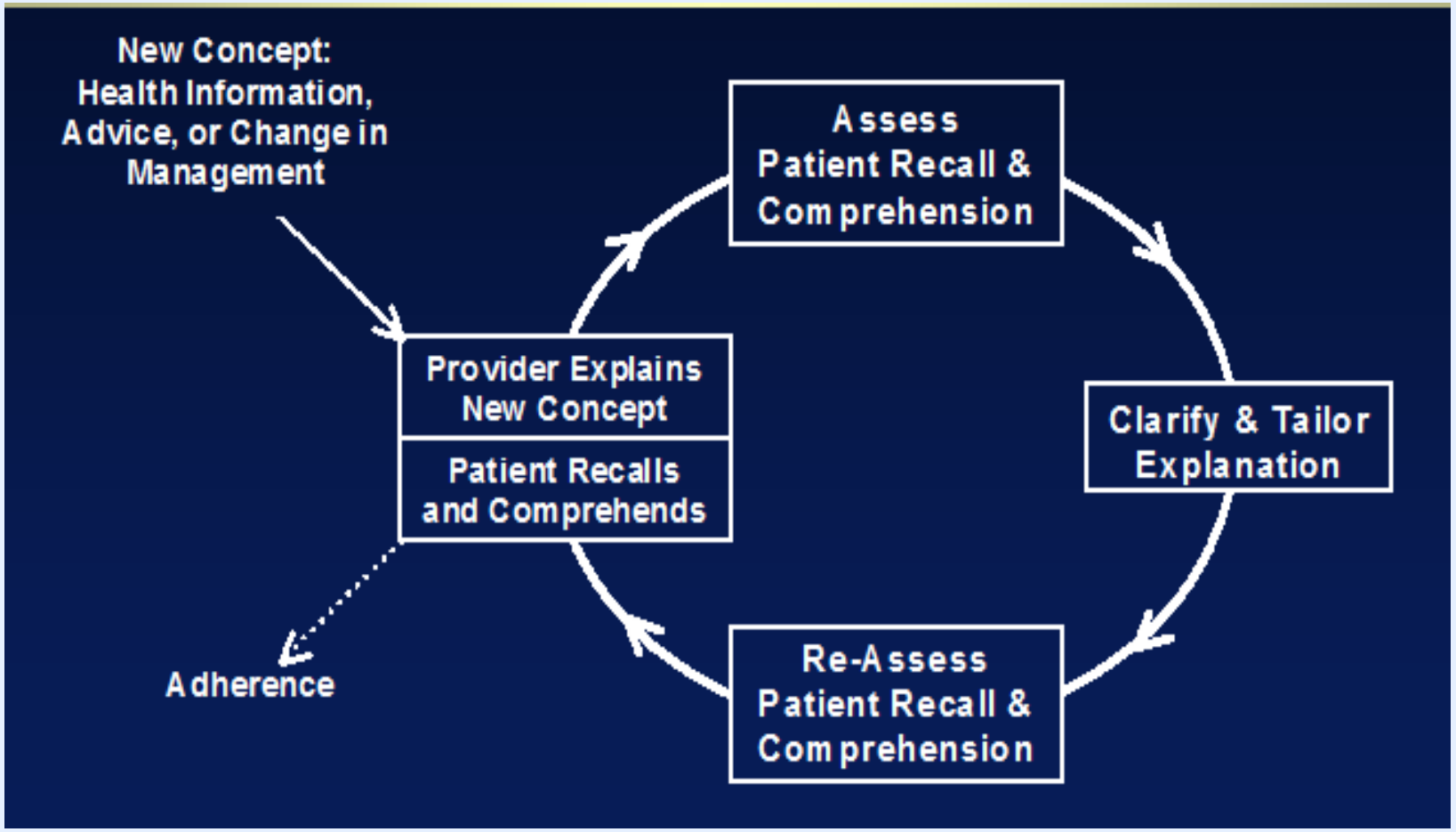
- In this interactive technique, the clinician prioritizes amongst the information exchange and **explicitly** asks the patient to "teach-back" what he/she has *recalled and understood* re those high-priority domains.

- Similarly, clinicians can use the strategy to assess patient's *perceptions* of the information or advice given.

- The technique can be used toward the end of a visit or during the course of the visit, so as to tailor communication earlier.

Schillinger et. al. Arch Intern Med. 2003 Jan 13;163(1):83-90.

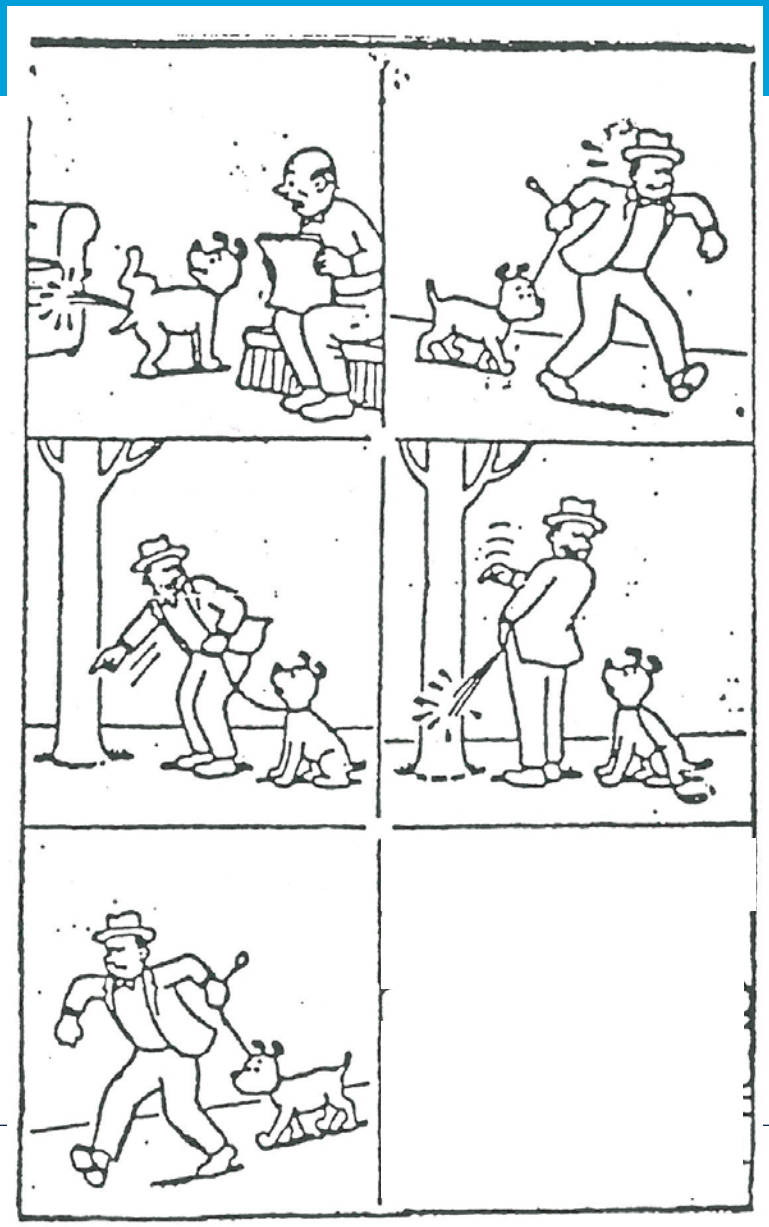
Closing the Loop: Interactive Communication to Enhance Recall & Comprehension



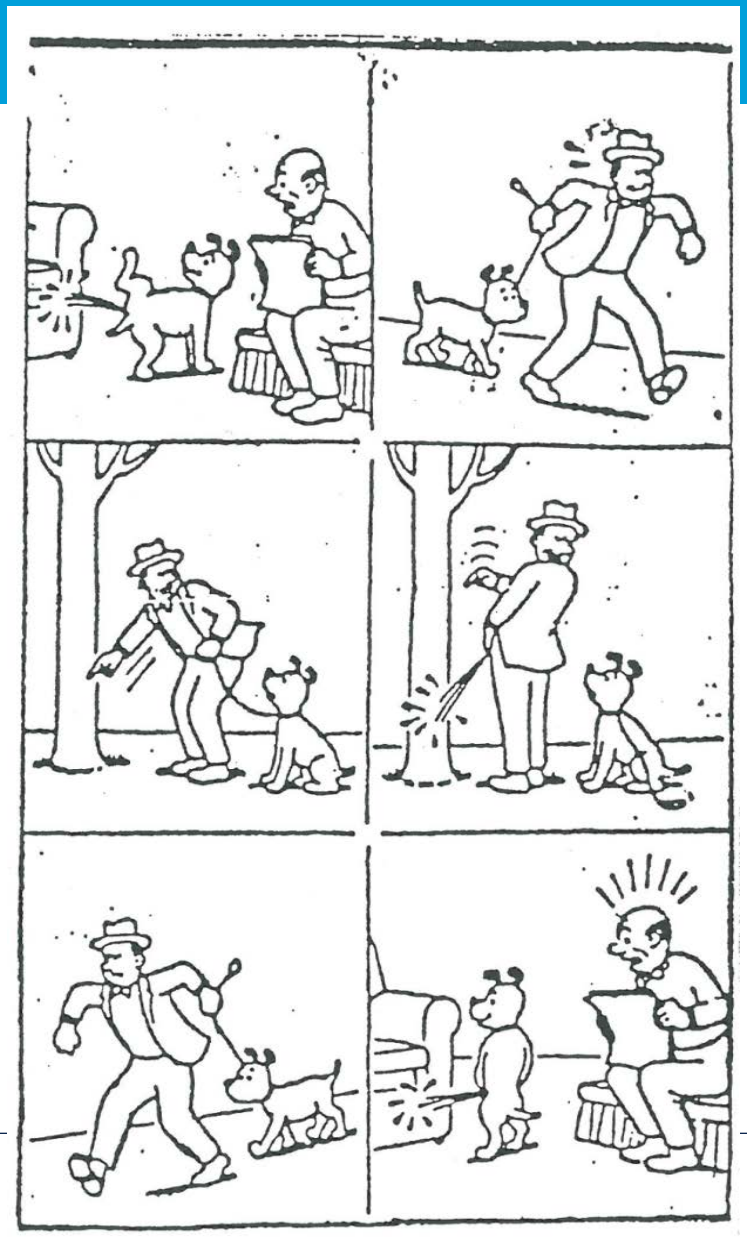
Schillinger et. al. Arch Intern Med. 2003 Jan 13;163(1):83-90.

UCSF

‘Teaching’ is one thing…….



…. But ‘learning’ is quite another



We Rarely "Close the Loop" – But It's Good When We Do

- Physicians assessed recall or comprehension for 15/124 new concepts (12%)
- When new concepts included patient assessment, patient provided incorrect response half the time (7/15=47%)
- Visits using interactive communication loop not longer (20 min vs. 22 min)
- Application of loop associated with better HbA1c (AOR 9.0, p=.02)

2003

Schillinger et. al. Arch Intern Med. 2003 Jan 13;163(1):83-90.

How to Use "Teach Back"?

Example 1 (medication change):

- **Provider (to patient):** "*I want to make sure I did a good job explaining your diabetes medications, because this can sometimes be confusing. Can you tell me what changes we decided to make and how you NOW will take the medications?*"

- **Note** how the provider places the onus of any possible miscommunication on him/herself. In other words, the "teach-back" task is conveyed not as a test of the patient, but of how well the provider explained the concept.

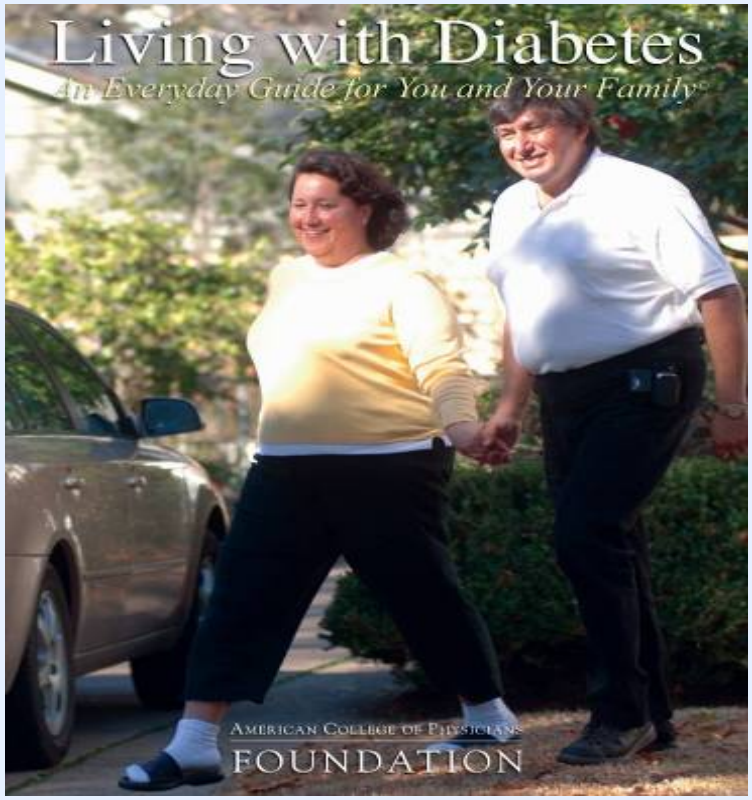
How Not To…

Example #2: Taking the Easy Way Out

- Provider (to patient*):*
  "Do you understand what we just talked about?" or
  "Do you understand the plan regarding your blood pressure medications?" or
  "Did that makes sense?"

- These routine queries, which do not require explicit articulation of recall, comprehension, or perceptions on the part of the patient, will universally be met with an uninformative (and possible falsely re-assuring), "Yes, doctor".

Recommendation #3:
Employ Well-Tested Visual Aids



© American College of Physicians Foundation

https://www.acponline.org/system/files/documents/patients_families/products/brochures/protected/CPP3003_Living_With_Diabetes_2014.pdf
or shorter url: http://bit.ly/1TZZVYv

UCSF

Pictures Help Tell the Story

Patients looked at pictures first.
Particularly liked pictures of food comparisons.

Too Much **Right Size**

https://www.acponline.org/system/files/documents/patients_families/products/brochures/protected/CPP3003_Living_With_Diabetes_2014.pdf
or shorter url: http://bit.ly/1TZZVYv

UCSF

Carb Counting Vs. Plate Method?

Nutrition Facts

6 servings per container

Serving Size 1 cup (110g)

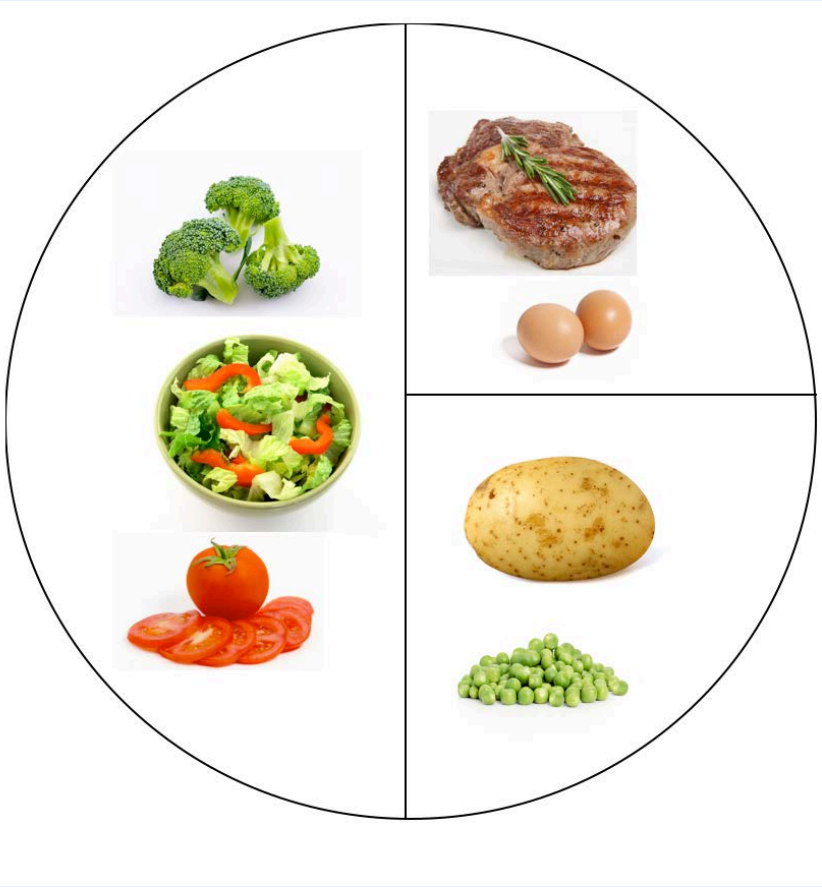
Amount per 1 cup

Calories 250

% DV*	
11%	**Total Fat** 7g
16%	**Saturated Fat** 3g
	***Trans* Fat** 0g
2%	**Cholesterol** 4mg
13%	**Sodium** 300mg
10%	**Total Carbs** 30g
14%	**Dietary Fiber** 3g
	Sugars 2g
	Added Sugars 0g
	Protein 5g
7%	**Vitamin A** 1mcg
15%	**Vitamin C** 2mcg
20%	**Calcium** 4mg
32%	**Iron** 5mg

* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	55g	75g
Saturated Fat	Less than	10g	12g
Cholesterol	Less than	1,500mg	1,700mg
Total Carbohydrate		250mg	300mg
Dietary Fiber		22mg	31mg



Wolff, Cavanaugh, Malone, Hawk, Gregory, Davise, Wallston and Rothman. Diabetes Educ. 2009 Mar-Apr;35(2):233-6, 238-41, 244-5.

UCSF

Plate Model> Carb Counting>Usual Care in lowering HbA1c, especially for low numeracy

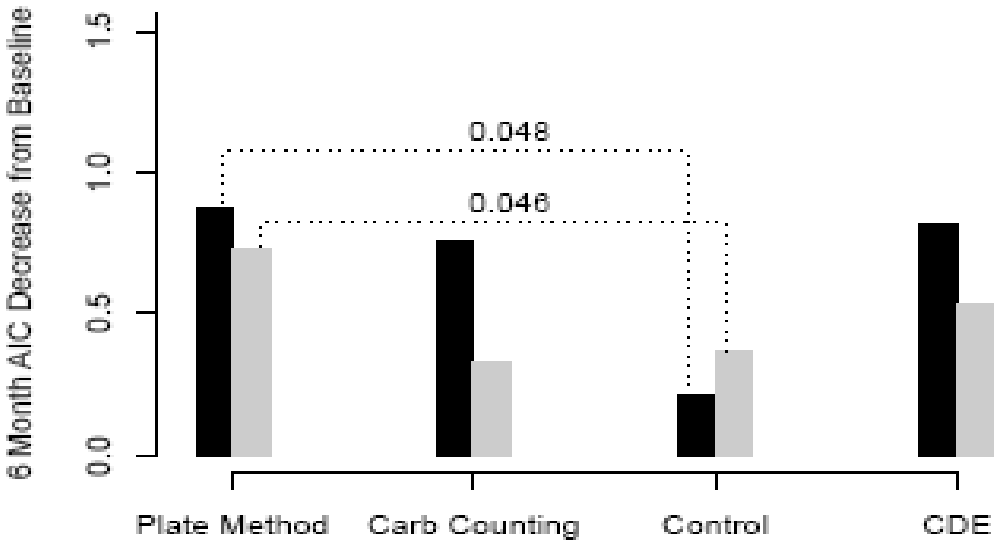


Figure 3: Change in A1C.

Black = High Num
Grey = Low Num

Cavanaugh K, et al: Addressing literacy and numeracy to improve diabetes care: two randomized controlled trials. Diabetes Care 32:2149–2155, 2009

UCSF

Recommendation #4:
Use Accessible Technology

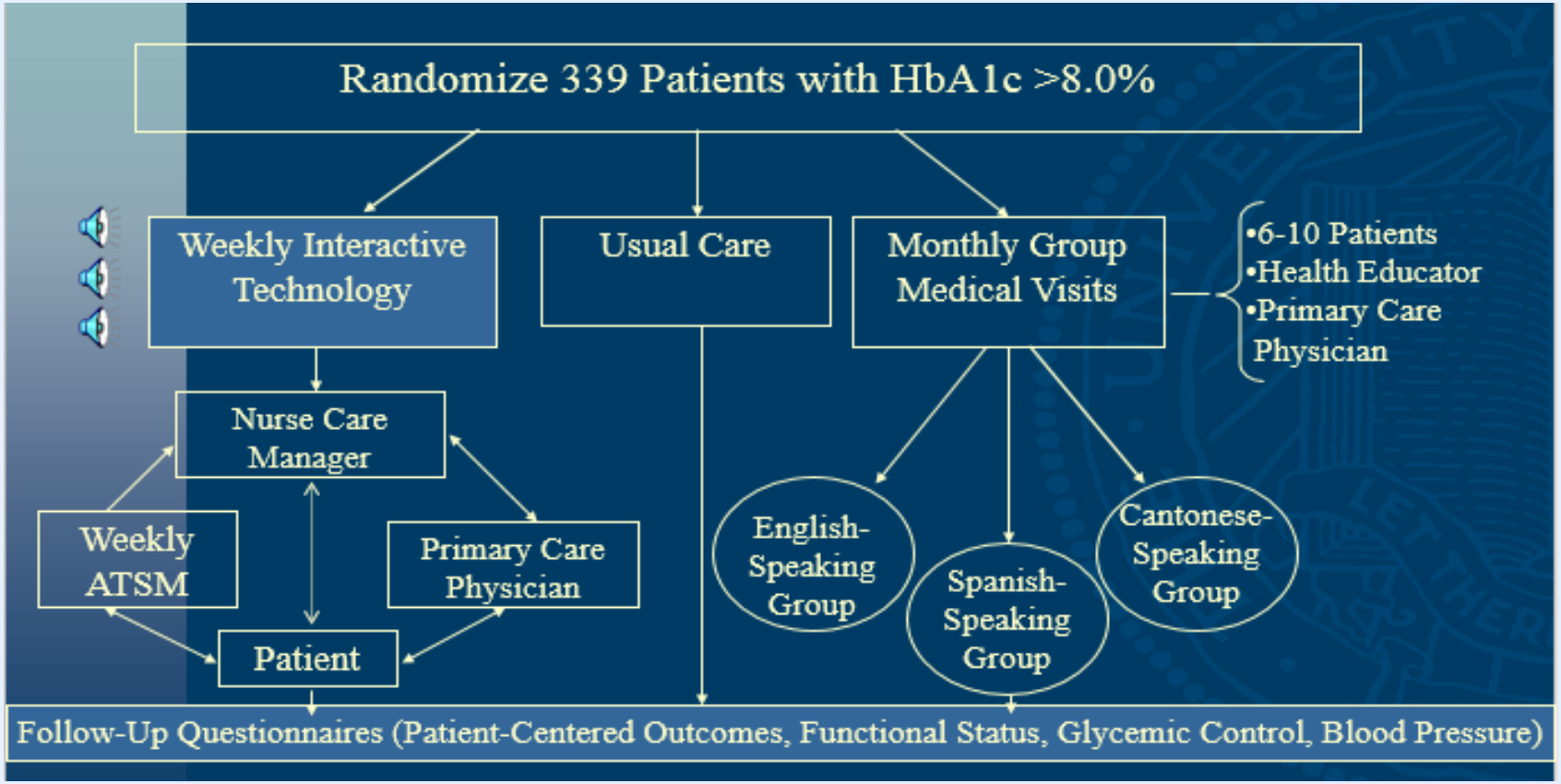
The future is already here, it's just not evenly distributed

William Gibson The Economist 2003

UCSF

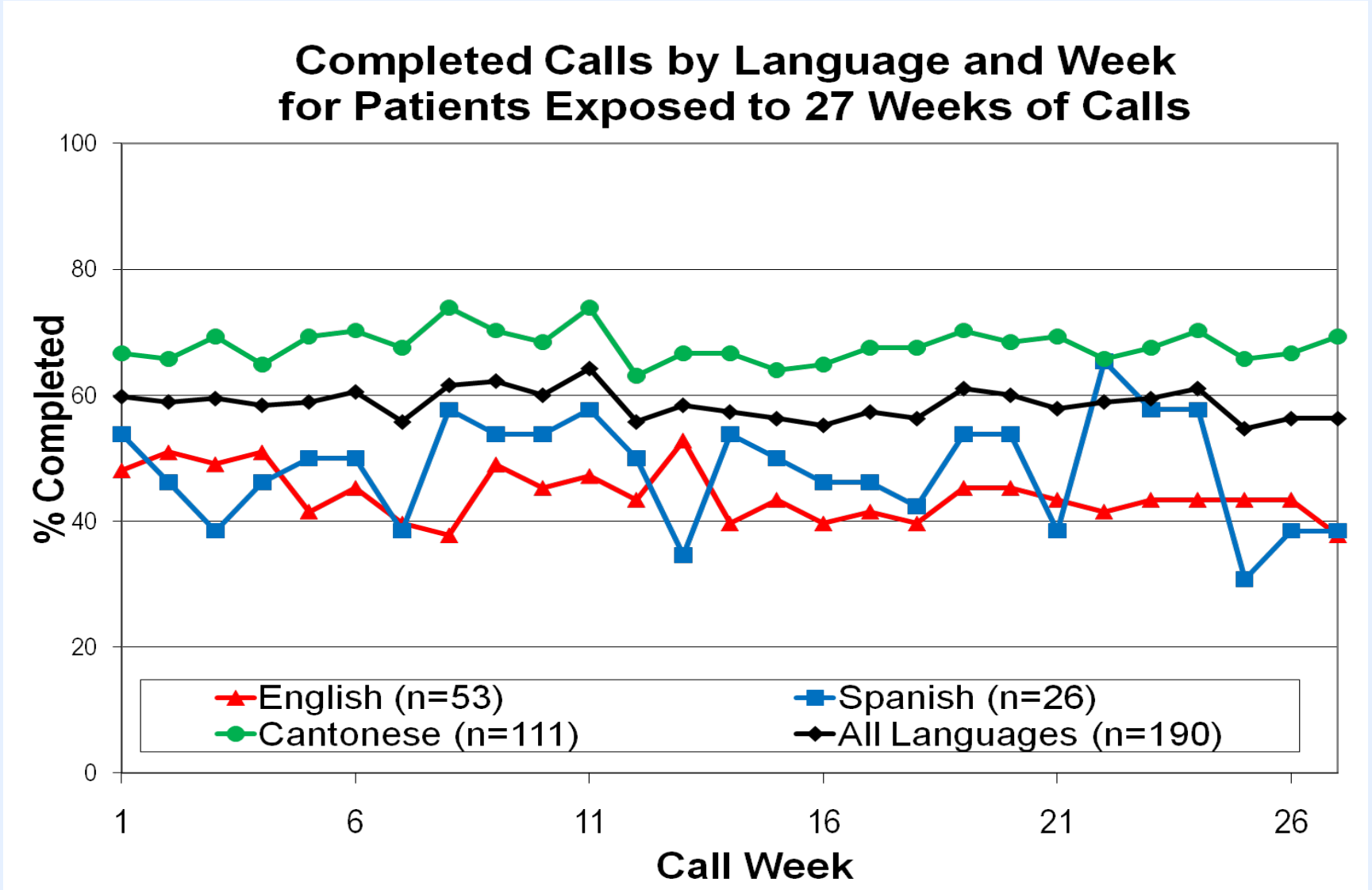
IDEALL PROJECT

EL PROYECTO DE SALUD IDEALL
理想健康計劃
IDEALL HEALTH PROJECT



Schillinger et al. Effects of self-management support on structure, process and outcomes among vulnerable patients with diabetes: a 3-arm practical clinical trial. Diabetes Care. 2009 Apr; 32(4): 559–566.

UCSF



Ratanawongsa, Handley, Quan, Sarkar, Pfeifer, Soria, Schillinger. Diabetes health information technology innovation to improve quality of life for health plan members in urban safety net. J Ambul Care Manage. 2014 Apr-Jun; 37(2):127-37.

UCSF

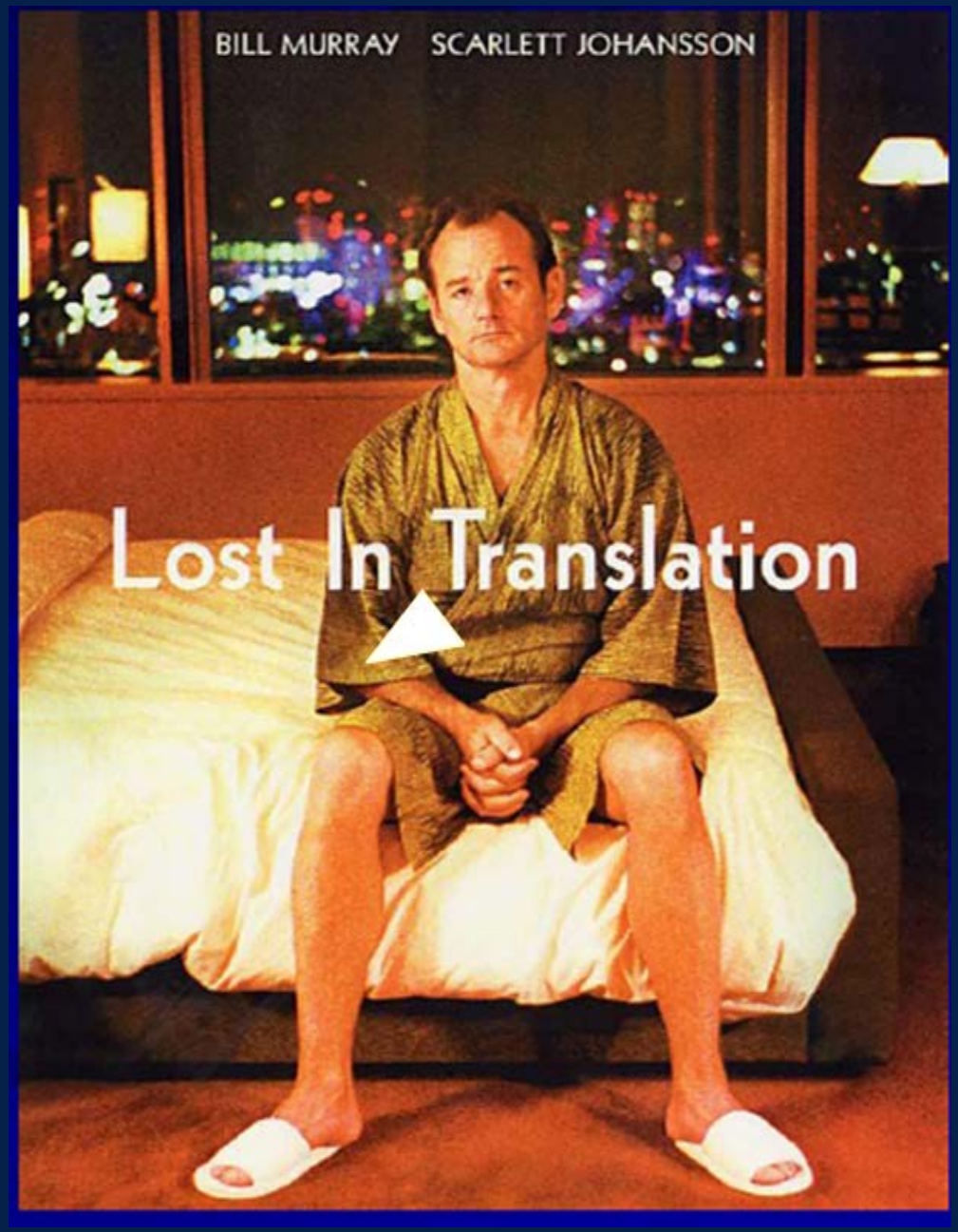
Key Findings of IDEALL Program Estimating Public Health "Reach" of Programs

Composite reach product

	ATSM	GMV
Overall	22.1	4.8
English	20.0	6.4
Chinese	22.0	2.7
Spanish	24.3	4.0
Adequate Literacy	15.6	7.6
Limited Literacy	28.0	3.6

Schillinger, et al. Seeing in 3-D: Examining the Reach of Diabetes Self-Management Support Strategies in a Public Health Care System. Health Ed and Behavior, Vol. 35 (5): 664-682 (Oct. 2008)

UCSF

UCSF

University of California
San Francisco