

Health Literacy among Adolescents and Young Adults

An Overview for the FDA / NIH Public Workshop on
Adolescent OTC Use
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Overview

- Health Literacy in the US
- Health Literacy among Adolescents and Young Adults
- Health Literacy and OTC Use among Young Adults
- What Research is Needed?

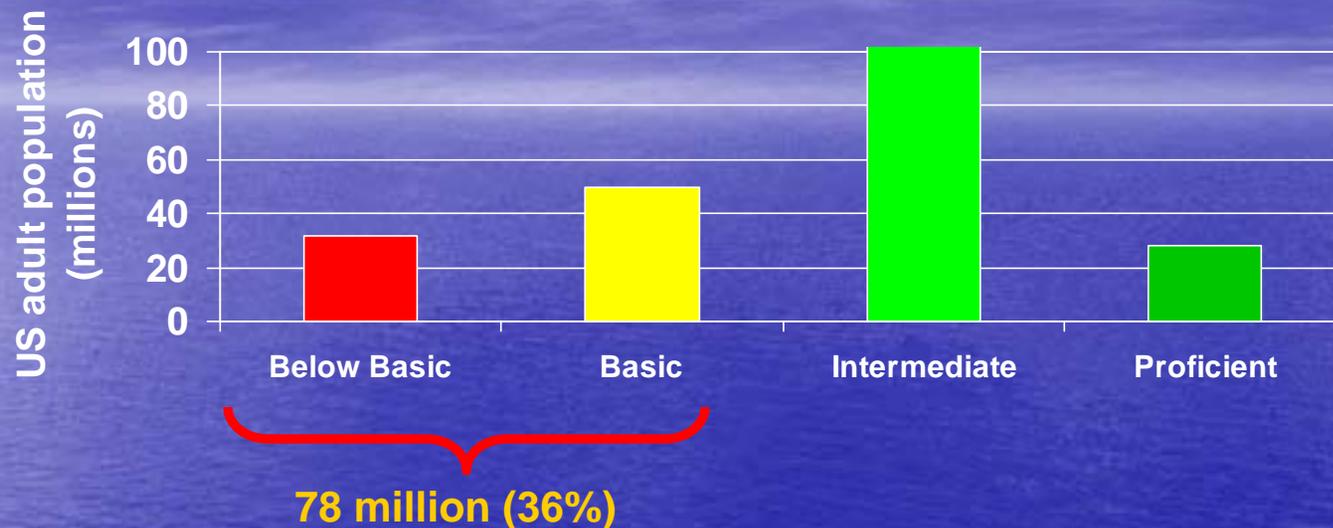
Health Literacy in the U.S.

**78 million U.S. adults (36%)
do NOT have**

“...the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.”

IOM 2004

Health Literacy Skills



"Below Basic" Skills

- Use the dosage chart on over-the-counter medicine.
- From a pamphlet, give 2 reasons why screening is important.

"Basic" Skills

- Use an immunization schedule
- Interpret a growth chart
- Follow a prescription to "take medicine on an empty stomach"

Among adults with “Below Basic Skills,” many are ...

- English-speaking (52%)
- White, non-Hispanic (37%)
- Employed (40%)
- Graduated from HS or College (45%)

Poor Health Outcomes Associated with Low Adult Health Literacy

Health Outcomes/Health Services

- General health status
- Hospitalization
- Prostate cancer stage
- Depression
- Asthma
- Diabetes control
- HIV control
- Mammography
- Pap smear
- Pneumococcal immunization
- Influenza immunization
- STD screening
- Cost

Behaviors

- Substance abuse
- Violent behavior
- Breastfeeding
- Behavioral problems
- Adherence to medication
- Smoking

Knowledge

- Birth control knowledge
- Cervical cancer screening
- ED instructions
- Asthma knowledge
- Diabetes knowledge
- Hypertension knowledge

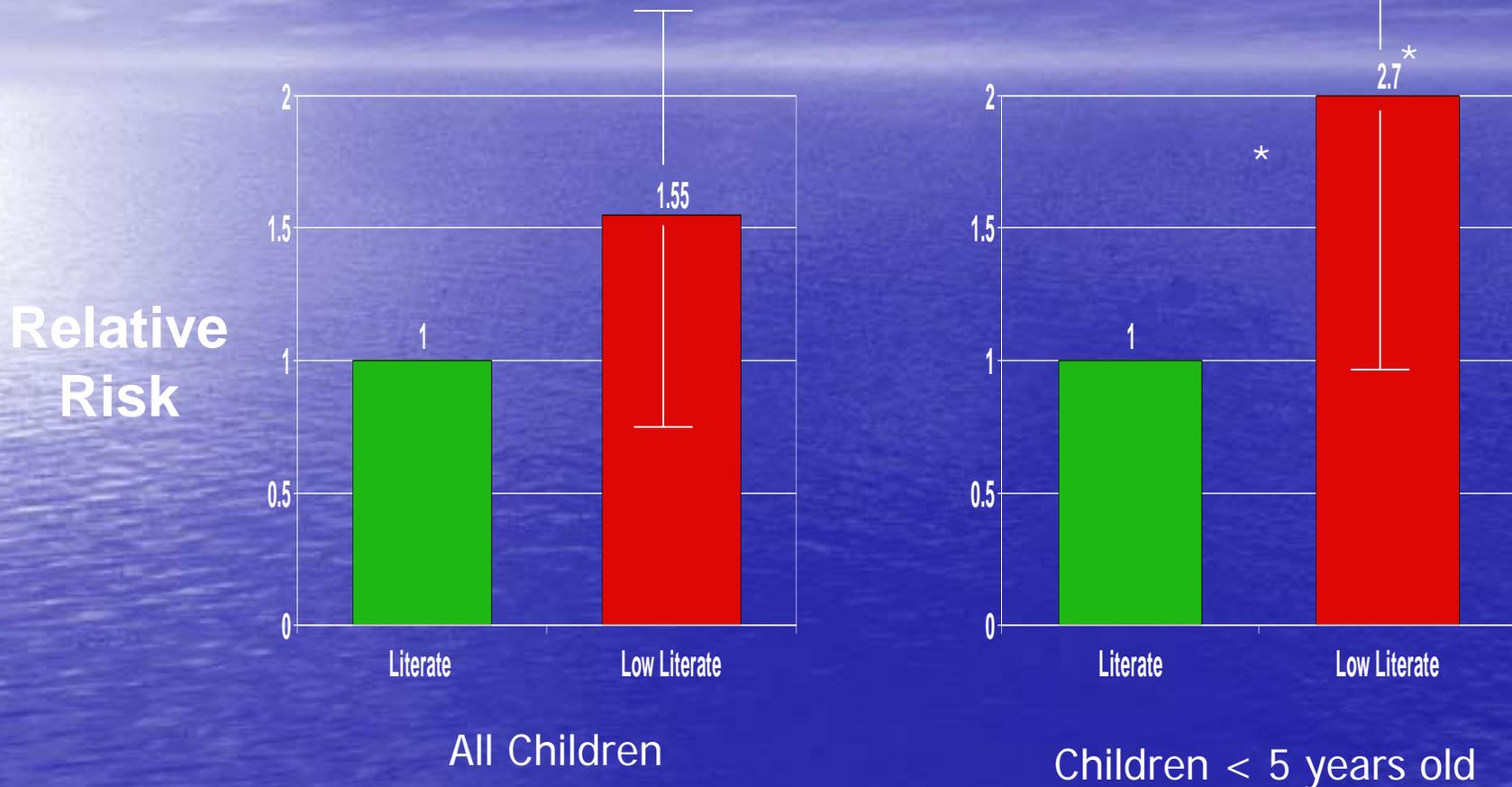
Poor Child Preventive Care associated with Low Adult HL

Children of adults with low literacy are twice as likely to ...

- Be uninsured OR 2.3 (95% CI 1.2-4.1)*
- Lack a regular pediatrician OR 2.4 (95% CI 1.1-5.4)*
- Lack a medical home OR 2.2 (95% CI 1.3-3.6) *

*controlling for caregiver education, caregiver income, English as primary language, US as place of birth, child age, child ethnicity, and child chronic illness
(Sanders, et al, 2005)

Child Use of Urgent Health Services, by Parent Health Literacy



N = 276

* p=.06, adjusted for parent and child age, gender, educational status, and English-language proficiency

Sanders, et al. Pediatrics 2006

Increased Cost of Health Care

Low health literacy is estimated to cost the US healthcare system

\$25 – 70 billion per year

(Friedland 1998)

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

Health Literacy

MEDICAL CENTER

NAME _____ AGE _____
ADDRESS _____ DATE _____

*A Prescription to
End Confusion*

Label

Refill _____ times PRN NR

substitution permitted _____ M.D.



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Measuring HL: Rapid Estimate of Adolescent Literacy in Medicine (REALM – Teen)

- "Read this list of words aloud"
- Proxy for general reading ability
- Medical content (e.g., "cancer," "antibiotic," "puberty")

**RAPID ESTIMATE OF ADOLESCENT LITERACY IN MEDICINE
(REALM) Teen©**

Terry Davis, PhD Joe Boochini, MD Sandy Long, PhD Michael Wolf, PhD

Subject # _____ Race _____ Gender _____ Age _____ Grade _____

Date _____ Site _____ Examiner _____

List 1	List 2	List 3
eye _____	fever _____	nutrition _____
pill _____	pimple _____	alcoholism _____
fat _____	virus _____	antibiotic _____
skin _____	calories _____	complications _____
throat _____	allergy _____	delinquency _____
blood _____	marijuana _____	penicillin _____
weight _____	pelvic _____	puberty _____
stress _____	asthma _____	menstrual _____
death _____	emergency _____	pneumonia _____
liquid _____	infection _____	constipation _____
disease _____	exercise _____	diagnosis _____
drug _____	medicine _____	nausea _____
mouth _____	violence _____	acne _____
ounce _____	prevention _____	anemia _____
heart _____	suicide _____	hepatitis _____
risks _____	depression _____	adolescent _____
diet _____	prescription _____	bulimia _____
teaspoon _____	abnormal _____	fatigue _____
period _____	injury _____	anorexia _____
cancer _____	ointment _____	tetanus _____
stomach _____	seizure _____	bronchial _____
headache _____	diabetes _____	obesity _____

Measuring HL: Test of Functional Health Literacy for Adults (S-TOFHLA)

- 36 items
- Tests only Prose Literacy
- Content:
 - Preparing for UGI
 - Understanding patient bill of rights

THE DAY BEFORE THE X-RAY.

For supper have only a _____ snack of fruit, _____ and jelly,

a. lirtle	a. toes
b. broth	b. throat
c. attack	c. toast
d. nausea	d. thigh

with coffee or tea.

After _____, you must not _____ or drink

a. minute,	a. easy
b. midnight,	b. ate
c. during,	c. drank
d. before,	d. eat

anything at _____ until after you have _____ the X-ray.

a. ill	a. are
b. all	b. has
c. each	c. had
d. any	d. was

Measuring HL: National Assessment of Adult Literacy (NAAL)

- 28 items
- Tests 3 Domains of Adult Health Literacy:
 - Prose (12)
 - Document (12)
 - Quantitative (4)
- Content:
 - Health Prevention (14)
 - System Navigation (10)
 - Medical Treatment (4)
- Example: “According to this brochure, why is it difficult for people to know if they have high blood pressure?”

TOO MANY BLACK ADULTS DIE FROM THE EFFECTS OF HIGH BLOOD PRESSURE

DID YOU KNOW?

More than one out of every four Black adults has high blood pressure, according to a two-year survey by Public Health Service in the 1960's. Other studies show as many as one out of three Black adults has high blood pressure.

High blood pressure is the most common chronic disease treated by practitioners in the Black community.

More Black people die as a result of high blood pressure than any other disease.

For every Black person who dies of sickle-cell anemia, at least 100 others die from the effects of high blood pressure.

The rate of death from the effects of high blood pressure for Black people is nearly one and one-half times the rate for White people.

High blood pressure, along with cigarette smoking, contributes greatly to the apparent increased number of heart attacks among Black adults.

If high blood pressure is controlled, strokes, heart attacks and kidney disease can be substantially reduced.

YES, HIGH BLOOD PRESSURE CAN BE TREATED... AND CONTROLLED.

WHAT YOU CAN DO

Have your blood pressure checked regularly

Unfortunately, high blood pressure is a silent killer and crippler. At least half of the people who have high blood pressure don't know it because symptoms usually are not present. The only way you can be sure is to have the doctor check your blood pressure. You should have your blood pressure checked at least once a year, especially if: (1) you are Black, (2) if you are over 40, (3) if members of your family or close relatives have had high blood pressure or the complications of high blood pressure (stroke, heart attack, or kidney disease), or (4) if you have frequent headaches, dizziness, or other symptoms that may occasionally be related to high blood pressure.

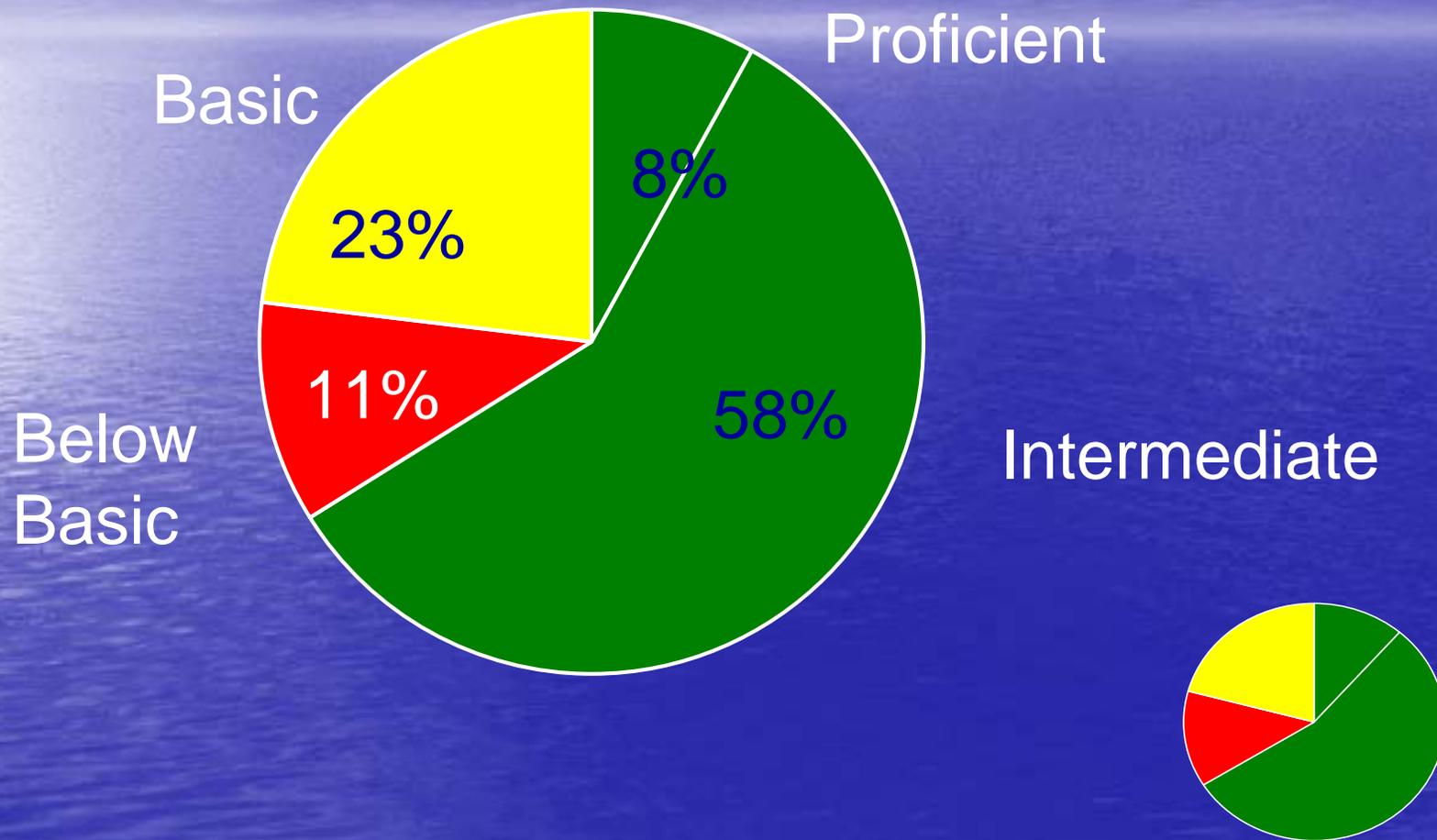
Follow your doctor's instructions

High blood pressure can't be cured, but it can be kept under control. Control means keeping your blood pressure as close to normal as possible. That's very important to you — it can prevent a crippling stroke or other serious illness in the future.

The doctor will find a way to control your blood pressure that's most comfortable for you. Then it will be up to you — to take the medicine and follow the prescribed diet, to follow the instructions carefully and to come back regularly for checkups.

Yes, high blood pressure can be controlled, but only if you cooperate fully with your doctor.

Health Literacy of Adolescents (Age 16 – 18 years)



NAAL 2006

Health Literacy Skills decrease with Age

Figure 2-7. Percentage of adults in each health literacy level, by age: 2003



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

Other Estimates of Health Literacy of Adolescents and Young Adults

Age (sample)	% with Low HL	N	Measurement Tool	Ref.
16 – 18 (national)	34	>1000	NAAL	NCES 2006
10 – 19 (school syst)	34	1247	REALM-Teen	Davis 2006
12 – 14 (high-risk)	37	408	STOFHLA / REALM	Sanders 2005
18 – 34 (health syst)	22	290	STOFHLA	Sanders 2004
16 – 21 (STD clinic)	37	158	REALM	Needham 2007

Adolescents' Self Report of Their Health Literacy

- N = 1528 children (Ages 9 – 13 years)
- Sampled from 11 AHEC centers in 7 states
- 22 % report difficulty understanding health information
- Schools and Clinics were main sources of health information
- Interest in Learning about Health decreases with Increasing Age and with Decreasing Self Efficacy

Factors associated with Adolescent Health Literacy

	Estimate	S.E.	P value
<i>Mother's Health Literacy</i>	0.76	0.21	<0.01
<i>Mother's Years of Education</i>	-0.23	0.56	0.68
<i>Family Income</i>	0.001	0.001	0.13
<i>Biological Mother</i>	-0.89	2.4	0.71
<i>Child Health Visits</i>	0.14	0.32	0.66

Health outcomes associated with Teens' Reading Below Grade Level

- School dropout (NAEP 2006)
 - Overall rate: 29%
 - Rate among those below grade level: > 50%
- Tobacco and substance use (Byrd RS 1997, 2005)
- Sexually transmitted illness (Fortenberry JD 2001)
- Violent behaviors (Davis TC 1999)

Teen Violence among those Reading Below Grade Level

	OR (95% C.I.)* for Reading Below Grade Level	
Carrying Weapons	1.9	(1.1 - 3.5)
Carrying Guns	2.6	(1.1 - 6.2)
In a Fight Resulting in Injuries	3.1	(1.6 - 6.1)

N = 386 Adolescents

*Controlling for SES, Gender, Race, Age

Davis TC, et al 1999

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Factors known to influence Adolescent Use of OTC Medication

- Social factors
 - Ethnicity / generational status
 - Peers / Family
- System factors
 - Mass media
 - Insurance and access
 - Medication Cost / Packaging / Marketing
- Individual factors
 - Gender
 - Illness type and severity
 - Parent / Child Health literacy ?

Adult Health Literacy and Use of OTC Medication

- NAAL 2003 item
- OTC box of cough syrup is shown, and interviewer points to a paragraph about what to do in case of an overdose
- **Question:** *What does the label say a person would do in case of an overdose?*
- 55% responded incorrectly

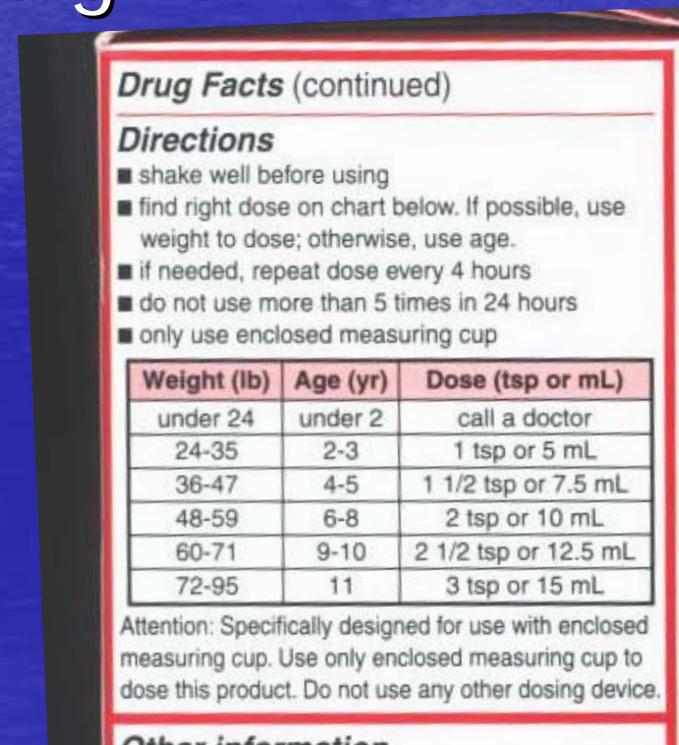
Young Adult Health Literacy and Use of Child OTC Medication

- 22-item Parent Health Activity Test (PHAT)
 - Document Literacy, Numeracy
 - Content: Pediatric Daily Care Practices, including use of 4 common OTC Cough/Cold Medications
- Validated against existing measures
 - Literacy (STOFHLA)
 - Numeracy (WRAT-3)

Your 3-year-old, 35 pound nephew comes to visit and he suddenly has a fever. To help treat his fever, you decide to give him Children's Tylenol. How much should you give him?

- A. ½ teaspoon
- B. 1 teaspoon
- C. 1 ½ teaspoon
- D. 1 tablespoon

Rothman, Sanders, et al 2007.



Young Adult Health Literacy and Use of Child OTC Medication

- N = 182 parents (16 – 25 years) of infants (< 12 months)
- 83% had < 9th grade numeracy skills
- 86% consider OTC cough/cold medication appropriate for children < age 2 without consulting a physician
- Only 47% chose to read dosing instructions
- Factors that influenced use of OTC meds
 - Parent numeracy skills
 - Infant-content on packaging (e.g., word “infant,” pictures of infants, teddy bears, droppers)

Factors that Influence OTC use

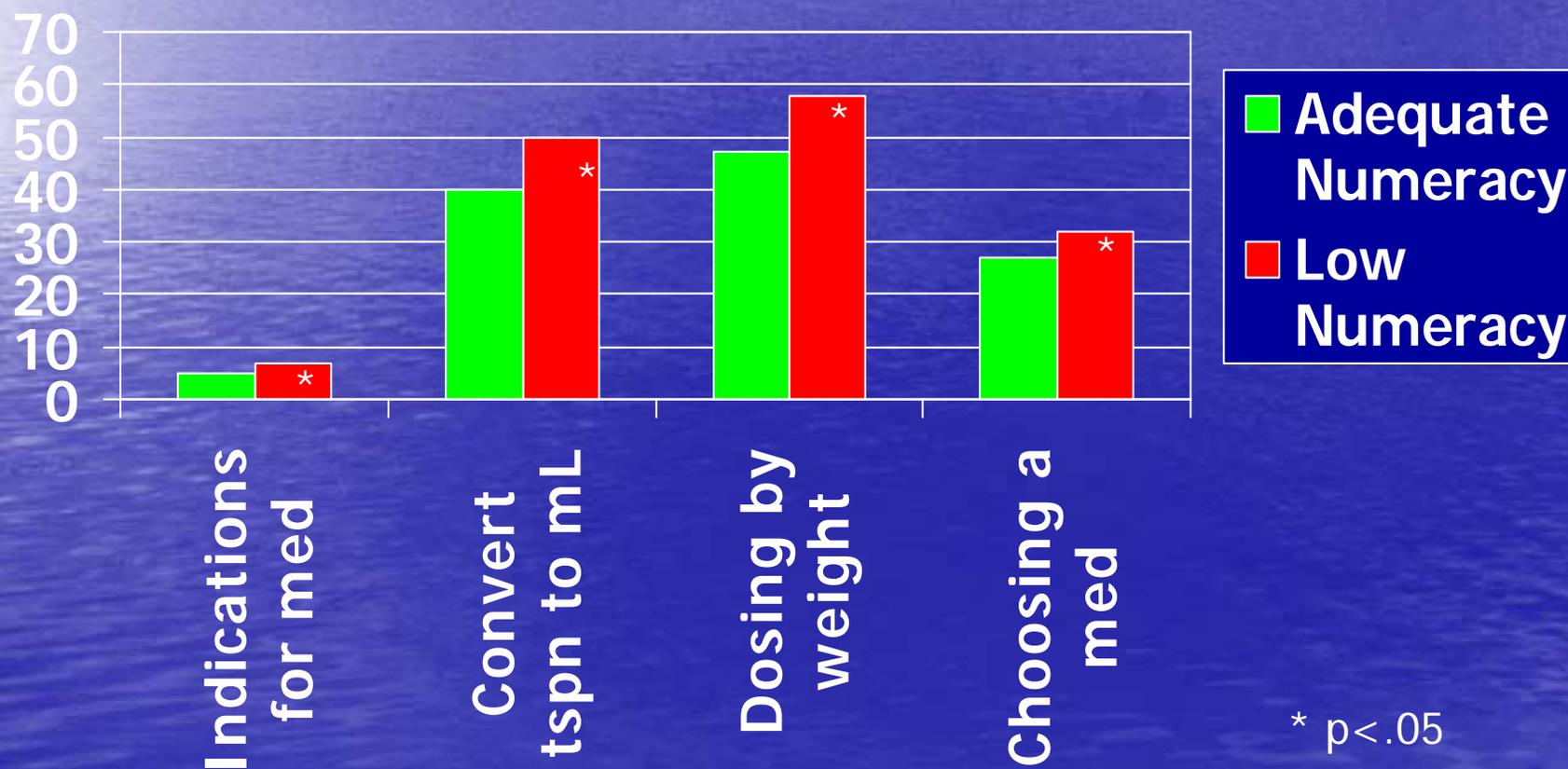
Odds of Using OTC Cough Medication for a Child < 2 years

Says	AOR (95% CI)*
Female	1.95 (0.87-4.34)
Education, per grade level	0.98 (0.86-1.11)
Numeracy, per grade level**	0.84 (0.71-0.99)
Word “Infant”***	3.08 (1.74-5.46)
Infant-related graphics**	5.93 (2.56-13.74)
Other Language**	3.53 (2.35-5.30)
Prior Experience Using Medication	1.46 (0.80 -2.68)

*Adjusted for age, gender, race, education level, and numeracy level; **p<.05

Health Literacy and Young Adults' Use of OTC Medication

% Incorrect



* p < .05

Lokker, Sanders, et al 2007.

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Research Agenda for Adolescent Health Literacy

- Better tools to measure teen health literacy
- Understanding the relationship between health literacy and teen health behaviors
- Understanding the relationship between health literacy and medication use
 - Adherence and error rates among teens with chronic illness
 - Moderating effects of medication cost and packaging
- Interventions to reduce literacy-related health disparities
 - Improving doctor-teen communication
 - Health-information kiosks to deliver tailored messages
 - Enhanced health literacy curricula in schools
 - Social marketing in mass media (e.g., billboards, film, internet)
 - Electronic health information delivery systems

Thank You

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