

# Defining, measuring and improving health literacy

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# Health literacy has become a “popular” issue in the past decade:

Rise in publications on health literacy 2000-2013

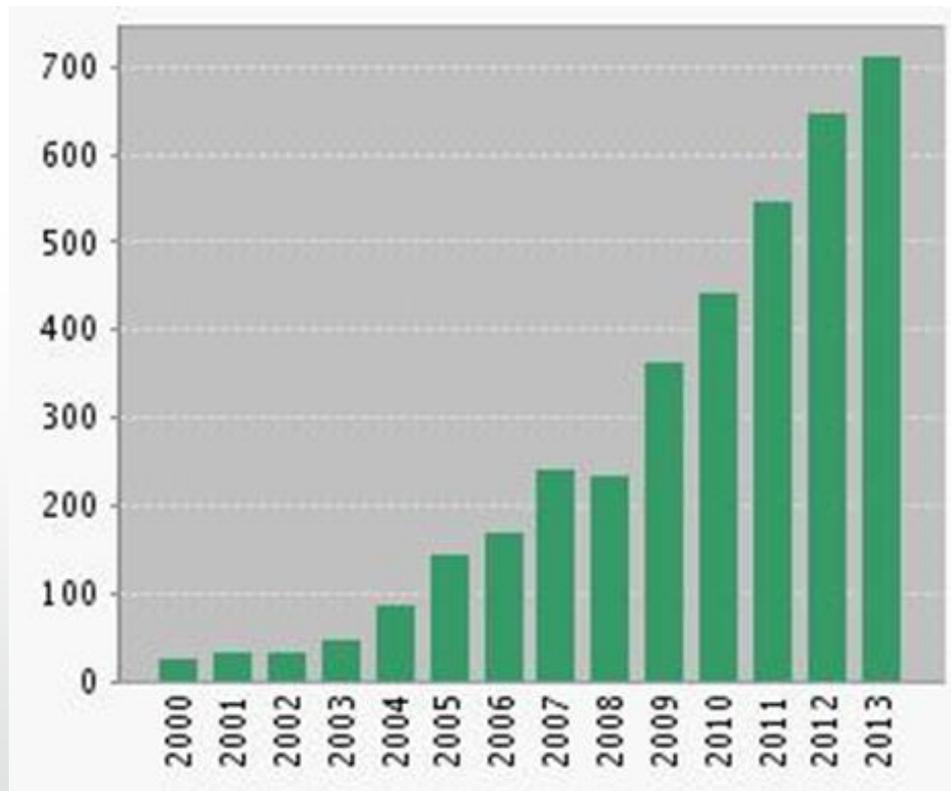
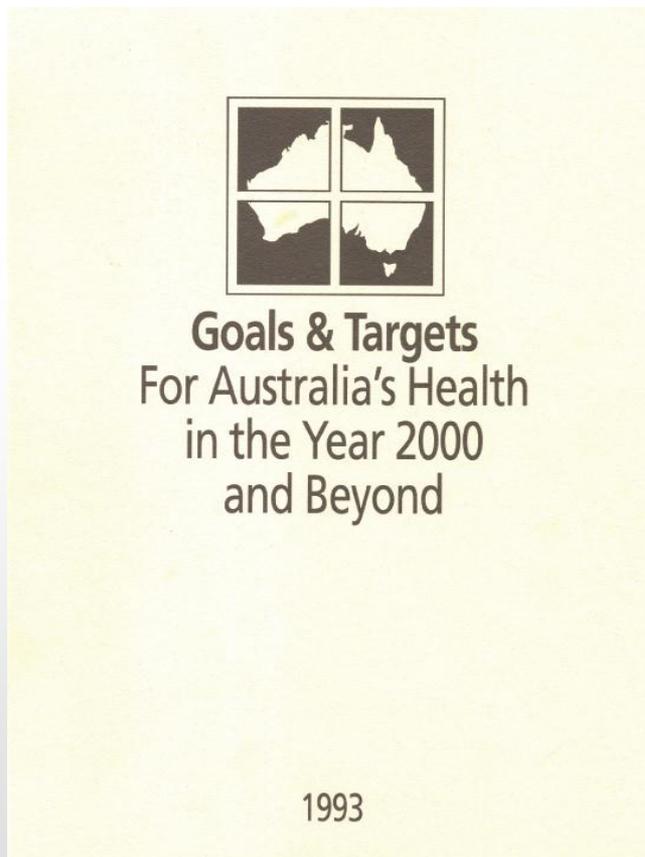


Chart from Thomson-Reuters *Web of Science* database. Accessed February 2015.

# Health literacy is not new – health literacy goals for Australia in 1993



## Health Literacy

### Need for action

Health literacy is defined as the ability to gain access to, understand, and use information in ways which promote and maintain good health. Health literacy is itself dependent on more general levels of literacy<sup>300</sup> among the population. Lack of literacy can affect people's health directly by limiting their personal, social, and cultural development or indirectly, by limiting their access to health information, and thus to the development of effective knowledge and skills.<sup>301</sup>

Studies show that about one million Australian adults have difficulty carrying out everyday literacy tasks.<sup>302</sup> Among both children and adults, those most likely to experience literacy difficulties are the socioeconomically disadvantaged.<sup>303</sup>

By comparison with their highly educated counterparts, relatively poorly educated men are 23% more likely to have serious chronic illness and 90% more likely to perceive their health as fair/poor; relatively poorly educated women are 15% more likely to have serious chronic illness, and 10% more likely to perceive their health as fair/poor.<sup>304</sup>

Aboriginal people have disproportionately poorer English literacy than any other group in Australia - partly because English is not their first language, and partly because of poor access to, and participation in education. People from non-English speaking backgrounds suffer similar

disadvantage.<sup>305-306</sup> Among older immigrants in particular the social isolation associated with migration is often exacerbated by low literacy levels in English.

The Australian Language and Literacy Policy has stated, as its first goal: *All Australian residents should develop and maintain a level of spoken and written English which is appropriate for a range of contexts, with the support of education and training programs addressing their diverse learning needs.*<sup>307</sup> The Policy also includes goals for learning languages other than English and for maintaining and developing Aboriginal and Torres Strait Islander languages where they are still used.

From a base of general literacy, personal health literacy enables people to make informed health choices. While knowledge on its own cannot ensure that people are able or willing to make healthy choices, in most cases it is an important precondition.<sup>308</sup> It is also necessary for people to be able to use services appropriately and to manage effectively chronic conditions (for example people with diabetes needing to achieve metabolic control, or optimal use of medications).

The range of knowledge which people require in order to become and stay healthy is very broad. In many ways, the process of setting targets itself exposes one reason

300 Literacy has been defined as the ability to read and use written information and to write appropriately, in a range of contexts. It is used to develop knowledge and understanding, to achieve personal growth and to function effectively in our society. Department of Employment, Education and Training. 1991. *Australia's Language: the Australian Language and Literacy Policy*, p 9.

301 Hartley R. 1989. *The Social Costs of Inadequate Literacy: A Report for International Literacy Year*. Australian Institute of Family Studies. Department of Employment Education and Training. Australian Government Publishing Service, Canberra. p xi.

302 Department of Employment, Education and Training. 1991. *Ibid*, p xiv. Australian Government Publishing Service, Canberra.

303 Department of Employment, Education and Training. 1991. *Ibid*, p 42.

304 National Health Strategy. 1992. *Enough To Make You Sick: How income and environment affect health*. Research Paper No 1. National Health Strategy, Melbourne. p38.

305 Department of Employment, Education and Training. 1991. *Ibid*, p 89.

306 Department of Employment, Education and Training. 1991. *Ibid*, p 39.

307 Department of Employment, Education and Training. 1991. *Ibid*, p 33.

308 Green L. & Kreuter M. 1991. *Health Promotion Planning: an educational and environmental approach*. 2nd Ed. Mayfield Publishing Co, Mountain View. p 155.

## Australia's health literacy goals 1993

- Health literacy was one of four major groups of goals and targets, and defined as “the ability to gain access to, understand and use information in ways that promote and maintain good health”
  - To achieve the goals of the Australian Language and Literacy Policy
  - To enhance knowledge and improve health literacy to enable people to make informed choices about their health
  - To enhance knowledge and improve health literacy to enable people to take an active role in bringing about changes in the environments that shape their health

Nutbeam D, Wise M, Bauman A et al in *Goals and Targets for Australia's Health*, Canberra, AGPS 1993

# Health literacy and health promotion

## Health Promotion Actions

## Health Promotion Outcomes (intervention impact measures)

## Intermediate Health Outcomes (modifiable determinants of health)

## Social and Health Outcomes

### Education

Examples include:  
Health and patient education,  
broadcast media communication

### Health Literacy

Measures include:  
health-related knowledge,  
attitudes, behavioural intentions,  
personal skills, self-efficacy

### Healthy behaviours and practices:

Measures include: tobacco and alcohol use, food choices, hygiene practices, use of medicines

### Social Outcomes

Measures include:  
quality of life, functional independence,  
social capital, equity

### Social mobilisation

Examples include:  
community development,  
and mobilisation

### Social action & influence

Measures include:  
community participation,  
social support, social norms,  
public opinion

### Effective health service

Measures include:  
provision of preventive services,  
access to appropriate health services

### Advocacy

Examples include:  
Lobbying, political organisation and activism,  
overcoming bureaucratic inertia

### Healthy public policy & organisational practice

Measures include:  
policy statements, legislation, regulation,  
resource allocation organisational practices

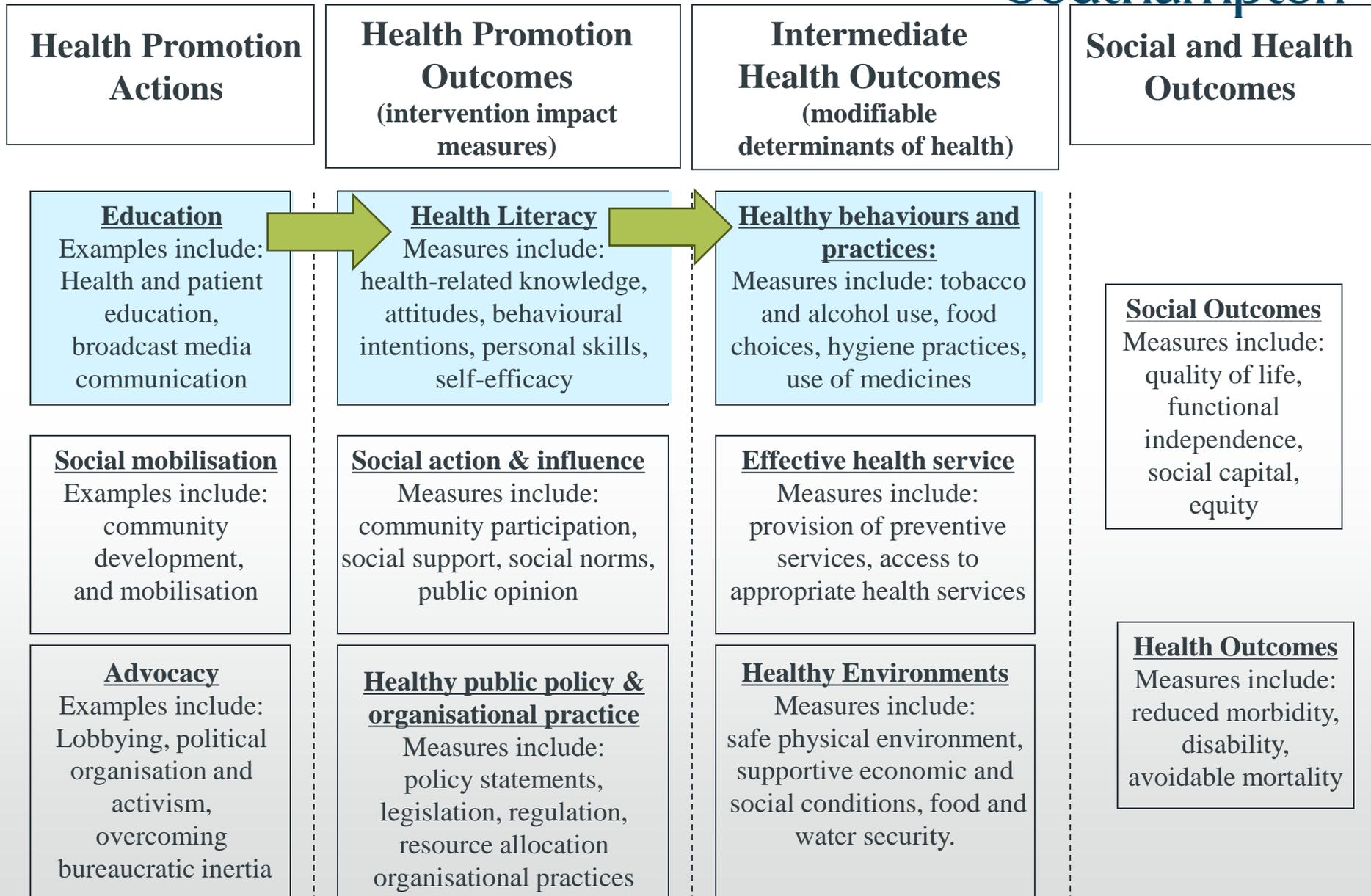
### Healthy Environments

Measures include:  
safe physical environment,  
supportive economic and social conditions,  
food and water security.

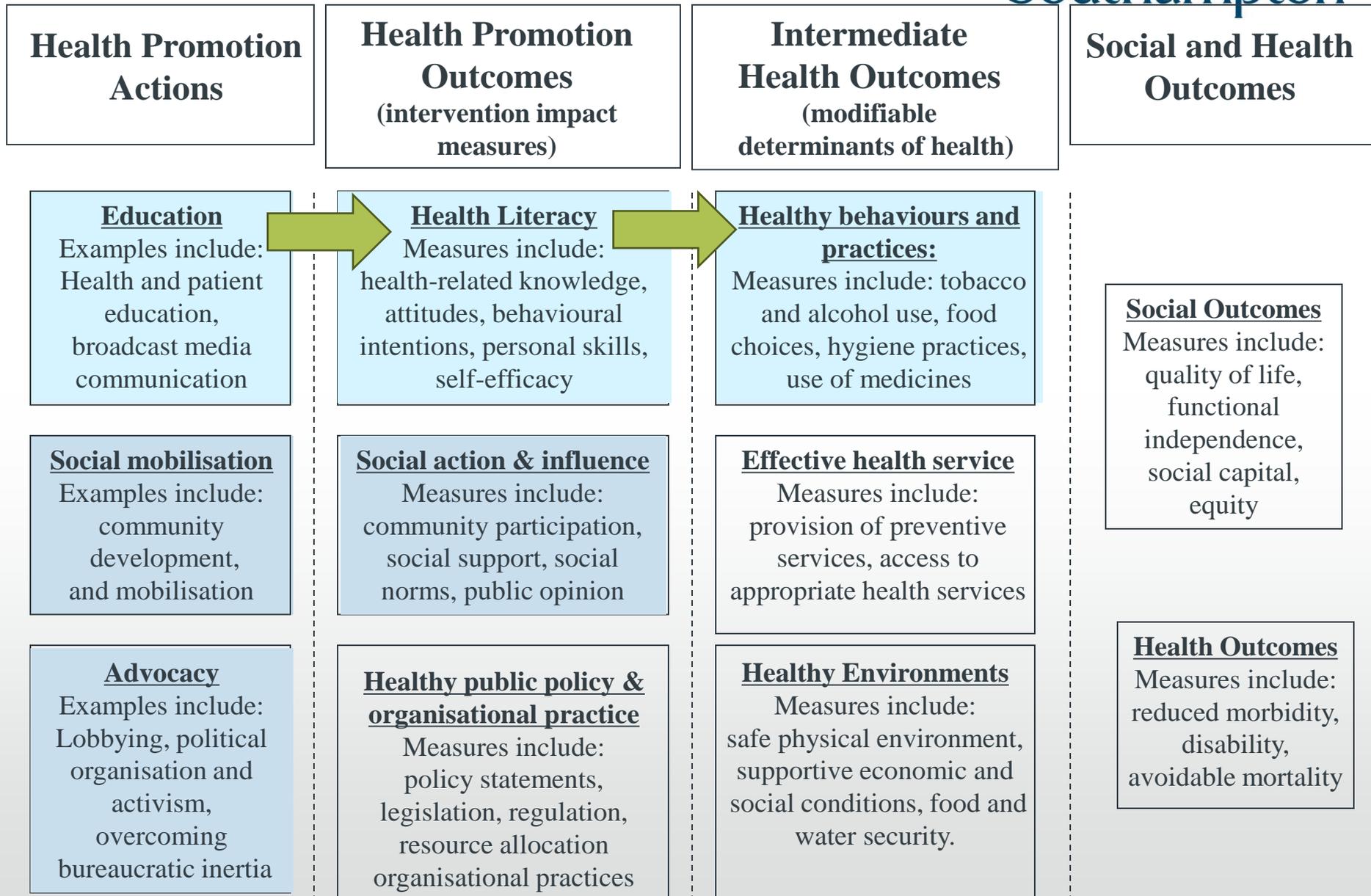
### Health Outcomes

Measures include:  
reduced morbidity, disability,  
avoidable mortality

# Health literacy and health promotion



# Health literacy and health promotion



# Literacy and Health

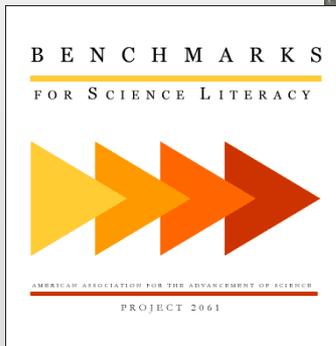
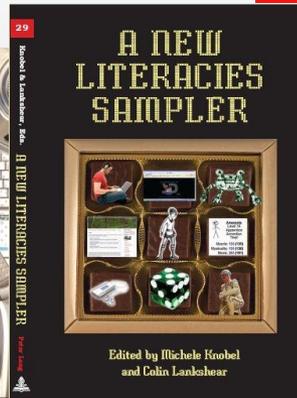
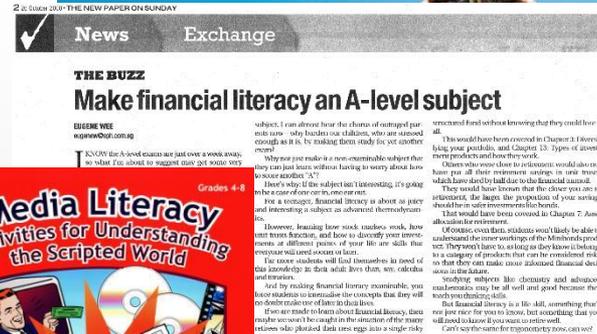
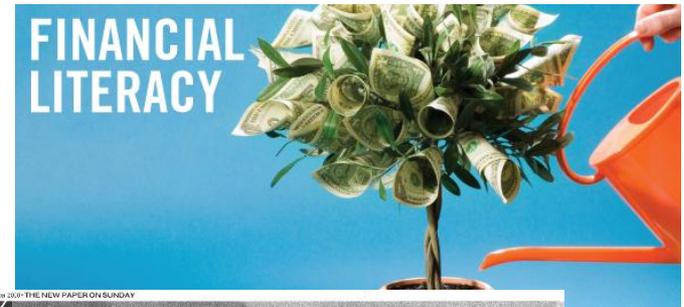
- Relationship between low literacy and a range of health related outcomes well established
- Some indirect effects related to employment and lifetime income
- Some direct effects of low literacy, individuals are\*
  - Less responsive to health education,
  - less likely to use disease prevention services, and
  - Less likely to successfully manage chronic disease

\*Berkman N D, Sheridan SL, Donahue KE, Halpern DJ, Crotty. 2011. Low Health Literacy and Health Outcomes: An Updated Systematic Review. *Annals of Internal Medicine*, 155, 97-107

# Literacy is context and content specific

- More accurate to talk about literacies for example:

- Financial literacy,
- Science literacy
- Media literacy,
- IT literacy (new literacy) and,
- Health literacy



# What is health literacy?

- **Health literacy** is the possession of literacy skills that are required to make health related decisions in a variety of different environments
- **Health literacy** describes the cognitive and social skills which determine the motivation and ability of individuals **to gain access to, understand and use information** in ways which promote and maintain health\*.
- **Health literacy** represents an observable set of cognitive and social skills that will vary from individual to individual.
- These skills enable individuals to obtain, understand and use information to make decisions and take actions that will have an impact on their health status.
- \*Nutbeam D. Health Promotion Glossary (1999) *Health Promotion International*, 13(4): 349-364. 1999 (also - WHO/HPR/HEP/98.1)

# Health literacy is also context and content specific – for example influenced by age, and stage in life

a pregnant woman attending  
ante-natal classes



an older person with  
chronic joint disease

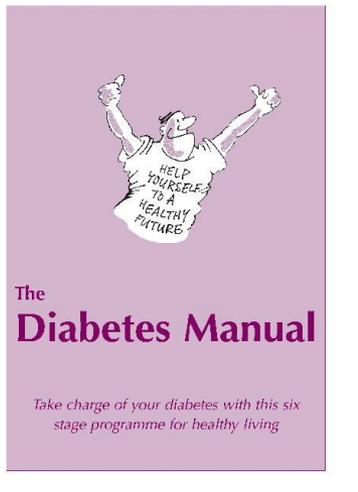
a young person receiving  
health education  
on illicit drugs at school.



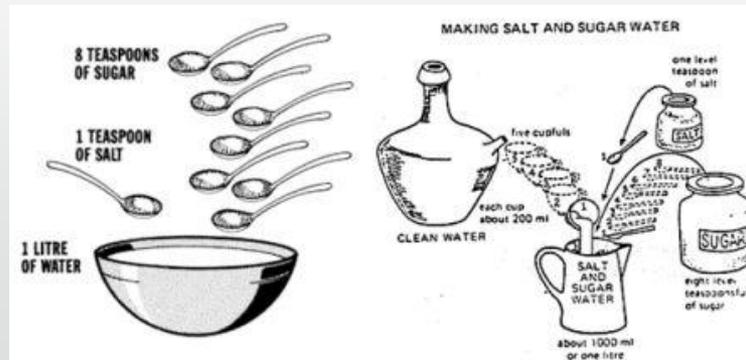
# Health literacy is context and content specific – for example influenced by disease type and socio-economic conditions

A person with diabetes receiving patient education

community education to reduce the spread of Ebola



a mother receiving education on oral rehydration to treat diarrhoea



## Measuring health literacy in *absolute* and *relative* terms

- In *absolute* terms we distinguish between those who have basic skills that enable them to access, understand, and use information for health, and those who do not.
- In *relative* terms we assess the skill differences between those who are able to apply more advanced cognitive and literacy skills to perform relatively challenging tasks in understanding and applying information for health, and those who cannot.

# Measuring relative differences in health literacy

- Several simple measures of health literacy have been tested, refined and validated over the past 20 years for use as screening tools in clinical practice,
- These are generally insufficient to measure relative differences in health literacy and work is underway to develop more complex measures for health literacy in several countries
- These measures include assessment of a person's ability to
  - gain access to age and context specific information from a variety of different sources;
  - discriminate between sources of information
  - understand and personalise health information that has been obtained
  - appropriately apply relevant health information for personal benefit

Nutrition Facts		1/2 cup
Serving Size	4	
Servings per container		
Amount per serving		
Calories	250	Fat Cal 120
<hr/>		
Total Fat	11g	20%
Sat Fat	9g	40%
Cholesterol	28mg	12%
Sodium	56mg	2%
Total Carbohydrate	30g	12%
Dietary Fiber	2g	
Sugars	23g	
Protein	4g	8%

\*Percent Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie intake.  
Ingredients: Cream, Biotin Milk, Liquid Sugar, Water, Egg Yolk, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

**Score Sheet for the Newest Vital Sign Questions and Answers**

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

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, 100 grams, 100 ml, 1 pint, half the container. None of the other answers. "Two servings," "60," "Two cups," or "one pint" are not correct answers for this question.

3. Your doctor advises you to reduce the amount of saturated fat in your diet. The results from #2 tell you that for each cup, which includes one serving of ice cream, if you ate nothing but cream, how many grams of saturated fat would you be consuming each day?  
Answer: 32 is the only correct answer.

4. If you usually eat 2,000 calories in a day, what percentage of your daily value of calories will you be getting if you eat one serving?  
Answer: 50% is the only correct answer.

READ TO SUBJECT: Preadium that you use through the following substances: Penicillin, penicillin, latex gloves, and latex gloves.

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.

Interpretation: Number of correct answers.  
Score of 6 suggests high health literacy (80% or more of tested literacy).  
Score of 5 indicates the possibility of limited literacy.  
Score of 4 or less always indicates adequate literacy.



## Distinctions between *absolute* and *relative* health literacy has led to two conceptualizations of health literacy

- Absolute measures of health literacy have had greatest application in **clinical care**.
  - Health literacy is conceptualized as a “risk” to be assessed and managed through adapted communication and environmental modification
- Relative measures of health literacy have had greatest application in **public health**.
  - Health literacy is conceptualized as an “asset” to be developed, as an outcome to health education and communication

\*Nutbeam D. 2008. The evolving concept of health literacy. *Social Science and Medicine*. 67. 2072-78

# Relative differences in health literacy\*

## Functional health literacy

- Basic health literacy skills that are sufficient for individuals to obtain relevant health information and apply that knowledge to a limited range of prescribed activities.

## Interactive health literacy

- More advanced literacy skills that enable individuals to extract information and derive meaning from different forms of communication; to apply new information to changing circumstances; and to interact with greater confidence with information providers such as health care professionals.

## Critical health literacy

- Most advanced cognitive skills which, together with social skills, can be applied to critically analyse information, and to use this information to exert greater control over life events and situations.

\*Nutbeam D. (2001) Health Literacy as a Public Health Goal: A challenge for contemporary health education and communication strategies into the 21st Century. *Health Promotion International*, 15; 259-67

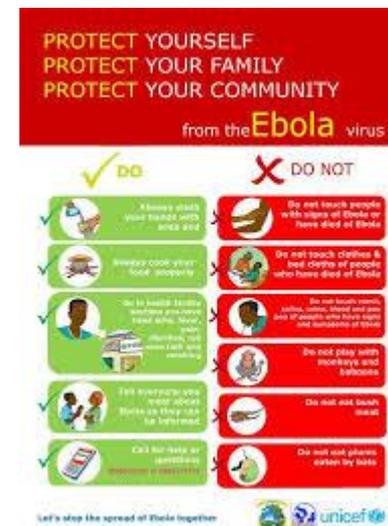
# Relative differences in health literacy

Classification of *functional*, *interactive* and *critical* health literacy indicates:

- Different categories of health literacy progressively allow for **greater autonomy in decision-making**, and personal empowerment.
- Progression between categories is not only dependent upon cognitive development, but also **exposure to different forms of information** (content and media).
- It is also dependent upon a person's **confidence to respond to health communications** – described as *self-efficacy*.

# Improving functional health literacy

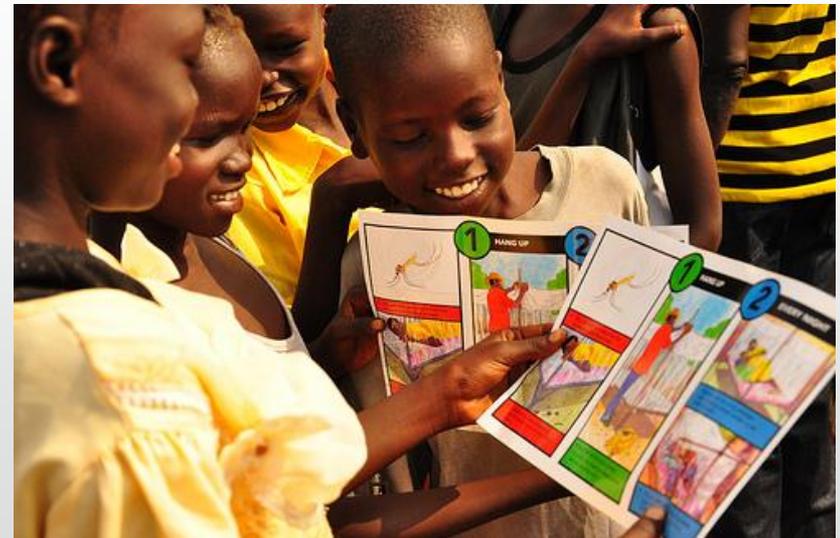
- Health literacy can be improved through education and is a measurable outcome to health education
- Differences in educational methods, media and content will result in different learning outcomes
- Improving *functional health literacy* based on relatively limited communication of factual information on health risks, and on how to use medications and health care services



# Improving *interactive* and *critical* health literacy

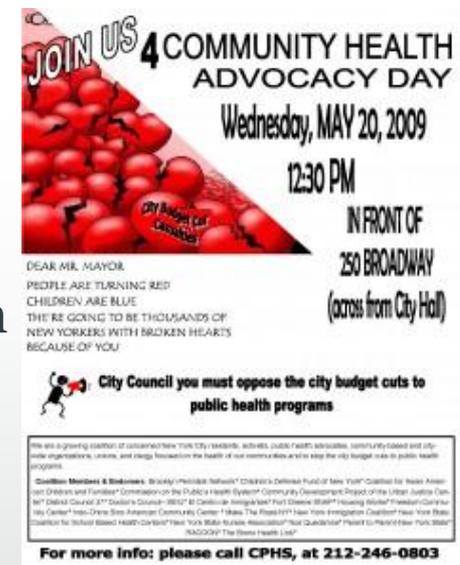
## Interactive health literacy

- Improving *interactive health literacy* will require the use of more interactive forms of health education directed towards improving self-confidence to act on information and advice received.
- This is best delivered in a more structured educational setting, or through well designed on-line learning programmes.
- Good examples can be found in:
  - school health education programs,
  - health clinic education



# Improving interactive and critical health literacy

- Improving *critical health literacy* involves health education that is more interactive and may include the communication of information to support a variety of health actions to address both personal and social determinants of health.
- The *content* of health education should not only be directed at changing personal lifestyle but also at raising awareness of the social determinants of health, and actions which may lead to modification of these determinants.
- This also has implications for the education and *communication methods*, challenging health educators to communicate in ways that draw upon personal experience, invite interaction, participation and critical analysis.



# What is the state of science?

- Good research in clinical settings linking poor health-related literacy with range of clinical outcomes
- Rapid assessment of health literacy is feasible in normal clinical setting
- Some intervention trials in clinical settings demonstrate potential effectiveness and cost savings\*
- Undeveloped but promising research outside health care settings (schools, adult education, E-learning)

\*Sheridan S, Halpern DJ, Viera AJ et al. Interventions for Individuals with Low Health Literacy: A Systematic Review. *Journal of Health Communication*. 2011; 16.3.30-54

# Characteristics of effective interventions in clinical practice

Mixed strategy and high intensity communications that employ:

- the use of theory and pilot testing,
- an emphasis on skill building,
- delivery by a health professional
- use of simplified text and
- Use of “teach-back” methodologies

Sheridan S, Halpern DJ, Viera AJ et al. Interventions for Individuals with Low Health Literacy: A Systematic Review. *Journal of Health Communication*. 2011; 16.3.30-54

## Where to from here - in research?

- Continue to **broaden intervention development and evaluation outside of health care setting and disease groups** into schools, adult learning, community development
- Recognize and explore the **potential of eHealth** based on increasing access to digital and mobile information
- Development of measures that incorporate **wider set of skills and capacities** represented by health literacy - eg inclusion of measures of context specific self-efficacy (confidence/capacity to act)

# Where to from here - in clinical policy and practice?

- Continue to **promote understanding** among clinicians of the impact of poor literacy on clinical outcomes
- Progress recognition that
  - self confidence to act on knowledge requires **broader range of educational and communication methods** than commonly used (eg teach-back)
  - Effective communication can be supported by **service management and organization** that is “literacy sensitive” (eg minimise/simplify form-filling)

# Where to from here - in public health policy and practice?

- Health literacy fundamentally dependent upon **levels of basic literacy** in the population – make links between these two social goals,
- School health education provides **important foundations for health literacy**
- Exploit great potential in **existing educational interventions in health care** such as ante-natal education, patient education for chronic disease management
- **Adult education and skills development programs** can provide ideal partnership for adult health literacy development

# Summary and conclusions

- Health literacy fundamentally dependent upon **levels of basic literacy** in the population
- Definition and measurement of **health literacy still evolving** and can usefully draw down on existing concepts, definitions and measurements from general literacy
- **Improving the sensitivity of clinicians** (and health service administrators) to the impact of low health literacy helps to minimize disadvantage and improve health outcomes
- Health literacy can be viewed as **health promotion outcome**, a product of more interactive, empowering health education
- Implies **widening of the content, method and settings of educational interventions** to produce a broader range of outcomes
- More **intervention development** is needed

The end

Thank you

## Case study – Decision aid for low literacy population

- Despite a substantial increase in the availability of decision aids, few attempts have been made to examine their application and effectiveness with socio-economically disadvantaged and lower literacy populations.
- Study to determine the extent to which adults with lower levels of education can make an informed choice about colorectal cancer screening, using a patient decision aid.
- Project involved substantial formative/qualitative research to develop a decision-aid that was suitable for use with individuals with widely variable literacy skills\*

\*Smith S, Trevena L, Barratt A, Nutbeam D, McCaffery K. 2008. Information needs and preferences of low and high literacy consumers for decisions about colorectal cancer screening. *Health Expectations* 11.2, 123-36

Smith S, Dixon A, Trevena L, Nutbeam D, McCaffery K. 2009. Exploring patient involvement in healthcare decision-making across different education and functional health literacy groups. *Social Science and Medicine* 69. 1805-1812 28

# Case study – Decision-aid for low literacy population: Outcomes from RCT\*

## Key results:

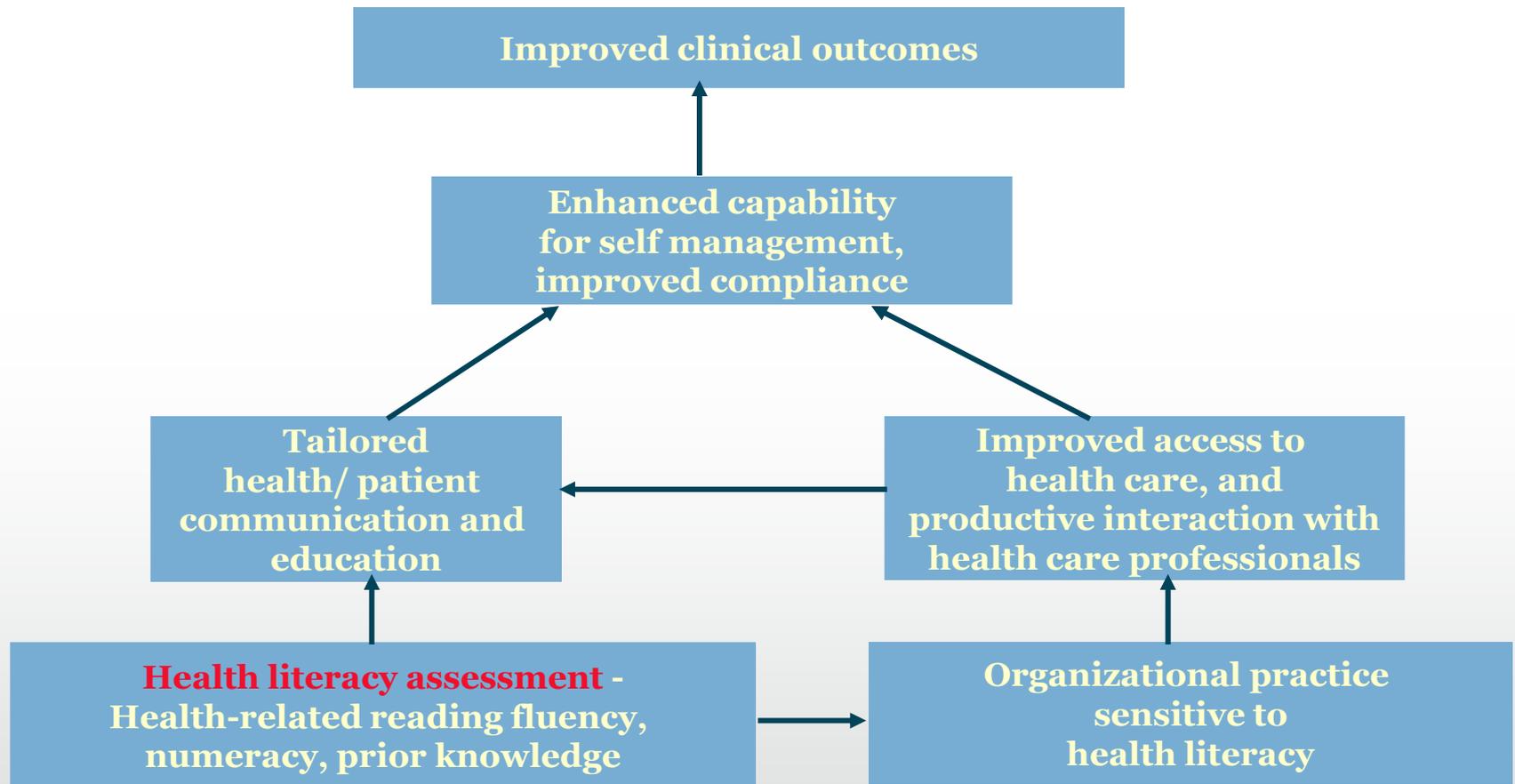
- Intervention population demonstrated higher levels of knowledge compared to the controls
- Attitudes towards screening were less positive in the intervention group, with 51.0% versus 65.1% of control participants.
- Screening participation was reduced in the DA groups (59.1% of DA participants completed the versus 75.1% in the controls;
- The DA increased the proportion of participants who made an informed choice (knowledge –based, consistent with values) from 11.6% in the control arm to 33.6% in the intervention group.

## Conclusion

Tailored decision support information can be effective in facilitating informed choices. Informed decision-making may lead to lower uptake of screening.

\*Smith S; Trevena L; Simpson J; Barratt A; Nutbeam D; McCaffery K. 2009. Informed choice in colorectal cancer screening among adults with lower levels of education: A randomized controlled trial of a decision aid (BMJ, 2010)

# Conceptual model of health literacy as a risk



1. Baker D, The Meaning and Measure of Health Literacy. *Jnl of General Internal Medicine* 21.8, 878-883. 2006
2. Paasche-Orlow MK, Wolf MS. The causal pathway linking health literacy to health outcomes. *American Journal of Health Behaviour*; 2007; 31 (Supplement 1): S19-26

## Developing interactive and critical health literacy skills

