

# Social And Behavioral Determinants of Health

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**February 6, 2014 (8:40-9:35 am session)**

*Institute of Medicine Committee on Recommended Social and  
Behavioral Domains and Measures for Electronic Health Records*

Beckman Center of the National Academies Of Sciences

100 Academy Drive, Irvine, CA 92617

# Phase II Questions

- What specific measures under each domain specified in Phase 1 should be included in EHRs?
- What are the obstacles to adding these measures to the EHR and how can these obstacles be overcome?
- What are the possibilities for linking EHRs to public health departments, social service agencies, or other relevant non-healthcare organizations?

# My Charge

- What specific measures under each domain specified in Phase 1 should be included in EHRs?
  - “Characteristics of measures that make them effective in an EHR” (Karen Helsing email)

# Eastabrooks et al. (2013)

## J Am Med Inform Assoc.

- Expert panel subject matter working groups
  - Examined available tools using standard criteria
    - Including extent to which item/measure potentially enhances patient engagement.
  - Recommended up to 4 candidate measures for inclusion in EHR (<http://www.gem-beta.org>)
- Reviewed by 93 health professionals
  - Primary care, patients, professional societies, scientists, regulators, federal entities
- Finalized in town hall meeting with stakeholders

# Nine Domains

- **Behavioral characteristics**
  - Eating patterns (3 items)
  - Physical activity (2 items)
  - Risky drinking (1 item)
  - Sleep quality (2 items)
  - Smoking/tobacco use (2 items)
  - Substance use (1 item)
- **Psychosocial characteristics**
  - Anxiety and depression (4 items)
  - Stress (1 item)
- **Patient characteristics**
  - Demographics (9 items)

## Research and applications

**Table 4** Recommended common data elements by domain

Domain	Final measure	Recommended frequency	Items
Eating patterns	Modified from starting the conversation (STC) <sup>22</sup>	Annual	Over the past 7 days: a. How many times a week did you eat fast food or snacks or pizza? b. How many servings of fruits/vegetables did you eat each day? c. How many soda and sugar sweetened drinks (regular, not diet) did you drink each day?
Physical activity	The exercise vital sign <sup>23</sup>	Annual	a. How many days of moderate to strenuous exercise, like a brisk walk, did you do in the last 7 days? b. On those days that you engage in moderate to strenuous exercise, how many minutes, on average, do you exercise at this level?
Risky drinking	Alcohol use screener <sup>24</sup>	Annual	How many times in the past year have you had X or more drinks in a day? (where X is 5 for men and 4 for women)
Smoking/tobacco use	Tobacco use screener <sup>25</sup>	Annual	Have you used tobacco in the last 30 days? Smoked cigarettes: Yes/No Smokeless tobacco product: Yes/No
Substance use	Drug use screener <sup>26</sup>	Annual	How many times in the past year have you used an illegal drug or used a prescription medication for non-medical reasons?
Anxiety and depression	PHQ-4 <sup>27</sup>	Annual	Over the past 2 weeks have you been bothered by these problems? (Leichert scale: not at all, several days, more days than not, nearly every day) a. Feeling nervous anxious, or on edge b. Not being able to stop or control worrying c. Feeling down, depressed, or hopeless d. Little interest or pleasure in doing things
Stress	Distress thermometer <sup>28</sup>	Annual	Please circle the number (0–10) that best describes how much distress you have been experiencing in the past week including today.
Demographics	Multiple sources <sup>29</sup>	Variable	9 items: Sex, date of birth, race, ethnicity, English fluency, occupation, household income, marital status, education, address, insurance status, veteran's status.
Sleep	Adapted BRFSS <sup>25</sup> ; Neuro-QOL <sup>30</sup>	Annual	Do you snore or has anyone told you that you snore? In the past 7 days, I was sleepy during the daytime... never, rarely, sometimes, often, always

# Example Data Elements

- How many times a week did you eat fast food or snacks or pizza?
  - Snacks could be healthy snacks
- How many times in the past year have you used an illegal drug or used a prescription medication for non-medical reasons?
  - Is marijuana an "illegal" drug?

# Important Aspects of Measures

- Same people get same scores
- Different people get different scores and differ in hypothesized ways
- Measurement equivalence for different subgroups (e.g., age, gender, race/ethnicity)
- Measure is practical
- Standardized metric facilitating comparisons



# Comparability of Scores (Two-sided tape measure)

**We Need the Health Equivalent of a  
Two-Sided Tape Measure**



<http://www.ahrq.gov/news/events/conference/2009/ware/index.html>

# How Much is Lost in Using Single Items?

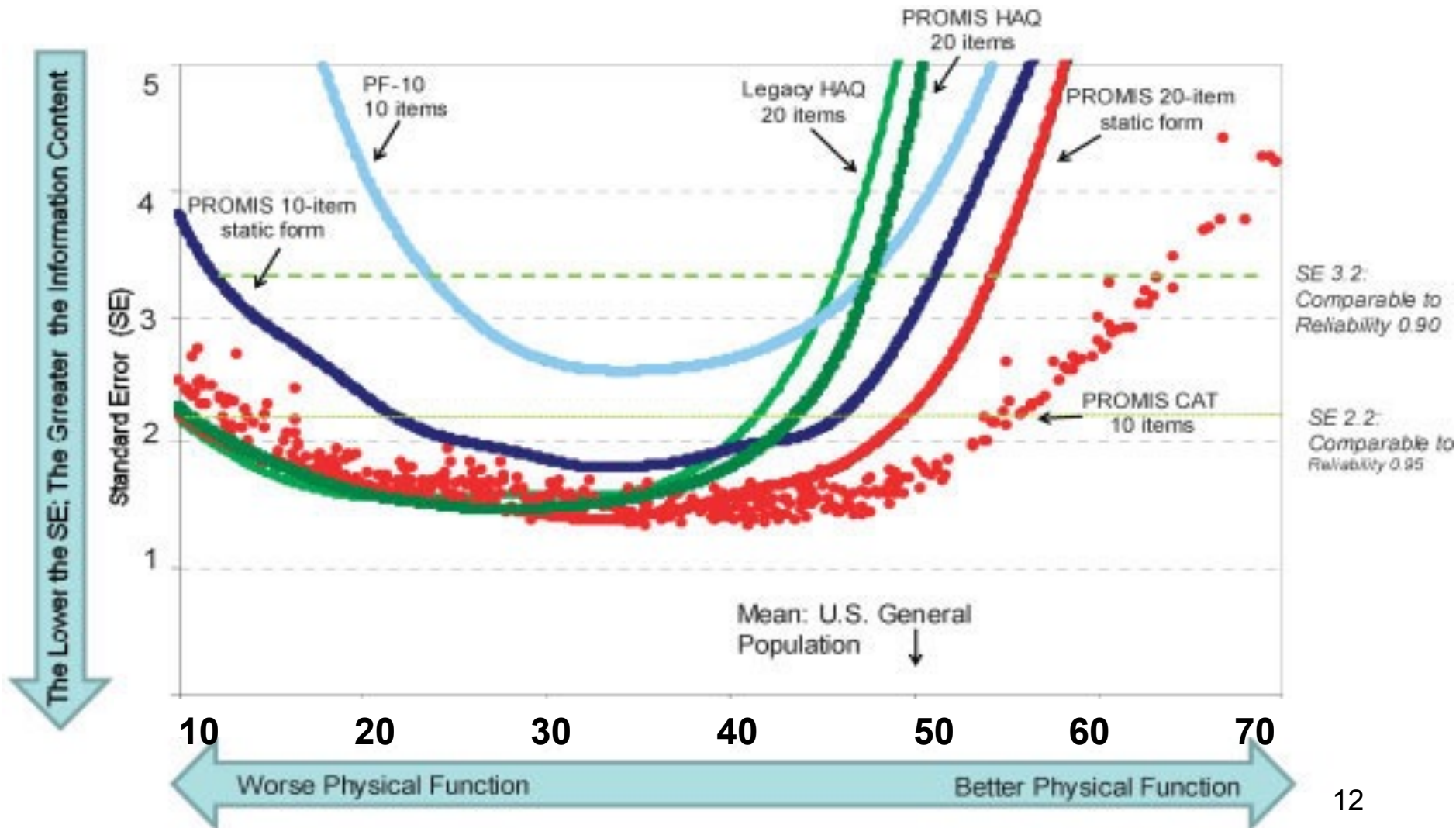
"IRT is grounded in knowing that any subset from a pool of unidimensional items can be used to represent the underlying concept."

- Identify best subset of items for estimating score based on large pool of items
  - Those with the highest discrimination with thresholds closest to where people are on the underlying continuum (i.e., most informative).

# Reliability Target for Use of Measures with Individuals

- Reliability ranges from 0-1
  - 0.90 or above is goal
  - $SEM = SD (1 - \text{reliability})^{1/2}$
  - $95\% \text{ CI} = \text{true score} \pm 1.96 \times SEM$ 
    - if true z-score = 0, then CI: -.62 to +.62
    - Width of CI is 1.24 z-score units
- Reliability = 0.90 when SE = 3.2
  - T-scores (mean = 50, SD = 10)  $T = 50 + (z * 10)$
  - Reliability =  $1 - (SE/10)^2$

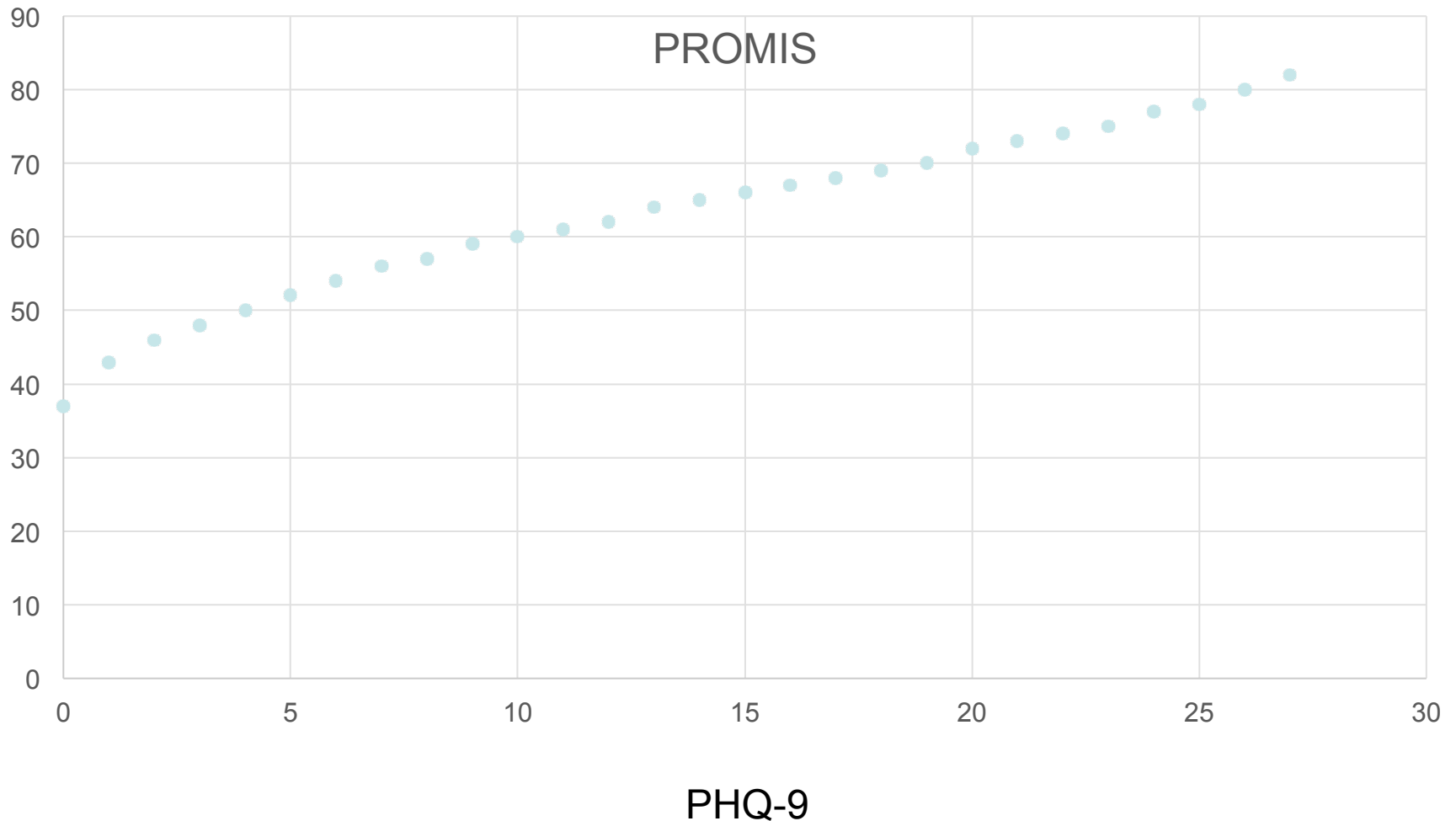
# PROMIS Physical Functioning vs. "Legacy" Measures



# Potential Targets

- PROMIS Physical activity bank
- PROMIS alcohol use bank
- PROMIS Sleep-related impairment bank
- Maria Edelen smoking banks
- PROMIS emotional distress bank

# Conversion of PHQ-9 to PROMIS Depression



# Thank you.



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"Janet, would you please delete all of my personal snide remarks and print a copy of Ms. Cole's electronic medical record?" 15