Patient Reports about their Health Care and Health

Ron D. Hays, Ph.D UCLA Center for East-West Medicine

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Disclosures

 Professor, UCLA Department of Medicine, Division of General Internal Medicine and Health Services Research (<u>drhays@ucla.edu</u>)

- Research funding from
 - AHRQ for Consumer Assessment of Healthcare Providers and Systems (CAHPS[®]) project
 - NCI for Patient-Centered Assessment Resource (PCAR)

Concerns About US Health Care System

- Access to care
 - ~ 50 million people uninsured before ACA
 - ~ 32 million people uninsured before ACA
- Cost of care
 - ~ \$ 2.7 Trillion
- Effectiveness (quality) of care
 - not all needed care is delivered
 - not all care delivered is beneficial

Quality of care measurement



- Focus has been on expert consensus about clinical process
- Variant of RAND Delphi Method

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- But how patients perceive their care is also important
- Patient reports about care are used to assess the patient's experiences.



Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Approach

- Focus on what patients want to know about AND can accurately report about
 - Communication with health care provider
 - Access to care
 - Staff courtesy and respect



CAHPS has a family of surveys

Ambulatory Care



Facility

Clinician & Group Survey Dental Plan Survey ECHO® Survey Health Plan Survey Home Health Care Survey Surgical Care Survey

Hospital Survey Nursing Home Survey In-Center Hemodialysis Survey



CAHPS Medicare Survey Composites



CAHPS Medicare Survey 2012 Care Coordination Items (n = 266,466)

Personal doctor:

- 1. has medical records or other information about your care during visits
- 2. talks about all medicines you are taking
- 3. informed and up-to-date about care from specialists
- 4. helps manage care from providers and services
- 5. follows up on test results

Analyses

- Categorical confirmatory factor analysis
 - Patient-level and multi-level (patient and plan)
 - Comparative Fit Index (CFI) > 0.95
 - Root Mean Square Error of Approximation (RMSEA) < 0.06
- Reliability >= 0.70
 - Internal consistency (coefficient alpha)
 - Plan-level reliability

Regress Global Rating on Composites

Using any number from 0 to 10, where 0 is the worst personal doctor possible, and 10 is the best personal doctor possible, what number would you use to rate your personal doctor?

 \square 0 Worst personal doctor possible

- **□** 1
- □ 2
- □ 3
- $\square 4$
- □ 5
- $\Box 6$
- $\square 7$

- □ 10 Best personal doctor possible

Confirmatory Factor Analyses

- Good fit for patient-level CFA
 - CFI = 0.996
 - RMSEA = 0.020
- Good fit for multi-level CFA
 - CFI = 0.997
 - RMSEA = 0.014



Standardized Factor Loadings

	Within-Level	Between-Level
Has medical records	0.72 (0.73)	0.86
Talks about medicines	0.65 (0.64)	0.58
Informed and up-to-date	0.70 (0.68)	0.49
Helps manage care	0.71 (0.73)	0.97
Follow-up on test results	0.71 (0.70)	0.72

Loadings from patient-level CFA shown within parentheses. Multi-level CFA loadings are the other numbers.

Reliability

- Internal consistency (alpha) = 0.70
- Plan-level
 - ICC = 0.022 at plan level
 - Number of patients needed to obtain
 ➢ 0.70 reliability = 102
 ➢ 0.80 reliability = 170

Regression of Global Rating of Personal Doctor on CAHPS Composites

Composite	Standardized Beta
Communication	0.62
Care Coordination	<u>0.17</u>
Getting Care Quickly	0.03
Getting Needed Care	0.01
Customer Service	002 (ns)

 $(R^2 = 0.56)$

Implications

Because the care coordination composite has satisfactory reliability and is uniquely associated with the global rating of the personal doctor

- Center for Medicare & Medicaid Services now
 - Reports care coordination to patients and health plans
 - Uses it in Quality Bonus Payments to Managed Care Plans
- Need to examine:
 - How it is related to other ways of assessing care coordination such as work flow, scheduling and documentation rated by external observers.

How Do We Know If Health Care Is Effective?

• Effective care maximizes probability of desired outcomes

• Outcomes are markers of whether or not care is effective

Traditional Clinical Outcomes

- Survival
- Disease occurrence, complications, other adverse events
- Clinical measures/biological indicators
 - Blood pressure
 - Blood hemoglobin level
 - Symptoms (e.g. fever, night sweats)

Quality of Life http://www.galmedics.com/welcome



Health-Related Quality of Life (HRQOL)

What the person can DO (functioning)

- Self-care
- Role
- Social

How the person FEELs (well-being)

- Emotional well-being
- Pain
- Energy



Health-Related Quality of Life (HRQOL)



In general, how would you rate your health?

Excellent Very Good Good Fair

Poor



Greater % of fair or poor health reported by females (17%) than males (15%) Does your health now limit you in walking more than a mile?

(If so, how much?)

Yes, limited a lot Yes, limited a little No, not limited at all

How much of the time during the past 4 weeks have you been happy?

None of the time A little of the time Some of the time Most of the time All of the time



Physical Functioning and Emotional Well-Being at Baseline for 54 Patients at UCLA-Center for East West Medicine



MS = multiple sclerosis; ESRD = end-stage renal disease; GERD = gastroesophageal reflux disease.

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Significant Improvement in all but 1 of SF-36 Scales (Change is in T-score metric)

	Change	t-test	prob.
PF-10	1.7	2.38	.0208
RP-4	4.1	3.81	.0004
BP-2	3.6	2.59	.0125
GH-5	2.4	2.86	.0061
EN-4	5.1	4.33	.0001
SF-2	4.7	3.51	.0009
RE-3	1.5	0.96	.3400 ←
EWB-5	4.3	3.20	.0023
PCS	2.8	3.23	.0021
MCS	3.9	2.82	.0067

Effect Size

(Follow-up – Baseline)/ SD_{baseline}

Cohen's Rule of Thumb:

 \checkmark ES = 0.20 Small





Effect Sizes for Changes in SF-36 Scores



PFI = Physical Functioning; Role-P = Role-Physical; Pain = Bodily Pain; Gen H=General Health; Energy = Energy/Fatigue; Social = Social Functioning; Role-E = Role-Emotional; EWB = Emotional Well-being; PCS = Physical Component Summary; MCS = Mental Component Summary. 0.11 0.13 0.21 0.24 0.30 0.35 0.35 0.36 0.41 0.53

Defining a Responder: Reliable Change Index (RCI)

 $X_{2} - X_{1}$ $(\sqrt{2})(SEM)$ $SEM = SD_{hl} \times \sqrt{1 - r_{rr}}$

Note: SD_{bl} = standard deviation at baseline r_{yy} = reliability

Significant Change

$$\frac{X_2 - X_1}{(\sqrt{2})(SD)\sqrt{(1 - r_{xx})}} >= 1.96$$

Amount of Change in Observed Score Needed To be Statistically Significant

$$(\sqrt{2})(SD)\sqrt{(1-r_{xx})}(1.96)$$

Note: SD_{bl} = standard deviation at baseline and r_{xx} = reliability

Amount of Change in Observed Score Needed for Significant Individual Change

Scale	RCI	Effect size	Cronbach's alpha
PF-10	8.4	0.67	0.94
RP-4	8.4	0.72	0.93
BP-2	10.4	1.01	0.87
GH-5	13.0	1.13	0.83
EN-4	12.8	1.33	0.77
SF-2	13.8	1.07	0.85
RE-3	9.7	0.71	0.94
EWB-5	13.4	1.26	0.79
PCS	7.1	0.62	0.94*
MCS	9.7	0.73	0.93*

* Mosier's formula (not coefficient alpha).

Amount of Change Needed for Significant Individual Change



PFI = Physical Functioning; Role-P = Role-Physical; Pain = Bodily Pain; Gen H=General Health; Energy = Energy/Fatigue; Social = Social Functioning; Role-E = Role-Emotional; EWB = Emotional Well-being; PCS = Physical Component Summary; MCS = Mental Component Summary.

7-31% Improve Significantly

	% Improving	% Declining	Difference
PF-10	13%	2%	+ 11%
RP-4	31%	2%	+ 29%
BP-2	22%	7%	+ 15%
GH-5	7%	0%	+ 7%
EN-4	9%	2%	+ 7%
SF-2	17%	4%	+ 13%
RE-3	15%	15%	0%
EWB-5	19%	4%	+ 15%
PCS	24%	7%	+ 17%
MCS	22%	11%	+ 11%

PROMIS



Self-report measures for adults and children in the general population and individuals with chronic conditions

T-score metric for U.S. general population (Mean = 50, SD = 10)

<u>http://www.healthmeasures.net/explore-</u> <u>measurement-systems/promis/measure-</u> <u>development-research/promis-international</u>

Patient-Reported Outcomes Measurement Information System (PROMIS®) Framework



Content <u>can</u> be expanded to be conditionspecific: Pain Interference "Plus" Items

Existing PROMIS items (8)

- How much did pain interfere with
 - your enjoyment of life?
 - your close personal relationships?
 - your day-to-day activities?
 - your ability to work (include work at home)?
 - your ability to participate in social activities?
 - your ability to remember things?
- How irritable did you feel because of pain?
- How often did pain prevent you from walking more than 1 mile?

New condition-specific "gap" items (5)

- How much did knee pain
 - limit your daily activities?
 - interfere with your walking?
 - interfere with going up stairs?
 - interfere with going down stairs?
- How often did knee pain make you feel depressed?

PROMIS[®] Profile Short Forms (v2) (29-43-57 items)



(+ pain intensity)



Administration Options

- Paper (short forms and profiles only)
- Computer (e.g., Assessment Center, REDCap)
- App (e.g., PROMIS iPad app)

Interpreting PROMIS T-Scores



*These are general guidelines to aid in interpreting PROMIS T-scores. Within a given condition or PROMIS domain, thresholds may differ.



PROMIS Fatigue Across Five Clinical Conditions



Test Information Functions: Separate and Combined







Measurement floors/ceilings can be addressed by extending the item bank

High PF

Low PF

Patients Items New Item New Item .## PFC33 New Item New Item New Item New Item New Item New Item ****** PFA39 ****** PFA1 PFB51 PFB7 New Item ######## PFA19 New Item ******* ******* PEC35 New Item ******* PFC12 PFC13 COROSCRATCH M New Item PEA33 PEA4 PEB PFB24 PFB9 PFA25 PFB44 PFB8 PFC36 PFA41 PFA42 PFC10 PFC32 PFA3 PFA5 PFC40 PFA21 PFA23 PFA7 PFB40 PFB42 PFB50 PFC20 PFC34 PFC38 PFB1 PFB28 PFB49 PFC37 PFA31 PFA34 PFC6 PFA29 PFB14 PFB39 PFC39 PFC41 PFC54 PFA28 PFA32 PFA53 PFA56 PFB10 PFB12 PFB3 PFB32 PFB34 PFB56 PFA16 PFA49 PFA52 PFA9 PFB11 PFB13 PFA22 PFA38 PFA45 PFA47 PFB20 PFB21 PFB27 PFB54 PFC29 PFC43 PFC52 PFA37 PFA44 PFA54 PFB17 PFB23 PFB25 PFB36 PFC31 PFC46 PFC56 PFA35 PFA40 PFA43 PFA48 PFA55 PFA6 PFB15 PFB26 PFB30 PFB33 PFB41 PFC45 FB37 PFB43 PFC47 PFC49 PFA36 PFA51 PFB22 PFB29 PFB48 PFC51 PFC53 PFB16 PFB18 PFB19 PFB31 PEA50

Computer Adaptive Test (CAT)

high physical function



low physical function

Who does CATs?







The PROMIS Metric

- T Score
 - Mean = 50
 - SD = 10
 - -Referenced to US General Pop.
 - **—** T = 50 + (z * 10)

www.healthmeasures.net

Reliability Target for Use of Measures with Individuals

- Reliability ranges from 0-1
 0.90 or above is goal
- SE = SD (1- reliability)^{1/2}
- For T-scores
 - Reliability = $1 (SE/10)^2$
 - Reliability = 0.90 when <u>SE = 3.2</u>
 - 95% CI = true score +/- 1.96 x SE (observed score = true score if = mean)

I was grouchy [1st question]

 Never 	[39]
• Rarely	[48]
 Sometimes 	[56]
• Often	[64]
 Always 	[72]

Estimated Anger = 56.1 SE = 5.7 (rel. = 0.68)

I felt like I was ready to explode

[2nd question]

- Never
- Rarely
- Sometimes
- Often
- Always

Estimated Anger = 51.9 SE = 4.8 (rel. = 0.77)

- I felt angry [3rd question]
 - Never
 - Rarely
 - Sometimes
 - Often
 - Always

Estimated Anger = 50.5 SE = 3.9 (rel. = 0.85)

I felt angrier than I thought I should [4th question]

- Never
- Rarely
- Sometimes
- Often
- Always

Estimated Anger = 48.8 SE = 3.6 (rel. = 0.87)

- I felt annoyed [5th question]
 - Never
 - Rarely
 - Sometimes
 - Often
 - Always

Estimated Anger = 50.1 SE = 3.2 (rel. = 0.90)

I made myself angry about something just by thinking about it. [6^{th} question]

- Never
- Rarely
- Sometimes
- Often
- Always

Estimated Anger = 50.2 SE = 2.8 (rel = 0.92)

Questions?



drhays@ucla.edu (310-794-2294)

References

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