GLOBAL HEALTH
MEASURE DIFFERENCES

A brief guide to differences between the PROMIS® Global Health instruments:

ADULT	PEDIATRIC	EARLY CHILDHOOD PARENT-REPORT	PARENT PROXY
PROMIS Scale v1.2 – Global Health PROMIS Scale v1.2 – Global Mental Health 4a PROMIS Scale v1.2 – Global Physical Health 4a PROMIS Scale v1.2 – Global Mental 2a PROMIS Scale v1.2 – Global Physical 2a PROMIS Scale v1.0/1.1 – Global Health*	PROMIS Pediatric Scale GenPop v3.0 – Global Health 7 PROMIS Pediatric Scale GenPop v3.0 – Global Health 7+2 PROMIS Pediatric Scale v1.0 – Global Health 7* PROMIS Pediatric Scale v1.0 – Global Health 7+2*	PROMIS Early Childhood Parent-Report Scale v1.0 – Global Health 8a	PROMIS Parent Proxy Scale GenPop v3.0 – Global Health 7 PROMIS Parent Proxy Scale GenPop v3.0 – Global Health 7+2 PROMIS Parent Proxy Scale v1.0 – Global Health 7* PROMIS Parent Proxy Scale v1.0 – Global Health 7+2*

*Retired measure

ABOUT GLOBAL HEALTH

Global Health instruments are available for adults (ages 18+), pediatric self-report (ages 8-17), for parents serving as proxy reporters for their child (youth ages 5-17) or for their very young child (children ages 1-5).

The Adult PROMIS Global Health measures assess an individual's physical, mental, and social health. The measures are generic, rather than disease-specific, and often use an "In General" item context as it is intended to globally reflect individuals' assessment of their health. The adult PROMIS Global Health measure produces two scores: Physical Health and Mental Health. Shorter global measures (e.g., Global Mental Health 4a, Global Physical Health 4a, Global Mental 2a, Global Physical 2a) produce just one score.

The PROMIS Pediatric Scale – Global Health 7 and PROMIS Parent Proxy Scale – Global Health 7 measures assess overall evaluation of one's physical and mental health. They produce a single score. The 7+2 versions include the same Global Health summary score, as well as raw scores for Fatigue and Pain Interference.

The PROMIS Early Childhood Parent-Report Global Health measure assesses young children's overall evaluation of an individual's physical, mental, and social health. It produces a single score.

INTRODUCTION TO ASSESSMENT OPTIONS

There is one administration option for assessing Global Health: <u>fixed length scales</u>. No computer adaptive test (CAT) is available. When administering a scale, instruct respondents to answer all of the items (i.e., questions or statements) presented.

VERSION DIFFERENCES

Some PROMIS domains have multiple versions of instruments (i.e., v1.0, v1.1, v2.0, v3.0). Generally, **it is recommended that you use the most recent version available which can be identified as the instrument with the highest version number.** In most cases, an instrument that has a decimal increase (v1.0 to v1.1) retains the same item-level parameters as well as instrument reliability and validity. In cases where a version number increases by a whole number (e.g., v1.0 to v2.0), the changes to the instrument are more substantial.

Adult

The PROMIS Adult Global v1.0 and Global v1.1 paper forms are identical. The electronic version of Global v1.0 had "In the past 7 days" associated with item Global09. The electronic version of Global v1.1 measure correctly removes this additional item context; this revised item is Global09r. Global09 and Global09r are scored identically.

PROMIS Global v1.2 was constructed to enable automatic Item Response Theory scoring in the Assessment Center API (used by the Epic PROMIS CAT application, REDCap, and others) and the HealthMeasures Scoring Service. The syntax of the items in Global v1.2 is identical to the syntax used in Global v1.1. To enable automated scoring, modifications were made only to response scores for three items. Specifically:

> Items Global08 and Global10 (now Global08r and Global10r) have been altered in v1.2; the response scores (e.g., 1=None to 5=Very severe) were reversed (5=None to 1=Very severe; Table 1). This was done to ensure that higher scores for responses always indicate better health. This means that users do not have to recode v1.2 items by hand to obtain mental and physical health T-scores. In addition, item Global07 was changed to Global07r, signifying that re-coding response scores from 0-10 to 1-5 is done automatically in the Assessment Center API (used by REDCap) and the HealthMeasures Scoring Service. There is no change to the appearance of this item to the respondent. Previous versions of the item required modifying response scores prior to calculating a score.

Table 1: Differences in item IDs and response scores between v1.0/v1.1 and v1.2 of the Adult Global Scale

PROMIS Scale v1.0/v1.1 – Global Health		PROMIS Scale v1.2 – Global Health	
Item ID	**Raw Scores and Responses**	**Item ID**	**Raw Scores and Responses**
Global10	1=Never 2=Rarely 3=Sometimes 4=Often 5=Always	Global10r	5=Never 4=Rarely 3=Sometimes 2=Often 1=Always
Global08	1=None 2=Mild 3=Moderate 4=Severe 5=Very severe	Global08r	5=None 4=Mild 3=Moderate 2=Severe 1=Very severe

Global07	Users need to recode the 0-10 response scores into 1-5 scores.	Global07r	The 0-10 response scores are automatically re-coded by the scoring algorithm used in the API and the HealthMeasures Scoring Service.

Scores from PROMIS Global Scales v1.0, v1.1, and v1.2 are on the same metric and can be compared to one another. For example, a PROMIS Global Mental score from v1.1 can be compared to a PROMIS Global Mental score from v1.2.

The **PROMIS Scale v1.2 – Global Mental Health 4a** instrument consists of the four items from PROMIS Scale v1.2 – Global Health that are used to produce a Global Mental Health score. No earlier version of this scale exists. This scale can be used to help fulfill requirements from the Centers for Medicare & Medicaid Services [Total Hip Arthroplasty/Total Knee Arthroplasty Patient-Reported Outcome-based Performance Measure (THA/TKA PRO-PM)](#).

The **PROMIS Scale v1.2 – Global Physical Health 4a** instrument consists of the four items from PROMIS Scale v1.2 – Global Health that are used to produce a Global Physical Health score. No earlier version of this scale exists.

The **PROMIS Scale v1.2 – Global Mental 2a** and **Scale v1.2 – Global Physical 2a** instruments consist of two items from PROMIS Scale v1.2 – Global Health. These are subsets of the 4-item scales. No earlier version of these scales exists. Items were selected based on content and psychometric characteristics.

Pediatric and Parent Proxy
Changes from v1.0 Global Health to GenPop v3.0 Global Health
- The GenPop v3.0 Pediatric and Parent Proxy Global Health measures replaced the v1.0 Global Health measures.
  - o Please note that, for the sake of naming consistency, "v2.0" was deliberately skipped, to harmonize Global measure names with the rest of the PROMIS GenPop v3.0 measures.
- The GenPop v3.0 measures were re-normed. This means that the scores produced by v3.0 measures are NOT equivalent to scores from older measures (i.e., v1.0).
- The v1.0 Ped/Proxy Global Health measures were developed with U.S. children sampled from a combination of the general population and those with chronic conditions. This means a v1.0 Global Health T-score of 50 is based on the mean of a sample comprised of a mix of children from the general population AND children with chronic conditions. The re-normed GenPop v3.0 Global Health measures are now purely based on a sample from the general pediatric population. This makes interpreting a PROMIS score easier as it refers to just the general population. The use of "GenPop" (general population) is used to convey the difference in metrics between v3.0 and earlier versions of the measures.
- Earlier versions (i.e., v1.0) of the PROMIS Pediatric and Parent Proxy Global Health measures can be converted to the GenPop v3.0 metric. Instructions for score conversions are included in the Global Health Scoring Manual.

The **PROMIS Pediatric Scale – Global Health 7** and **PROMIS Parent Proxy Scale – Global Health 7** instruments each have two versions: **v1.0** and **GenPop v3.0**. For each of these measures, the v1.0 and

GenPop v3.0 iterations are identical in terms of both item content and item calibrations, so scores can be compared between versions.

The **PROMIS Pediatric Scale – Global Health 7+2** and **PROMIS Parent Proxy Scale – Global Health 7+2** instruments each have two versions: **v1.0** and **GenPop v3.0**. For each of these measures, the v1.0 and GenPop v3.0 iterations are identical in terms of item content.

- The Global Health score that is produced by 7 items is identical for v1.0 and GenPop v3.0. Consequently, the Global Health score from v1.0 and GenPop v3.0 are comparable.
- However, the GenPop v3.0 calibrations have been updated for the final "+2" items (**2876R1r** and **3793R1r** for Pediatric; **Pf4fatigue3r** and **Pf2pain5r** for Parent Proxy), in conjunction with a broader effort to re-norm core PROMIS Banks on the 2020 U.S. general population.
  - As such, for both Pediatric and Parent Proxy, Fatigue and Pain Interference scores from the v1.0 and GenPop v3.0 Global Health 7+2 Scales are not directly comparable. See the Global Health Scoring Manual for instructions on how to convert scores from v1.0 to the GenPop v3.0 metric.

Early Childhood Parent-Report
There is only one version of the Global Health scales for Early Childhood Parent-Report.

SELECTING A GLOBAL SCALE

Adult Scales
For adults, there are multiple versions of the Global scale. The Global v1.2 is the most recent version and should be used if possible. Because the appearance of v1.0, v1.1, and v1.2 are identical to respondents, the version number is less important when reporting results. We recommend converting data obtained with the v1.0 and v1.1 measures to the v1.2 format and using the HealthMeasures Scoring Service or Assessment Center API.

Within PROMIS v1.2 Global scales, there are 2, 4, and 10-item versions. In addition to their number of items, they also differ in what scores they produce (see Table 2).

Table 2: PROMIS Global Health Scale v1.2 measures and scores

Measure Name	Number of Items	Score(s)
PROMIS Scale v1.2 – Global Health	10	Global Mental Health Global Physical Health Global01 raw response score Global09r raw response score
PROMIS Scale v1.2 – Global Mental 4a	4	Global Mental Health
PROMIS Scale v1.2 – Global Mental 2a	2	Global Mental Health
PROMIS Scale v1.2 – Global Physical 4a	4	Global Physical Health
PROMIS Scale v1.2 – Global Physical 2a	2	Global Physical Health

The 2- and 4-item PROMIS Global measures are comprised of a subset of items from the 10-item PROMIS Global Health scale (see Figure 1 and Table 3).

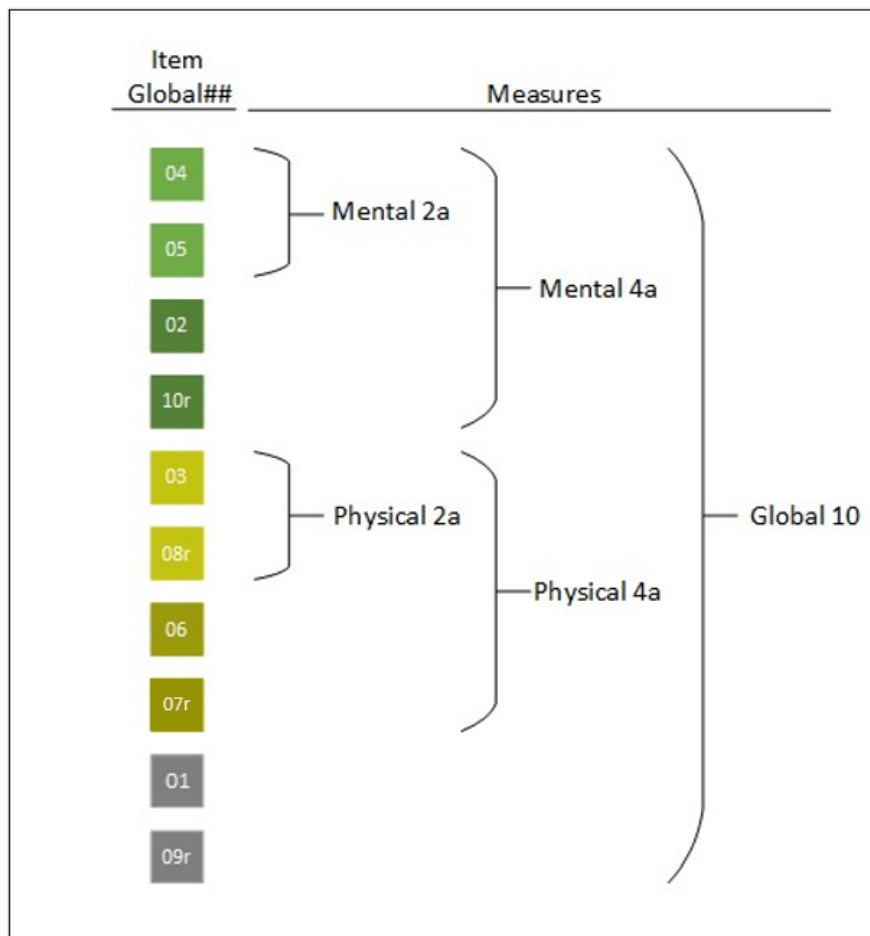Figure 1: Items in the 2-, 4-, and 10-item PROMIS Global Health measures

Table 3: Items in the 2-, 4-, and 10-item PROMIS Global Health measures

Item Global##	Mental 2a	Mental 4a	Physical 2a	Physical 4a	Global 10
04	✓	✓			✓
05	✓	✓			✓
02		✓			✓
10r		✓			✓
03			✓	✓	✓
08r			✓	✓	✓
06				✓	✓
07r				✓	✓
01					✓
09r					✓

The 2-, 4-, and 10-item versions of PROMIS v1.2 – Global Health are designed for specific uses described in Table 4. Select the measure that best aligns with your aims.

Table 4: When to use Global 2, 4, and 10 item measures

Measure Name	# of Items	When to Use
PROMIS Scale v1.2 – Global Health	10	• This option is recommended for most purposes. • Participants can complete 10 items (e.g., they have sufficient time). • You want information on both Global Mental Health and Global Physical Health. • You want to be able to estimate an EQ-5D-3L score. • You want to estimate group average T-scores for physical function, pain interference, pain intensity, fatigue, anger, anxiety, depression, ability to participate in social roles and activities, and/or satisfaction with participation in social roles and activities based on single item responses. Note: score estimates will have very wide confidence intervals and are not recommended for use with an individual patient.
PROMIS Scale v1.2 – Global Mental Health 4a	4	• You only want a Global Mental Health score. • You are using a score to either evaluate an individual patient (e.g., monitoring mental health over time) or compare groups of patients. • You are collecting the measure under a specific requirement, such as the Centers for Medicare & Medicaid services total knee/total hip arthroplasty patient-reported outcome performance measure (TKA/THA PRO-PM).
PROMIS Scale v1.2 – Global Mental 2a	2	• You only want a Global Mental Health score. • You are working with very large samples. This measure is not recommended for small samples or for assessing an individual patient.
PROMIS Scale v1.2 – Global Physical Health 4a	4	• You only want a Global Physical Health score. • You are using a score to either evaluate an individual patient (e.g., monitoring physical health over time) or compare groups of patients.
PROMIS Scale v1.2 – Global Physical 2a	2	• You only want a Global Physical Health score. • You are working with very large samples. This measure is not recommended for small samples or for assessing an individual patient.

Pediatric and Parent Proxy Scales
Both the Pediatric and Parent Proxy measures have a 7-item and 9-item (i.e., "7+2") version. The 7-item versions are best used when assessment time is limited and a single measure of Global Health is desired. If there is a need to have more information about a child or adolescent's physical health, the 7+2 versions produce the same global score as well as a score from a single Fatigue item and a score from a Pain Interference item. The added calibrated items were selected from PROMIS Pediatric and Parent Proxy v3.0 GenPop item banks. These two items are administered but do not contribute to the Global Health score. Rather, they are "signal" items that provide initial score estimates for Fatigue and Pain Interference.

Parent-Report Forms
There is one PROMIS Early Childhood Parent-Report instrument with 8 items and assesses a child's overall physical, mental, and social health. It produces a single score of global health. The measure is conceptually aligned to the PROMIS Parent Proxy Global Health instrument for children ages 5-17 and includes several overlapping items.

Parent Proxy Report Versus Early Childhood Parent-Report Measures
The PROMIS Parent Proxy measures are for parents to report on their children ages 5-17. The PROMIS Early Childhood Parent-Report measures are for parents to report on their children ages 1 to 5. In both cases, the parent provides his or her perspective about the child's positive affect. Scores from PROMIS Parent Proxy and PROMIS Early Childhood Parent-Report measures are calibrated and normed with different, age-appropriate reference populations and therefore are on different metrics. Scores from one should not be compared to scores on the other. For parents of 5-year-old children, either the PROMIS Parent Proxy or the PROMIS Early Childhood Parent-Report measure can be used. In general, for longitudinal research and/or on-going clinical follow-up, using the measure that aligns with the majority of the time frame with which the child will be studied is recommended. For example, if the measure is administered at child age 1 year through child age 5, using the PROMIS Early Childhood Parent-Report is recommended. If the child will be studied across in both early childhood and beyond age 5, switching to the PROMIS Parent Proxy measure is necessary.

SELECTING A PEDIATRIC OR PARENT PROXY INSTRUMENT
In selecting whether to use the pediatric or parent proxy instrument for this domain, it is important to consider both the population and the domain which you are studying. Pediatric self-report should be considered the standard for measuring patient-reported outcomes among children. However, circumstances exist when the child is too young, cognitively impaired, or too ill to complete a patient-reported outcome instrument. While information derived from self-report and proxy-report is not equivalent, it is optimal to assess both the child and the parent since their perspectives may be independently related to healthcare utilization, risk factors, and quality of care.

SCORES
For most PROMIS instruments, a score of 50 is the average for the United States general population with a standard deviation of 10 because calibration testing was performed on a large sample of the general population. You can read more about the calibration and centering samples on HealthMeasures.net (http://www.healthmeasures.net/score-and-interpret/interpret-scores/promis). The T-score is provided

with an error term (Standard Error or SE). The Standard Error is a statistical measure of variance and represents the "margin of error" for the T-score.

Important: *A higher PROMIS T-score represents more of the concept being measured.* Thus, a person who has T- scores of 60 for Global Health, Global Physical Health, or Global Mental Health is one standard deviation better (more healthy) than the general population.

STATISTICAL CHARACTERISTICS

There are four key features of the score for Global Health:

Figure 2

- **Reliability**: The degree to which a measure is free of error. It can be estimated by the internal consistency of the responses to the measure, or by correlating total scores on the measure from two time points when there has been no true change in what is being measured (for z-scores, reliability = $1 - SE^2$).
- **Precision**: The consistency of the estimated score (reciprocal of error variance).
- **Information:** The precision of an item or multiple items at different levels of the underlying continuum (for z-scores, information = $1/SE^2$).
- **Standard Error (SE):** The possible range of the actual final score based upon the scaled T-score. For example, with a T-score of 52 and a SE of 2, the 95% confidence interval around the actual final score ranges from 48.1 to 55.9 (T-score $^\pm$ (1.96*SE) = 52 $^\pm$ (1.96*2) = 48.1 to 55.9).
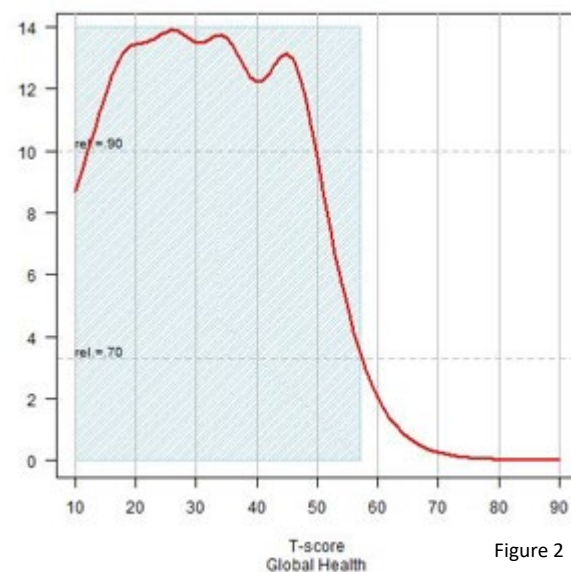
The two dotted horizontal lines in Figure 2 each represent a degree of internal consistency reliability (i.e., .70 or .90) typically regarded as sufficient for an accurate individual score for the Early Childhood Parent-Report scale. The shaded blue region marks the range of the scale where measurement precision is comparable to the reliability of .70 for the form.

The final score is represented by the T-score, a standardized score with a mean of 50 and a standard deviation (SD) of 10. More information is available at www.HealthMeasures.net.

PREVIEW OF SAMPLE ITEM

Figure 3 is an excerpt from the paper version of the Parent Proxy 7-item scale. This is the paper version format used for all Global Health instruments.

		Excellent	Very good	Good	Fair	Poor
Global01_PXR1	In general, would you say your child's health is:........................	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Global02_PXR1	In general, would you say your child's quality of life is:............	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1

Figure 3

FREQUENTLY ASKED QUESTIONS (FAQs)

Q: I am interested in learning more. Where can I do that?
Review the HealthMeasures website at www.healthmeasures.net.

Q: Are these instruments available in other languages?
Yes! Look at the HealthMeasures website (http://www.healthmeasures.net/explore-measurement-systems/promis/intro-to-promis/available-translations/117-available-translations) for current information on PROMIS translations.

Q: Can I make my own short form?
Yes, custom short forms can be made by selecting any items from an item bank. This can be scored using the Scoring Service (https://www.assessmentcenter.net/ac_scoringservice).