



ITCH

A brief guide to the PROMIS® Itch instruments:

ADULT	PEDIATRIC
PROMIS Item Pool v1.0 - Itch-Severity	PROMIS Pediatric Short Form v1.0 – Itch-Sleep Disturbance 4a
PROMIS Item Bank v1.0 – Itch - Mood and Sleep	PROMIS Pediatric Short Form v1.0 – Itch-Sleep Disturbance 8a
PROMIS Item Bank v1.0 – Itch-Activity and Clothing	
PROMIS Item Bank v1.0 – Itch-Interference	
PROMIS Checklist v1.0 - Itch-Quality	
PROMIS Checklist v1.0 - Itch-Triggers	
PROMIS Scale v1.0 - Itch-Scratching Behavior 5a	
PROMIS Short Form v1.0 – Itch-Activity and Clothing 4a	
PROMIS Short Form v1.0 – Itch-Interference 4a	
PROMIS Short Form v1.0 – Itch-Mood and Sleep 4a	
PROMIS Short Form v1.0 – Itch-Activity and Clothing 8a	
PROMIS Short Form v1.0 – Itch-Interference 8a	
PROMIS Short Form v1.0 – Itch-Mood and Sleep 8a	

ABOUT ITCH

The PROMIS Itch-Severity item pool assesses the characteristics of itch, including intensity, frequency and time of occurrence. The PROMIS Itch-Severity measure is universal rather than disease-specific. It includes 8 items, each individually scored. There is currently no summary score.

The PROMIS Itch-Mood and Sleep item bank assesses mood and sleep related quality of life impairment from itch (pruritus) in adults (18+). The PROMIS Itch-Mood and Sleep item bank is universal rather than disease-specific. It assesses the impact of itch over the past 7 days and includes 18 items.

The PROMIS Itch-Activity and Clothing item bank assesses Activity and Clothing related quality of life impairment from itch (pruritus) in adults (18+). The PROMIS Itch-Activity and Clothing item bank is universal rather than disease-specific. It assesses the impact of itch over the past 7 days and includes 15 items.

The PROMIS Itch-Interference item bank assesses general issues related to quality of life impairment from itch (pruritus) in adults (18+). The PROMIS Itch-Interference item bank is universal rather than disease-specific. It assesses the impact of itch over the past 7 days and includes 25 items.

The PROMIS Itch-Scratching Behavior scale assesses quality of life impairment from scratching behavior and the physical manifestations of itch (pruritus) in adults (18+). The PROMIS Itch-Scratching Behavior scale is universal rather than disease-specific. It assesses the impact of itch over the past 7 days and includes 5 items.

The PROMIS Itch-Quality item pool assesses the subjective description of the sensation of itch with a 16-item checklist. Respondents can select as many as apply. There is no summary score.

The PROMIS Itch-Triggers item pool assesses the subjective description of the triggers of itch with a 13-item checklist. Respondents can select as many as apply. There is no summary score.

Itch instruments are only available for adults (ages 18+).

INTRODUCTION TO ADMINISTRATION OPTIONS

There are two administration options for assessing Itch: short forms and a computerized adaptive test (CAT). When administering a short form, instruct participants to answer all of the items (i.e., questions or statements) presented. With CAT, participant responses guide the system's choice of subsequent items from the full item bank (see description section above for number of items for each measure). Although items differ across respondents taking a CAT, scores are comparable across participants. Some administrators may prefer to ask the same question of all respondents or of the same respondent over time, to enable comparability on specific content across people or over time. In these cases, or when paper administration is preferred, a short form would be more desirable than CAT. This guide provides information on all Itch short form and CAT instruments.

Whether one uses a short form or a CAT, the score metric is derived from Item Response Theory (IRT), a family of statistical models that link individual questions to a presumed underlying trait or concept of itch represented by all items in the item bank. When choosing between a CAT and a short form, it is useful to consider the demands of computer-based assessment, and the psychological, physical, and cognitive burden placed on respondents as a result of the number of questions asked.

SHORT FORM DIFFERENCES

Adult Short Forms

There are 6 adult short forms drawn from item banks, and one 5-item calibrated scale for scratching behavior. For the short forms, items were selected based on content and psychometric characteristics. In each of the three adult domains, the 4-item short form is a nested subset of the 8-item short form.

SCORING THE INSTRUMENT

Short Forms: PROMIS instruments are scored using item-level calibrations. Thus, the most accurate way to score a PROMIS instrument is to use the HealthMeasures Scoring Service (https://www.assessmentcenter.net/ac_scoring-service) or a data collection tool that automatically calculates scores (e.g., Assessment Center, REDCap auto-score). This method of scoring uses responses to each item for



each participant. We refer to this as “response pattern scoring.” Because response pattern scoring is more accurate than the use of raw score/scale score look up tables included in this manual, it is preferred. Response pattern scoring is especially useful when there is missing data (i.e., a respondent skipped an item), different groups of participants responded to different items, or you have created a new questionnaire using a subset of questions from a PROMIS item bank.

To use the scoring tables in this manual, calculate a summed score. Each of the scored questions has five response options ranging in value from one to five. To find the total raw score for a short form with all questions answered, sum the values of the response to each question. For example, for the 4-item form, the lowest possible raw score is 4; the highest possible raw score is 20 (see all short form scoring tables in the Appendix). **All questions must be answered in order to produce a valid score using the scoring tables.** If a participant has skipped a question, use the HealthMeasures Scoring Service (https://www.assessmentcenter.net/ac_scoring-service) to generate a final score.

With the total raw score for a measure, locate the applicable score conversion table in the Appendix and use this table to translate the total raw score into a T-score for each participant. The T-score rescales the raw score into a standardized score with a mean of 50 and a standard deviation (SD) of 10. Therefore a person with a T-score of 40 is one SD below the mean.

For the adult PROMIS Itch- Activity and Clothing 4a short form, a raw score of 10 converts to a T-score of 47.2 with a standard error (SE) of 2.7 (see scoring table for the 4a short form in the Appendix). Thus, the 95% confidence interval around the observed score ranges from 41.9 to 52.5 (T-score \pm (1.96*SE) or 47.2 \pm (1.96*2.7)).

Pool and Checklists: These are not scored.

CAT: A minimum number of items (4 for adult CATs) must be answered in order to receive a score for the Itch CAT. The response to the first item will guide the system’s choice of the next item for the participant. The participant’s response to the second item will dictate the selection of the following question, and so on. As additional items are administered, the potential for error is reduced and confidence in the respondent’s score increases. CAT will continue until either the standard error drops below a specified level (on the T-score metric 3.0 for adult CATs), or the participant has answered the maximum number of questions (12), whichever occurs first.

For the PROMIS itch instruments, a score of 50 is the average score for people in the United States general population who have recently experienced itch for any reason. The standard deviation around this mean of 50 is 10 T-score units. 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. For negatively-worded concepts like Itch, a T-score of 60 is one SD worse than average. By comparison, an Itch T-score of 40 is one SD better than average.

STATISTICAL CHARACTERISTICS

There are four key features of the score for Itch:

- **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 $\pm (1.96*SE) = 52 \pm 3.9 = 48.1$ to 55.9).

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 HealthMeasures.net.

PREVIEW OF SAMPLE ITEM

Figure 1 is an excerpt from the paper version of the Itch- Activity and Clothing 4-item short form. This is the paper version format used for all Itch instruments. It is important to note, CAT is not available for paper administration.

In the past 7 days...		Never	Rarely	Sometimes	Often	Almost always
PIQActivCloth31	because of itch, my physical activities were limited.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PIQActivCloth20	because of itch, it was hard to do activities that made me sweat.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Figure 1

FREQUENTLY ASKED QUESTIONS (FAQs)

Q: I am interested in learning more. Where can I do that?

The best place to start is the HealthMeasures website at www.healthmeasures.net. The site contains a wealth of educational information and citations for further reading

Q: Do I need to register with PROMIS to use these instruments?

No.

Q: Are these instruments available in other languages?

Yes! Look at the HealthMeasures website (www.healthmeasures.net) 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_scoringervice).

Q: How do I handle multiple responses when administering a short form on paper?

Guidelines on how to deal with multiple responses have been established. Resolution depends on the responses noted by the research participant.

- If two or more responses are marked by the respondent, and they are next to one another, then a data entry specialist will be responsible for randomly selecting one of them to be entered and will write down on the form which answer was selected. Note: To randomly select one of two responses, the data entry specialist will flip a coin (heads - higher number will be entered; tails – lower number will be entered). To randomly select one of three (or more) responses, a table of random numbers should be used with a statistician's assistance.
- If two or more responses are marked, and they are NOT all next to one another, the response will be considered missing.

Q: What is the minimum change on a PROMIS instrument that represents a clinically meaningful difference?

To learn more about research on the meaning of a change in scores, we suggest conducting a literature review to identify the most current information. The HealthMeasures website (<http://www.healthmeasures.net/score-and-interpret/interpret-scores/promis>) has additional information on interpreting scores.



APPENDIX-SCORING TABLES

Adult v1.0 – Itch – Scratching Behavior 5a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
5	30.4	5.1
6	35.0	3.8
7	37.8	3.4
8	40.0	3.0
9	41.9	2.8
10	43.6	2.7
11	45.0	2.6
12	46.5	2.6
13	47.8	2.6
14	49.2	2.6
15	50.5	2.6
16	51.8	2.6
17	53.2	2.6
18	54.6	2.6
19	56.0	2.6
20	57.4	2.7
21	59.0	2.8
22	60.7	2.9
23	62.8	3.1
24	65.3	3.5
25	69.8	4.8

*SE = Standard Error on T-score metric



Adult v1.0 - Itch – Activity & Clothing 4a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
4	32.4	5.0
5	37.2	3.5
6	39.6	3.3
7	41.8	2.9
8	43.7	2.8
9	45.5	2.7
10	47.2	2.7
11	49.0	2.7
12	50.9	2.7
13	52.7	2.7
14	54.5	2.7
15	56.3	2.7
16	58.2	2.7
17	60.1	2.7
18	62.3	2.9
19	65.0	3.1
20	69.9	4.5

*SE = Standard Error on T-score metric

Adult v1.0 – Itch – Activity & Clothing 8a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
8	31.2	4.7
9	35.6	3.2
10	37.5	2.8
11	39.1	2.4
12	40.5	2.2
13	41.6	2.1
14	42.6	2.0
15	43.6	1.9
16	44.5	1.9
17	45.4	1.9
18	46.3	1.9
19	47.2	1.9
20	48.1	1.9
21	49.0	1.9
22	49.9	1.9
23	50.8	1.9
24	51.7	1.9
25	52.6	1.9
26	53.5	1.9
27	54.4	1.9
28	55.3	1.9
29	56.3	1.9
30	57.2	1.9
31	58.2	1.9
32	59.1	1.9
33	60.1	1.9
34	61.1	2.0
35	62.2	2.0
36	63.4	2.1
37	64.7	2.2
38	66.3	2.5
39	68.3	2.9
40	72.2	4.3

*SE = Standard Error on T-score metric



Adult v1.0 - Itch – Interference 4a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
4	35.8	7.4
5	39.5	6.9
6	41.0	6.9
7	42.3	6.9
8	43.4	7.2
9	45.7	6.8
10	47.0	6.8
11	48.4	6.8
12	50.0	7.0
13	51.6	6.8
14	53.0	6.8
15	54.3	6.8
16	56.6	7.2
17	57.7	6.9
18	59.0	6.9
19	60.5	6.9
20	64.2	7.4
*SE = Standard Error on T-score metric		

Adult v1.0 - Itch – Interference 8a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
8	32.7	4.8
9	37.5	3.0
10	39.7	2.7
11	41.3	2.4
12	42.6	2.2
13	43.8	2.1
14	44.8	2.0
15	45.7	2.0
16	46.7	1.9
17	47.5	1.9
18	48.4	1.9
19	49.2	1.9
20	50.0	1.9
21	50.8	1.9
22	51.6	1.9
23	52.4	1.9
24	53.2	1.9
25	54.0	1.9
26	54.9	1.9
27	55.7	1.9
28	56.5	1.9
29	57.3	1.9
30	58.2	1.9
31	59.0	1.9
32	59.9	1.9
33	60.8	1.9
34	61.8	1.9
35	62.8	2.0
36	63.9	2.1
37	65.1	2.2
38	66.6	2.4
39	68.5	2.8
40	72.5	4.3
*SE = Standard Error on T-score metric		



Adult v1.0 - Itch – Mood & Sleep 4a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
4	30.2	4.7
5	35.0	3.3
6	37.6	3.1
7	39.8	2.9
8	41.7	2.9
9	43.6	2.9
10	45.4	2.9
11	47.2	2.9
12	49.0	2.9
13	50.8	2.9
14	52.7	2.9
15	54.6	2.9
16	56.5	3.0
17	58.6	3.0
18	60.9	3.3
19	63.6	3.5
20	68.5	4.9
*SE = Standard Error on T-score metric		

Adult v1.0 - Itch – Mood & Sleep 8a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
8	28.5	4.5
9	32.6	3.1
10	34.6	2.8
11	36.2	2.5
12	37.5	2.4
13	38.7	2.3
14	39.7	2.2
15	40.7	2.2
16	41.7	2.2
17	42.6	2.2
18	43.6	2.2
19	44.5	2.2
20	45.4	2.2
21	46.3	2.2
22	47.3	2.2
23	48.2	2.2
24	49.1	2.2
25	50.1	2.2
26	51.0	2.2
27	52.0	2.2
28	53.0	2.2
29	54.0	2.2
30	55.0	2.2
31	56.0	2.2
32	57.0	2.2
33	58.0	2.2
34	59.1	2.3
35	60.2	2.3
36	61.5	2.4
37	62.9	2.6
38	64.6	2.8
39	66.7	3.2
40	70.9	4.6
*SE = Standard Error on T-score metric		



Pediatric v1.0 – Itch – Sleep Disturbance 4a			
<i>Short Form Conversion Table</i>			
Raw Summed Score	T Score	SE*	Theta Score
4	38.8	6.0	-1.12
5	45.4	4.0	-0.46
6	48.8	3.4	-0.12
7	51.5	3.1	0.15
8	53.7	3.0	0.37
9	55.8	3.0	0.58
10	57.9	3.1	0.79
11	60.0	3.1	1
12	61.9	3.1	1.19
13	63.7	3.2	1.37
14	65.5	3.2	1.55
15	67.5	3.1	1.75
16	69.3	3.1	1.93
17	71.2	3.1	2.12
18	73.3	3.3	2.33
19	75.5	3.4	2.55
20	79.1	3.8	2.91

*SE = Standard Error on T-score metric



Pediatric v1.0 – Itch – Sleep Disturbance 8a			
<i>Short Form Conversion Table</i>			
Raw Summed Score	T Score	SE*	Theta Score
8	36.6	5.6	-1.34
9	42.1	3.8	-0.79
10	44.8	3.4	-0.52
11	46.8	3.0	-0.32
12	48.5	2.8	-0.15
13	50.0	2.6	0
14	51.3	2.5	0.13
15	52.5	2.5	0.25
16	53.7	2.4	0.37
17	54.9	2.4	0.49
18	56.0	2.4	0.6
19	57.1	2.5	0.71
20	58.2	2.5	0.82
21	59.3	2.5	0.93
22	60.3	2.5	1.03
23	61.4	2.5	1.14
24	62.4	2.5	1.24
25	63.5	2.5	1.35
26	64.5	2.5	1.45
27	65.6	2.5	1.56
28	66.6	2.4	1.66
29	67.6	2.4	1.76
30	68.7	2.4	1.87
31	69.7	2.4	1.97
32	70.7	2.4	2.07
33	71.8	2.5	2.18
34	72.9	2.5	2.29
35	74.1	2.6	2.41
36	75.4	2.7	2.54
37	76.8	2.9	2.68
38	78.5	3.1	2.85
39	80.3	3.3	3.03
40	82.7	3.5	3.27

*SE = Standard Error on T-score metric