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Screening and Assessment of Cancer-Related Fatigue: An Executive Summary and Road Map for Clinical Implementation

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Background: Cancer-related fatigue (CRF) prevalence is reported as high as 90%. Cancer-related fatigue is multidimensional and associated with lower health-related quality of life. Effective screening and assessment are dependent upon use of valid, reliable, and clinically feasible measures. This Executive Summary of the Screening and Assessment of Cancer-related Fatigue Clinical Practice Guideline provides recommendations for best measures to screen and assess for CRF based on the quality and level of evidence, psychometric strength of the tools, and clinical utility. **Methods:** After a systematic review of the literature, studies evaluating CRF measurement tools were assessed for quality; data extraction included psychometrics and clinical utility. Measurement tools were categorized as either screens or assessments. **Results:** Four screens are recommended: European Organization of Research and Treatment of Cancer Quality of Life Questionnaire, the MD Anderson Symptom Inventory, the Distress Thermometer, and the One-Item Fatigue Scale. Eight assessments are recommended: Functional Assessment of Chronic Illness Therapy—Fatigue, Piper Fatigue Scale—Revised, Brief Fatigue Inventory, Cancer Fatigue Scale, Fatigue Symptom Inventory, Patient-Reported Outcome Measurement Information System (PROMIS) Fatigue Short Form and CAT, and Multidimensional Fatigue Inventory-20. **Discussion:** This Executive Summary is a synopsis of and road map for implementation of the Clinical Practice Guideline for Screening and Assessment of CRF. Review of the full Clinical Practice Guideline is recommended [10.1093/ptj/pzac120]. Additional research focused on responsiveness of instruments is needed in order to consider them for use as outcome measures. Screening and assessing CRF will result in opportunities to improve the quality of life of individuals with cancer. (*Rehab Oncol* 2022;40:148–161) *Key words:* neoplasm, psychometrics, tiredness

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One of the most common side effects of cancer treatment is cancer-related fatigue (CRF), which impacts nearly all individuals with cancer at some point in the care continuum. The incidence of CRF ranges between 25% and 99% depending on the type, stage and treatment of the cancer, and how the fatigue is diagnosed.^{1,2} The causes of CRF are multifactorial, related to the cancer itself and to treatments for cancer, are cumulative during treatment, and may persist long after treatment has ended.³⁻⁵ The National Comprehensive Cancer Network (NCCN) defines CRF as “a distressing, persistent, subjective sense of physical emotional and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning.”⁶ Most researchers agree that for CRF to be diagnosed, the fatigue must be present on a daily basis.⁷ Addressing CRF is imperative because it can profoundly affect physical and social functioning, treatment tolerance, and ability to work during and after treatment.

The multidimensional nature of CRF often differentiates this fatigue from usual tiredness. Piper et al,⁸ in a 1998 publication on the Piper Fatigue Scale—Revised, delineated several subjective domains in which patients experience fatigue. These included the sensory components of mental, physical, and emotional fatigue, temporality (when fatigue occurs), intensity and severity of fatigue and its impact on activities of daily living, and an emotional component evaluating mood as it relates to fatigue. In this publication, the authors revised an original fatigue scale from those 5 to 4 subscales with 22 items after initial psychometric testing with validation in the cancer population and called it the Piper Fatigue Scale—Revised (PFS-R), which is a recommended scale of this Clinical Practice Guideline (CPG). Other researchers have subsequently defined the multidimensionality of CRF as physical, emotional, and cognitive.^{9,10} Because of the multidimensional nature of CRF, it is challenging to diagnose. For more than 2 decades, the NCCN has recommended regular screening for CRF.⁶ However, in a stakeholder survey of patients with a cancer diagnosis conducted as part of this clinical practice guideline work, 84% reported that CRF was an important issue, yet 77% of these patients reported that they themselves brought fatigue to the attention of their medical team.¹¹ These findings are corroborated in other studies.^{12,13}

Oncology care providers must be able to properly screen and/or assess CRF to provide effective intervention strategies throughout the cancer care continuum and into survivorship. Accurate screening and/or assessment of CRF is dependent upon measures that demonstrate strong psychometric properties that are also efficient in clinical administration.¹⁴ Ease of use, cost, and availability in multiple languages are important considerations for clinical adoption. Currently, the identification of CRF is primarily by self-report questionnaires. These self-reports range from simple screens that identify the presence of CRF to more comprehensive assessments of the nature of CRF. After fatigue is identified, a comprehensive examination by a

medical doctor is warranted. This may include laboratory work to identify possible medical causes of fatigue, such as anemia, malnutrition, and pharmacological effects, or psychological reasons such as depression is necessary.^{9,15} Once medical reasons for CRF are treated and/or ruled out, referral to other providers to manage CRF is warranted.

Clinical practice guidelines offer the health care provider guidance for clinical practice that encompasses the whole of the evidence database. Clinical practice guidelines make recommendations based on the quantity and quality of the evidence for practice and are underpinned by a systematic review of the available evidence and an assessment of the benefits and harms of alternative care options. The intent is to reduce practice variation, move research into practice, and improve the overall quality of care delivered.¹⁶ The Academy of Oncologic Physical Therapy, with support from the American Physical Therapy Association, commissioned the development of a CPG identifying the best screening and assessment tools for use in the management of CRF. The methodology related to the development of the CPG, the full list of recommendations with associated details regarding the strength of recommendations, and psychometric data of screening and assessment tools can be found in the full CPG.[10.1093/ptj/pzac120] The purpose of this executive summary is to provide the health care clinician with a road map for implementing the recommendations of the CPG.

SCREENING VERSUS ASSESSMENT

Screening tools are generally unidimensional, easy to administer and interpret, and are limited in scope, while assessment tools are multidimensional in scope, more complex, but provide much more information in evaluating CRF.¹⁷ The value of a screen is that it can be quickly used by disparate health care professionals to trigger a referral for more in-depth evaluation by the appropriate health care professional. A thorough evaluation of CRF using assessment tools allows for a richer understanding of the nature, source, and extent of the problem identified by a screen. These findings can be used to drive treatment decisions. Because of the multidimensional information that can be elicited by an assessment, the treatment plan can then be more easily tailored to meet the patient's specific challenges. In addition, assessments, if psychometrically tested and valid for this purpose, can be used to document change with appropriate interventions during care. The Figure provides a decision-making algorithm for screening and assessment of CRF in those with cancer.

Following best practices for CPG development, the guideline development team made recommendations incorporating benefits and harms, quality of the available evidence, and psychometric strength of the included CRF tools, while also considering clinical utility. Clinical utility includes considerations such as time to complete, available languages, and cost to use. This executive summary presents the findings for preferred clinical application based on the Clinical Practice Guideline on Screening

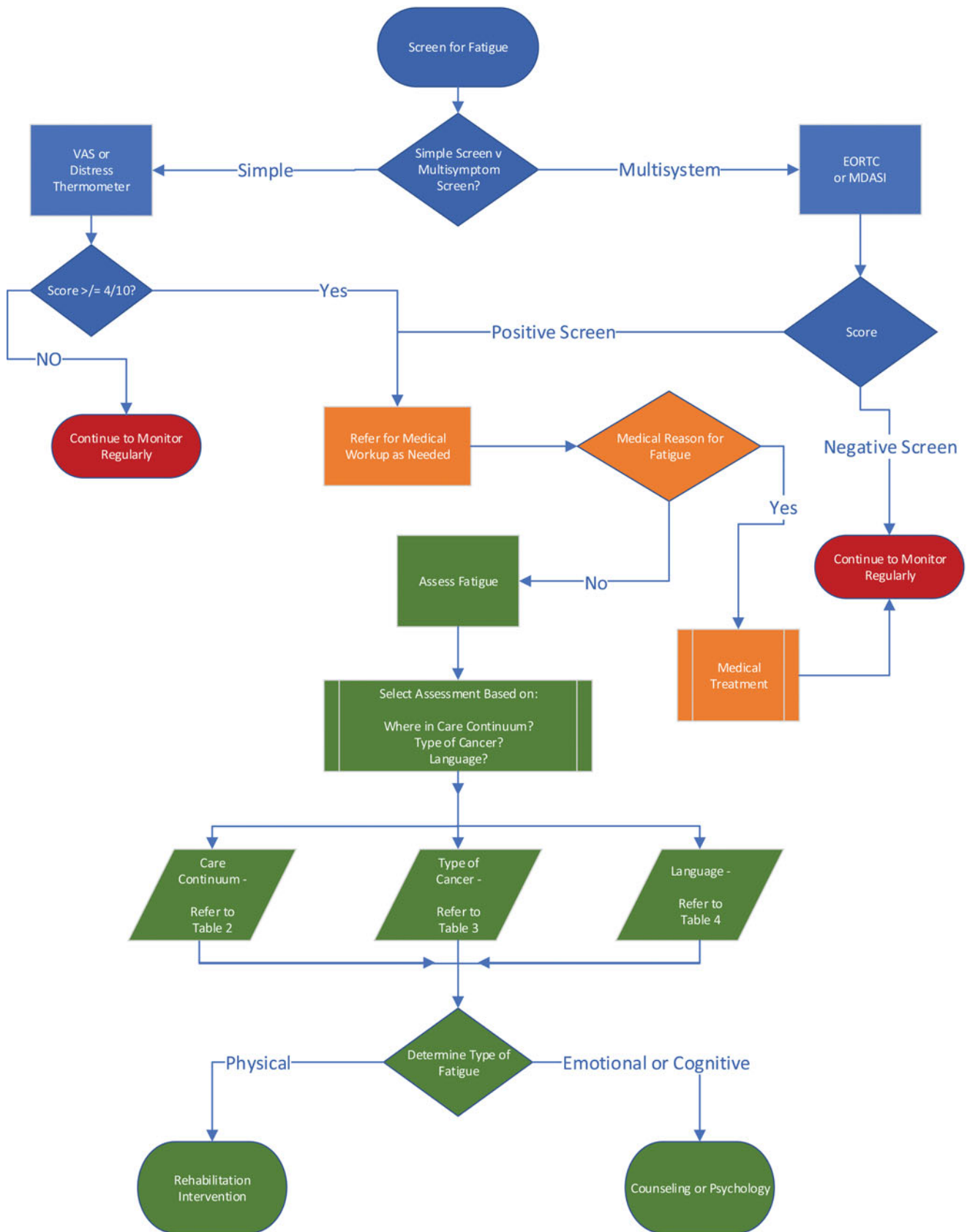


Fig. 1. Screening and assessment decision algorithm. EORTC indicates European Organization of Research and Treatment of Cancer; MDASI, MD Anderson Symptom Inventory; VAS, Visual Analog Scale. This figure is available in color online (www.rehabonc.com).

and Assessment of Cancer-related Fatigue published in the *Journal of Physical Therapy and Rehabilitation* (PTJ) [10.1093/ptj/pzac120]. Recommendation language (*should* or *may*) guides the clinician to use a particular tool but does not obligate its use. That is, highest rated tools are denoted by *should*, and alternative tools are denoted by *may*. The authors acknowledge that the greatest harm is in not screening for and assessing CRF, which results in missed treatment or patient education opportunities and substandard clinical care of the individual with cancer.

SCREENING AND ASSESSMENT MEASUREMENT TOOL RECOMMENDATIONS

A total of 25 (10 screening and 15 assessment) measures were included in the final CPG. The screening and assessment tools with level A and level B recommendations have the highest quality and are recommended for use (2 screening and 8 assessment); 2 additional Best Practice-P tools for screening are also included on the basis of widespread clinical use. These recommended tools are summarized in this executive summary (Table 1). To be rated level A, a tool must demonstrate a preponderance of high-quality studies and strong psychometrics such as

good to excellent reliability and validity as well as comprehensive testing in the population of interest, while level B is indicative of tools that have acceptable evidence with good reliability and validity.

To determine which tool to use, consideration must be given to the patient population, language, and point of care along the survivorship continuum. See Tables 2 to 4 that identify, by tool, the applicability across the care continuum (Table 2), types of cancer (Table 3), and translations (Table 4). It must be pointed out that no screen or assessment has been psychometrically tested in all cancer types.

Screening Recommendations

Following NCCN recommendations, screening for CRF at every health care visit by any of the oncologic team is appropriate and can be effective in noting a change in status. This recommendation is especially useful during active treatment and throughout the immediate posttreatment period, but once an individual transitions to long-term survivorship, screening less frequently but periodically remains important. Rehabilitation personnel might note CRF symptoms warranting treatment if screening is included in an evaluation of an unrelated musculoskeletal impairment during survivorship. The active treatment

TABLE 1
CRF Tools—Final Recommendations

Tool Name	Grade	Notes on Recommendation
Screening Tools		
European Organization for Research and Treatment of Cancer—Quality of Life Questionnaire—Core 30 ^{19,20,24-28}	A	Health care providers should use for screening cancer-related fatigue
MD Anderson Symptom Inventory ²⁹⁻³³	B	May be used for screening cancer-related fatigue
Distress Thermometer & Associated Problem List ³⁴	P	Limited evidence (1 study); may be used for severe fatigue; should be followed up with use of Associated Problem List if positive for DT ≥ 4 .
One-Item Fatigue Screen ³⁵	P	Limited evidence (1 study); may be used for screening cancer-related fatigue
Assessment Tools		
Functional Assessment of Chronic Illness Therapy—Fatigue ³⁶⁻⁴¹	A	High level of evidence; good overall psychometrics; widely used with multiple validated translations; missing useful elements such as responsiveness measures
Piper Fatigue Scale—Revised ^{8,42-48}	A	Should be used for initial assessment of cancer-related fatigue if at risk or referred for cancer-related fatigue; strong psychometric data; some controversy on the factor solution in different cultures
Patient-Reported Outcomes Measurement Information System—Short Form Fatigue ⁴⁹⁻⁵⁶	A	Short Form—Fatigue has significant evidence with strong psychometric support for use as initial or ongoing assessment of CRF. The measure is easy to use and translated into multiple languages.
Brief Fatigue Inventory ⁵⁷⁻⁶²	B	Rehabilitation professionals may use to assess cancer-related fatigue when a patient has a history of cancer
Cancer Fatigue Scale ^{23,63-68}	B	Instrument designed to assess 3 separate domains of fatigue; concerns with level of evidence for psychometric properties; concerns about translation to other languages or cultures that do not capture fatigue the same as English does.
Fatigue Symptom Inventory ^{23,68-72}	B	Useful to assess fatigue but has a lower number of high-quality studies. Concerns about translation to other languages or cultures that do not capture fatigue the same as English does.
Multidimensional Fatigue Inventory-20 ^{22,73-78}	B	Acceptable quality (primarily level II studies) with good ease of use. Some challenges with structural validity in languages other than English.
Patient-Reported Outcomes Measurement Information System—CAT Fatigue ⁴⁹⁻⁵⁶	B	This computer-adapted testing form for fatigue is available for use on several platforms; however, psychometrics are emerging and the cost associated with use is high.

Abbreviations: A, strong obligation—**should** be used; B, moderate obligation—**may** be used; CAT, computer-adapted testing; CRF, cancer-related fatigue; DT, Distress Thermometer; P, best practice—**may** be used.

TABLE 2
Tool Applicability Across the Care Continuum^a

Tool Name	Active Treatment	Immediate Posttreatment Period	Long-term Survivorship
Screening Tools			
Distress Thermometer & Associated Problem List ³⁴	✓	✓	
European Organization for Research and Treatment of Cancer—Quality of Life Questionnaire—Core 30 ^{19,20,24-28}	✓		
MD Anderson Symptom Inventory ²⁹⁻³³	✓	✓	✓
One-Item Fatigue Screen ³⁵	✓	✓	✓
Assessment Tools			
Brief Fatigue Inventory ⁵⁷⁻⁶²	✓	✓	
Cancer Fatigue Scale ^{23,63-68}	✓		
Functional Assessment of Chronic Illness Therapy—Fatigue ³⁶⁻⁴¹	✓		
Fatigue Symptom Inventory ^{23,68-72}	✓	✓	✓
Multidimensional Fatigue Inventory-20 ^{22,73-78}	✓	✓	✓
Piper Fatigue Scale—Revised ^{8,42-48}	✓	✓	
Patient-Reported Outcomes Measurement Information System—Short Form Fatigue ⁴⁹⁻⁵⁶		✓	
Patient-Reported Outcomes Measurement Information System—Fatigue CAT	✓		

Abbreviation: CAT, computer-adapted testing.

^aActive treatment: surgery, chemo, radiation; immediate posttreatment: completion of primary adjuvant treatment to the first year of recovery;¹⁸ and long-term survivorship: 1 year and longer after diagnosis.

phase includes the surgical, chemotherapeutic, and radiation interventions, while immediate posttreatment is that time from the completion of primary adjuvant treatment through the first year of recovery; long-term survivorship is 1 year after diagnosis and greater.¹⁸

Two tools for performing a screen are recommended for use by health care professionals seeking to evaluate a broad range of symptoms experienced by individuals diagnosed with cancer in order to efficiently capture the challenges these individuals may be facing. These include the European Organization of Research and Treatment of Cancer Quality of Life Questionnaire and the MD Anderson Symptom Inventory. These screening tools provide the health care provider with the ability to comprehensively screen for multiple comorbidities that may require further investigation, and by doing so in a single tool, are more efficient than performing multiple separate screens.

European Organization of Research and Treatment of Cancer—Quality of Life Questionnaire—30 Core Questionnaire (EORTC-QLQ-C30)

Recommendation: Should be used to screen

Description: This is a 30-item quality-of-life questionnaire surveying multiple symptoms experienced with cancer; 3 symptom items are specific to fatigue: (1) “Did you need to rest?”; (2) “Have you felt weak?”; (3) “Were you tired?” Scoring is not straightforward. Directions for calculating a score are available in the scoring manual on their Web site.

When to use: Active treatment.

Clinical utility: This measure takes less than 10 minutes to complete. Answering yes to any of

the 3 fatigue questions indicates that fatigue is present and further assessment is warranted. The EORTC-QLQ-C30 is free to use with registration as an academic user and can be found at: <https://qol.eortc.org/questionnaire/eortc-qlq-c30/>. Commercial users should contact EORTC through this Web site for cost information. The minimal detectable change for fatigue is reported as 11 points.¹⁹ The minimal clinically important difference for improving fatigue is 12 points and for worsening fatigue is 9 points.²⁰

MD Anderson Symptom Inventory (MDASI)

Recommendation: May be used to screen.

Description: A 13-item questionnaire designed to evaluate the severity and effect of symptoms related to cancer and cancer treatment. Each question asks the respondents to rate their response on a 0 to 10 scale in the past 24 hours. Three symptom items relate to fatigue: (1) “Your fatigue (tiredness) at its WORST”; (2) “Your disturbed sleep at its WORST;” and (3) “Your feeling drowsy (sleepy) at its worst.” The score is reported as the mean of the items responded to as long as a majority (eg, 7 out of 13) have been answered. In comparison with other symptoms assessed “Patients rated fatigue-related symptoms as the most severe.”²¹

When to use: Across the care continuum.

Clinical utility: The validated cut points provide a description of the severity of the fatigue: 5 to 6 = moderate, and 7 and greater = severe fatigue. The measure can be completed in 2 to 5 minutes; however, clinical utility is limited due a required licensing fee

TABLE 3
CRF Measurements—Validation in Cancer Types

Tool Name	Head and Neck													
	Breast	Prostate	Colorectal	Lung	Urogenital	Brain	Myeloma	Blood	Lymphoma	Bone	Gynecologic	Skin	Liver	Stomach
Distress Thermometer & Associated Problem List ³⁴	✓		✓											
	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			
European Organization for Research and Treatment of Cancer—Quality of Life Questionnaire—Core 30 ^{19, 20, 24-28}	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			
MD Anderson Symptom Inventory ²⁹⁻³³	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			
One Item Fatigue Screen ³⁵				✓										
Screening Tools														
Brief Fatigue Inventory ⁵⁷⁻⁶²	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Cancer Fatigue Scale ^{23, 63-68}	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Functional Assessment of Chronic Illness Therapy—Fatigue ³⁶⁻⁴¹	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Fatigue Symptom Inventory ^{23, 68-72}	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Multidimensional Fatigue Inventory-20 ^{22, 73-78}	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Piper Fatigue Scale—Revised ^{8, 42-48}	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Patient-Reported Outcomes Measurement Information System—Short Form Fatigue ⁴⁹⁻⁵⁶	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Patient-Reported Outcomes Measurement Information System—CAT Fatigue ⁴⁹⁻⁵⁶	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓

Abbreviation: CAT, computer-adapted testing.

TABLE 4
Foreign Language Translations of Recommended Screening and Assessment Tools for CRF

Tool Name	Spanish	French	Chinese	Korean	Arabic	Russian	Japanese	Greek	Filipino	Taiwanese	Swedish	Italian	Portuguese	Ethiopian	Indonesian	Polish	German
Screening Tools																	
Distress Thermometer & Associated Problem List ³⁴	✓				✓												
Organization for Research and Treatment of Cancer – Quality of Life Questionnaire—Core ^{28,31-35,37}																	
MD Anderson Symptom Inventory ²⁹⁻³³		✓															
One-Item Fatigue Screen ³⁵																	

TABLE 4
Foreign Language Translations of Recommended Screening and Assessment Tools for CRF (Continued)

Tool Name	Spanish	French	Chinese	Korean	Arabic	Russian	Japanese	Greek	Filipino	Taiwanese	Swedish	Italian	Portuguese	Ethiopian	Indonesian	Polish	German
Brief Fatigue Inventory ⁵⁷⁻⁶²			✓	✓			✓	✓	✓	✓		✓		✓	✓		
Cancer Fatigue Scale ^{23,63-68}			✓				✓	✓					✓				✓
Functional Assessment of Chronic Illness Therapy—Fatigue ³⁶⁻⁴¹													✓			✓	
Fatigue Symptom Inventory ^{23,68-72}			✓														
General Fatigue Scale ⁸²										✓							
Multidimensional Fatigue Inventory-20 ^{22,73-78}		✓	✓										✓				
Piper Fatigue Scale—Revised ^{8,42-48}	✓	✓									✓	✓	✓				
Patient-Reported Outcomes Measurement Information System—Short Form Fatigue ⁴⁹⁻⁵⁶	✓																
Patient-Reported Outcomes Measurement Information System—CAT Fatigue ⁴⁹⁻⁵⁶	✓																

Abbreviation: CAT, computer-adapted testing.

of a minimum of \$100, which can vary by clinic size and number of users. The MDASI cannot be used or reproduced without permission. It can be accessed at: https://www.mdanderson.org/patients-family/search-results.html?q=MDASI_userguide.pdf#_

For a quick screen, 2 “Best Practice” (Recommendation Strength P) tools are recommended by the CPG: *The Distress Thermometer* and the *One-Item Fatigue Scale*. Although both of these tools have insufficient psychometric analysis to support a strong recommendation from the guideline development group, both are extensively used clinically and, since they are easy to implement, make a good choice for *quick* screens.

The Distress Thermometer and Associated Problem List (DT)

Recommendation: May be used to screen.

Description: The Distress Thermometer is an 11-point Likert scale presented as a thermometer with 0 = No distress and 10 = Severe distress, denoting overall distress experienced during cancer care. The score is the number chosen. A cut point of 4 and greater triggers the completion of the associated Problem List, which is a 40-item multidimensional list to identify the specific cause or causes of the reported distress; fatigue is one of the items on the problem list.

When to use: Active treatment and the immediate post-treatment period.

Clinical utility: If fatigue is checked on the associated Problem List, this functions to alert the health care provider that fatigue is a significant complaint. A full assessment of fatigue or referral to an appropriate health care provider to complete assessment is warranted. Determining the appropriate health care provider can be made on the basis of other symptoms checked on the Problem List. For example, if fatigue and another symptom in physical concerns are checked, it is appropriate to refer to physical therapy for further assessment; if fatigue and another symptom among emotional concerns are checked, a referral to social work may be warranted. It is free and readily available for use.

One-Item Fatigue Scale

Recommendation: May be used to screen.

Description: The One-Item Fatigue Scale is a numeric or verbal rating scale in which the individual answers the question “Since your last visit, how would you rate your worst fatigue on a scale of 0 to 10 with 0 = no fatigue and 10 = worst fatigue.” The score is the number chosen.

When to use: Across the care continuum.

Clinical utility: Scoring: 0 = No fatigue, 1 to 3 = mild fatigue, 4 to 6 = moderate fatigue, and 7 to 10 = severe fatigue. A score of 4 and greater is a cut point indicative of fatigue sufficient to trigger a referral

for primary medical evaluation; a score 7/10 and greater can indicate a marked decrease in physical functioning.⁶ There is no cost for use.

Assessment Recommendations

Positive screens for CRF should be followed by referral to appropriate health care providers for assessment. For rehabilitation providers evaluating individuals with CRF, 3 tools received the highest recommendation, A, and *should* be used in practice, while 5 tools received a B recommendation, and *may* be used in practice.

Functional Assessment of Chronic Illness Treatment—Fatigue (FACIT-F)

Recommendation: *Should* be used to assess.

Description: The FACIT-F is a 41-item questionnaire covering multiple domains of health-related quality of life with a 13-item fatigue specific domain subscale. All items are scored on a 0 to 5 Likert scale and separate scores can be calculated for each domain subscale (including fatigue) or summed for a total score with a higher score representing better functioning or less fatigue.

When to use: Active treatment.

Clinical utility: The measure takes 15 minutes to complete and is free for both clinical and research use. It can be completed verbally or in writing. When based on a global perception of fatigue improvement, a change of 10 points in the FACIT-F score had a sensitivity (73%) and specificity (78%), which predicted a clinically important improvement. A cutoff score of 34 with a range of 0 to 52 on the fatigue domain subscale indicates CRF.

Piper Fatigue Scale—Revised (PFS-R)

Recommendation: *Should* be used to assess.

Description: The PFS-R is a 22 item numerically scaled self-report questionnaire for assessing the current level of fatigue experienced by the respondent. It measures 4 domains of fatigue with each item rated on a 0 to 10 scale from “None” to “A Great Deal.” The domains include Behavioral/Severity or effect on activities of daily living, Affective or emotional effects of fatigue, Sensory or physical symptoms of fatigue, and Cognitive/Mood subscale measuring mental and mood status. There are 4 additional questions to elicit qualitative information regarding the respondent’s experience of fatigue. Subscale and total scores are calculated by sum divided by number of items for a total score between 0 and 10 with higher scores indicative of greater fatigue.

When to use: Active treatment and immediate post-treatment period.

Clinical utility: The written version takes 10 minutes to complete and is available for free for both clinical and research use: <https://geriatrictoolkit.missouri.edu/fatigue/PiperFatigueScale.pdf>.

Patient-Reported Outcome Measurement Information System (PROMIS) Fatigue—Short Forms v1.0—Fatigue (4a, 6a, 7a, 7b, 8a, 13a)

Recommendation: Should be used to assess.

Description: There are 6 adult PROMIS Fatigue short forms and the number (ie, 4a) designates how many questions are in each form. The original adult short form instrument was the 7a and measures fatigue in the past 7 days as do forms 4a, 6a, and 8a.⁸¹ Short forms 7b and 13a are instruments that measure daily fatigue.⁸¹ Items are scored on a 5-point Likert scale, with 1 = not at all, 5 = very much, and summed, some items are reverse scored such as item 7 in form 7a. Scoring is not straightforward. Refer for further information at: https://www.assessmentcenter.net/ac_scoringservice or https://www.healthmeasures.net/images/PROMIS/manuals/PROMIS_Fatigue_Scoring_Manual.pdf. The PROMIS Fatigue-Short Forms are part of the PROMIS system of self-report measures developed by the National Institutes of Health (<http://www.healthmeasures.net/explore-measurement-systems/promis/intro-to-promis>).

When to use: In the immediate posttreatment period.

Clinical utility: The PROMIS Fatigue-Short Form instruments are short, easy to complete, and have been translated into several languages. The instruments are available for free, though commercial users must seek permission to use, reproduce, or distribute the instrument. The PROMIS Fatigue-Short Form is part of the PROMIS system of self-report measures and is available through a number of different platforms³⁸⁻⁴⁰ (http://www.healthmeasures.net/index.php?option=com_content&view=category&layout=blog&id=71&Itemid=817).

Brief Fatigue Inventory (BFI)

Recommendation: May be used to assess.

Description: The Brief Fatigue Inventory assesses fatigue in the previous 24 hours—both its severity and its effect on daily functioning and social activities. It has 10 items that the respondent rates on a scale from 0 to 10: 0 = “No Fatigue” to 10 = “As bad as you can imagine.” A score is calculated from the average of the item responses.

When to use: Active treatment and immediate post-treatment period.

Clinical utility: The BFI has published cutoff scores of 1 to 3 mild fatigue, 4 to 6 moderate fatigue, and 7 to 10 severe fatigue. The utility is limited because the MD Anderson Web site states that there is a \$100 licensing fee for its use in clinical settings. This tool can be found at: <https://www4.mdanderson.org/symptomresearch/index.cfm>

Cancer Fatigue Scale (CFS)

Recommendation: May be used to assess.

Description: This 15-item multidimensional scale measures physical, affective, and cognitive fatigue. Each question of the CFS is assessed on a 5-point Likert scale where 1 = No and 5 = Very much; Higher scores indicate greater fatigue. Scoring is not straightforward. We suggest a review of the published reference.⁴⁹

Although no cut points are reported, some evidence suggests that the CFS is responsive to change with a minimally important difference ranging from 0.3 to 0.5.

When to use: During active treatment

Clinical utility: The CFS is estimated to take less than 2 minutes to complete and has been translated into multiple languages. Cost information could not be determined.

Multidimensional Fatigue Inventory 20 (MFI 20)

Recommendation: May be used to assess.

Description: The MFI 20 is a 20-item self-report tool with multiple dimensions assessed including general fatigue, physical fatigue, mental fatigue, reduced motivation, and reduced activity. Each dimension has 4 questions with Likert scales for each from 1 to 5, with a higher score indicating greater fatigue.

When to use: Across the continuum.

Clinical utility: The written version takes about 5 to 10 minutes to complete. A free copy of the questionnaire was included in the original article published by the developers and can also be obtained by contacting the developers.²² Direct correspondence to: E.M.A. Smets Academic Medical Centre, University of Amsterdam Department of Medical Psychology Amsterdam, the Netherlands.

Fatigue Symptom Inventory (FSI)

Recommendation: May be used to assess.

Description: The FSI is a 14-item questionnaire that measures fatigue severity, frequency of fatigue, and the perception of fatigue as interfering with an individual's quality of life. The FSI also measures the diurnal variation of fatigue, which is a unique feature of this tool. Fatigue severity is assessed using 4 items on a 0 to 10 scale (0 = “not at all fatigued;” 10 = “as fatigued as I could be”) within 4 areas: most, least, average, and current fatigue. Frequency is measured using 2 items: the number of days in the past week (0-7) that a patient felt fatigued plus the extent of each day on average he or she felt fatigued (0 = None of the day; 10 = The entire day). Perceived interference is measured using 7 items on a separate 0 to 10 scale (0 = No interference, 10

= Extreme interference). The final item provides qualitative information about potential daily diurnal patterns of fatigue. Each item on the FSI can be scored individually, and the frequency and interference ratings can be summed to yield a total subscale score.²³

When to use: Across the care continuum.

Clinical utility: The FSI is free and takes about 5 minutes to complete.

Patient-Reported Outcomes Measurement Information System Computerized Adaptive Testing for Fatigue (PROMIS Fatigue CAT)

Recommendation: May be used to assess.

Description: This computer-adapted testing (CAT) scale includes an item bank of 95 questions (a question plus respective response options); the respondent is first presented with an item of moderate symptom severity and based on responses to previously administered items. The computer estimates the domain score after each item, and when this score reaches a predefined precision, the CAT stops. Hence, patients need to answer only a small number of items (usually 5-7) per PROMIS item bank to get an accurate and reliable T score.⁷⁹ This allows the system to identify the patient on the symptom continuum within 4 to 12 items. The recall period is over the past 7 days.

When to use: Immediate posttreatment period.

Clinical utility: Can be completed by the individual without assistance but having a proxy complete is acceptable. Limitations arise related to access (requires access to the internet); despite efforts to maximize efficiency of individual scales, clinically useful combinations of PROMIS scales may take too long (greater than 10 minutes) for older patients and patients with low technology literacy. Despite rigorous effort to increase precision, patients with a lower literacy level may demonstrate lower precision.⁸⁰ Cost is an additional consideration, ranging from a few hundred to a few thousand dollars per year depending on the institution.

CLINICAL IMPLEMENTATION

Cancer-related fatigue is the most commonly reported side effect in the cancer population. Recognition that this side effect can have significant effect on physical, cognitive, and psychological function resulting in a decreased quality of life during and beyond cancer treatment with obvious societal implications is essential. Identification and quantification of CRF can be facilitated by the timely and judicious use of reliable and validated outcome measures to screen and assess for its presence. These tools can then trigger referral for medical and effective rehabilitative strategies. Recommended screening tools provide opportunities for the rapid determination of CRF by any health care

provider, while the assessment tools describe the multidimensional nature of the experience of CRF and may allow for more goal-directed treatment planning. Clinicians should practice caution in using these recommended tools to measure outcomes as most do not have the necessary psychometric testing related to sensitivity and specificity to detect minimal clinically important differences. This Executive Summary provides the clinician with a road map for implementation of these tools in their oncology practice.

Although we found a number of outcome measures, which are valid and reliable for assessing CRF, the available literature was too limited to allow us to generalize their use across all cancer diagnoses or across the entire continuum of cancer care. Few of these tools have been psychometrically tested in the survivorship phase of cancer care where an increasing number of patients may experience CRF years after their cancer treatment. Careful attention to Tables 2 to 4 will guide the health care provider in choosing the right tool.

CONCLUSION

This executive summary is intended to guide clinicians in selecting appropriate tools for use in the screening and assessment of CRF. Too often, CRF is underdiagnosed and underreported. Timely identification and evaluation of CRF will greatly aid in its management, potentially reducing the survivor's symptom burden and improving their quality of life. Readers and clinicians are encouraged to refer to the full CPG article for more detailed information about each outcome measures merits, or lack thereof. It is important to consider each patient's clinical presentation, disease stage, and place in the cancer treatment and survivorship spectrum when considering the appropriate measure to use in CRF screening or assessment.

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