

A Pragmatic Approach for Organizations to Measure Health Care Professional Well-Being

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Introduction

There is a high prevalence of burnout, depression, and suicide among health care professionals (HCPs) [1-5]. Compromised well-being among HCPs is associated with medical errors, medical malpractice suits, health care associated infections, patient mortality, lower interpersonal teamwork, lower patient satisfaction, job dissatisfaction, reduction in professional effort, and turnover of staff [2]. In addition, burnout among physicians is an independent predictor of suicidal ideation and substance abuse and dependence [6-9]. As burnout is adversely affecting quality, safety, and health care system performance, as well as the personal lives of HCPs, there is a need for organizations to add measures of HCP well-being to their routine institutional performance measures (e.g., patient volume, quality metrics, patient satisfaction, financial performance) [10, 11]. Institutional performance measures, including measurements of HCP well-being, hold the potential to substantially improve health care systems. However, putting measures in place without sufficient thought and care (e.g., insufficiently valid data) may result in the misdirection of resources, a false sense of the scope of the problem, and delay in improvement. The successful evaluation of HCP well-being depends on a series of strategic decisions, including who to survey (e.g., all employees or only a subset), how to survey (electronic or paper survey, local administration or external vendor), when to survey (timing and frequency), and what to include on the survey (i.e., items). The following paper will focus on which survey tools are available for institutions to measure burnout and composite well-being.

While several instruments measuring HCP well-being have well-established reliability and validity, they are not all equally pragmatic for use by organizations interested in local assessment and quality improvement efforts. In this paper, we provide a list of considerations for individuals charged with measuring HCP well-being at their institutions to guide them in selecting the most appropriate measurement instrument. Such a decision should be based on which dimensions of well-being are most important to stakeholders in addition to instrument characteristics (i.e., respondent and organizational burden, how actionable the provided data is, sensitivity to change, psychometric support, and applicability; see *Table 1*) [12, 13].

Instrument Characteristics to Consider

Dimensions of Well-Being Important to Stakeholders

Measuring HCP well-being involves determining which dimension(s) of well-being to assess (e.g., burnout, fatigue, engagement, emotional health, quality of life, and professional fulfillment/satisfaction). For each of these dimensions, multiple survey instruments exist. The chosen measure(s) should assess dimensions of well-being deemed important by HCPs, organizational decision makers (department chairs, chief medical officer, chief wellness officer, chief executive officer, or legal department), patient experience advocates, patient safety advocates, and other local stakeholders. Focus groups and surveys can be conducted with stakeholders to identify common dimensions of greatest interest to guide decision making.

Table 1 | Characteristics of Pragmatic Approaches

Characteristic
Dimensions of well-being important to stakeholders: Measures domains of well-being or distress prevalent in the population of interest, costly, and challenging
Low organizational burden: Brief, simple to analyze, and low or no cost
Actionable measures: Scores are easy to interpret, have norms or benchmarks, relate to other important outcomes, and lead to a response by organizational leadership
Sensitivity to change: Can be used longitudinally to assess the impact of interventions or changes over time
Psychometrically strong: Validity of the findings
Broadly applicable: Questions are relevant to more than one group of employees (i.e., can be applied to both physicians and nurses within a health system)

SOURCE: Adapted from Estabrooks, P. A., M. Boyle, K. M. Emmons, R. E. Glasgow, B. W. Hesse, R. M. Kaplan, A. H. Krist, R. P. Moser, and M. V. Taylor. 2012. *Harmonized patient-reported data elements in the electronic health record: Supporting meaningful use by primary care action on health behaviors and key psychosocial factors*. *Journal of the American Medical Informatics Association* [65].

Measuring Burnout and Composite Well-Being

Although the selection of which dimension of well-being to monitor locally should be determined locally, in this paper we discuss principles of instrument selection for burnout and composite well-being measures. Burnout is one construct that an organization may choose to measure, given its prevalence and associated serious personal, professional, and organizational consequences.

The most commonly used instrument to measure burnout in HCPs is the Maslach Burnout Inventory-Human Services Survey for Medical Personnel (MBI-HSS [MP]) [14]. The MBI-HSS [MP] has three domains: emotional exhaustion, depersonalization, and low sense of personal accomplishment. Other instruments available to measure burnout include the Oldenburg Burnout Inventory (OBI) [15] and the Copenhagen Burnout Inventory (CBI) [16]. The OBI has three domains: physical, cognitive, and affective exhaustion and disengagement from work. The CBI has three domains: personal (physical and psychological fatigue and exhaustion), work (physical and psychological fatigue and exhaustion related to work), and client-related (or a similar term such as patient, student, etc.) burnout [16]. Some health systems and investigators use the Physician Worklife Study (PWLS) single-item ("Overall, based on your definition of burnout, how would you rate your level of burnout?") to measure burnout symptoms [17].

Focusing on the single construct of burnout can simplify the process of choosing, administering, and analyzing measurement results. However, as distress can manifest differently in individuals who have similar experiences [18], single construct measures may miss

individuals who are not well, but may not be feeling burned out. As such, organizations may prefer to use brief composite measures that assess multiple dimensions of distress commonly experienced by HCPs, such as the Well-Being Index (WBI) [19-23] or the newly developed Stanford Professional Fulfillment Index (PFI) [24] that measure symptoms of burnout (work exhaustion and interpersonal disengagement) as well as professional fulfillment.

Low Respondent Burden

Given the busy work lives of HCPs, it is best to use brief surveys to limit responder burden. Measures used in research studies are often lengthy and can lead to substantial responder fatigue and poor response rates, especially if administered at regular intervals. With respect to burnout measures, the MBI-HSS [MP], OBI, and CBI are 22, 16, and 19 items long, respectively (see *Table 2*) [25-27]. To reduce burden, West and colleagues identified two single questions with the highest loading factor on the emotional exhaustion and depersonalization subscales of the MBI-HSS [MP], resulting in a two-item MBI [MP] [28, 29]. The two single MBI items have an area under the receiver operating characteristic curve (AUC) of 0.94 and 0.93 for the emotional exhaustion and depersonalization domains, respectively, relative to the full MBI-HSS [MP] [28, 29]. Thus, the two-item MBI [MP] can reasonably be used as a substitute for the full MBI-HSS [MP] to reduce responder burden. The PWLS single-item is the shortest measurement instrument [17]. For composite measures, the WBI and PFI are 9 and 16 items, respectively [19-24].

Low Organizational Burden

Organizational burden is dependent on the cost of the instrument and the cost and complexity of analysis. Measures that are difficult to analyze require sophisticated statistical resources and expertise that may not be available to individuals charged with assessing HCP well-being for an organization. The MBI-HSS [MP], OBI, CBI, and PFI are moderately complex to analyze. The PWLS, two single-item MBI-HSS [MP], and WBI are relatively simple to analyze. While the MBI-HSS [WP] is proprietary, the other measures are free for research purposes and for use in quality improvement efforts by nonprofit organizations. Currently, the license to reproduce the MBI-HSS [MP] for a paper and pencil survey or an online survey is \$125 per 50 administrations (\$2.50 each with a minimum purchase of 50). The MBI manual is an additional \$50. There are discounts offered for large volume purchases. Volume discount rates vary by the number of administrations purchased. For an organization with 450 physicians, the cost is \$837.50, including the purchase of the manual. This is a trivial amount in the face of an estimated cost of \$5,625,000 due to turnover from burnout at a similarly sized organization (assumes an annual turnover rate of 7.5 percent and a replacement cost of \$500,000 per physician) [30].

Actionable Measures

Measures most likely to lead to action provide scores that are meaningful to stakeholders. Typically, scores have meaning if they can be compared to historical institutional data, have relevant national benchmark data (e.g., scores in national samples of physicians and other HCPs), and correlate with important outcomes, such as medical error, malpractice litigation suits, patient satisfaction, or HCP turnover [30]. National benchmark data provide context in interpreting survey results. For example, if the prevalence of burnout among an organization's emergency physicians is higher than national norms, then there is likely to be locally active issues within the sphere of influence of an organization that could benefit from local action planning. To date only the MBI-HSS [MP] and WBI have national benchmark data for physicians, nurses, and advanced practice providers [1, 20-23].

Correlation with Other Important Outcomes

Actionable measures of well-being should also be

linked with important outcomes that may have a secondary response to interventions that directly impact HCP well-being. The MBI-HSS [MP] is supported by the most extensive association with important outcomes. In large studies of U.S. physicians and trainees, MBI-HSS [MP] scores have been associated with medical error [31-33], malpractice [34], suboptimal patient care practices [35], physician turnover and early retirement [36, 37], lower medical knowledge [38], suboptimal professionalism [39, 40], alcohol abuse [8, 9, 41], suicidal ideation [6, 7], and motor vehicle incidents [56]. The two single-item measures from the MBI-HSS [MP] have been demonstrated in large samples of more than 10,000 physicians and trainees to also correlate with key outcomes such as major medical errors, suicidal ideation, serious thoughts of dropping out of medical school, and poor professionalism [28, 29].

Less is known about the meaning of OBI and CBI scores, as most studies have been small and conducted outside the United States. Existing data suggest correlations between OBI scores of Swedish nurses and public health professionals with the intent to change jobs [42-44], and between OBI scores of Swedish medical students and residents with self-rated health [45, 46]. High CBI scores have been associated with perceptions of lower quality of care in a study of German surgeons [47]; lower World Health Organization-Five Well-Being Index scores in a study of 317 Canadian residents [48]; turnover intention in a small study of Iranian intensive care unit (ICU) nurses [49]; job strain, overcommitment, and low social support in a study of Taiwanese HCPs [50]; and recent reorganization at work in a study of Norwegian midwives [27]. In non-HCPs, studies have found correlations between high CBI scores and absenteeism, sleep problems, use of pain killers, intention to quit work, and antidepressant treatment [16, 51, 52].

Studies of the PWLS single item have mostly been small and included almost exclusively primary care physicians [17, 53-56]. In these studies, the PWLS single-item burnout scores were associated with lower job satisfaction, greater intent to leave the medical practice (on univariate analysis) [55], self-reported medical error, and suboptimal patient care practices [56]. WBI scores have been shown to stratify career satisfaction, intent to leave current job, and self-reported medical error among physicians, residents, medical students, nurses, and other health care workers [19-23]. Data on the meaning of PFI scores are more limited, with one

study of 250 resident and practicing physicians showing a relationship between PFI scores and self-reported medical errors [24].

Sensitivity to Change

Ideally, measures of HCP well-being should detect meaningful effect sizes from interventions. If initiatives intended to improve HCP well-being are relatively short in duration, measures that assess a short time frame would be best suited. However, as a multi-faceted approach is likely needed to implement systematic change to improve HCP well-being, a longer time frame (such as 1 year or more) may be more appropriate.

The MBI-HSS [MP] response categories include “never,” “a few times a year,” and “every day” [25]. Although the MBI-HSS [MP] may not be sensitive to change over a short time period, data from a systematic review and meta-analysis support that the MBI-HSS [MP] can detect moderate effect size from a range of interventions intended to improve physician burnout [57, 58]. In contrast, the OBI, CBI, and PWLS single-item do not refer to a time frame and less is known about their ability to detect meaningful effect size from an intervention. The PFI asks about symptoms over the past 2 weeks while the WBI asks about symptoms over the past month. Preliminary data suggest that the PFI may be sensitive to change [24].

Psychometrically Strong

HCP well-being measures should have an acceptable degree of construct validity, but may not meet all of the requirements expected of measures used in intervention studies [12, 13]. Validity is to what extent results obtained from a measure should be trusted [59]. The degree of validity depends on the evidence collected in support of how well a measure’s scores reflect the intended construct (e.g., overarching dimension of well-being that the instrument intends to measure). Sources of evidence within the construct validity rubric include content evidence (e.g., steps taken to ensure that items represent the construct), response process evidence (e.g., thoughts respondents have while answering the questions, methods for scoring, and reporting), internal structure evidence (e.g., reliability and factor analysis), relations to other variables (e.g., correlation with scores on other measures or outcomes of interest), and consequence validity (e.g., improvement in HCP well-being) [59]. Single-item measures do not have internal structure evidence. Reviews

detailing current concepts in validity for measures have been published [59].

Among the common burnout measures, the 22-item MBI-HSS [MP] has the strongest construct validity data for use for U.S. physicians and other HCPs (see *Table 2*). Similarly, the two items from the MBI-HSS [MP] have strong validity evidence of relationship to other variables in large samples of U.S. physicians [28, 29]. The WBI has strong validity content evidence and evidence of relationships to other variables in U.S. physicians, residents, medical students, nurses, and other workers [19-23].

Less robust construct validity is available for the remaining measures, especially for use for U.S. physicians and other HCPs. The OBI has mixed evidence of internal structure as some studies suggest a two-factor structure [15, 61, 62] while another study confirmed a four-factor structure [63]. As mentioned previously, the OBI has limited evidence of relationship to other variables in studies of Swedish nurses, public health professionals, medical students, and residents [42-46]. In samples of non-HCPs, OBI scores have been shown to correlate modestly with the scores from the MBI-General Survey in a sample of U.S. workers [62], Chinese nurses [63], and other non-U.S. workers [26, 61].

The CBI has evidence of internal structure and limited evidence of relationship to other variables in studies of non-U.S. physicians and other HCPs (i.e., German surgeons [47], Canadian residents [48], Iran ICU nurses [49], Taiwanese HCPs [50], and Norwegian midwives [27]) and non-HCPs [16, 51]. In a study of 1,914 individuals from 7 different workplaces, CBI scores correlated with quality-of-life scores as measured by the 36-item Short Form Health Survey scale [64].

For the PWLS, stem and response items vary in publications, making it difficult to synthesize findings. Existing publications provide some evidence of relationship to other variables. For example, the PWLS single-item predicts a high level of emotional exhaustion. However, scores from the PWLS do not correlate as strongly with the full MBI-HSS [MP] emotional exhaustion scale in comparison to the original single-item MBI-Emotional Exhaustion item [17, 53, 54].

The PFI has some evidence of internal structure validity (i.e., three-factor structure, test-retest reliability) and relationship to other variables (PFI scores correlate moderately with MBI scores) in a sample of 250 U.S. physicians [24]. Regardless of the instrument chosen, validated and established approaches to scoring should be employed in order to meaningfully interpret

the data collected. Best practices for how to analyze data from the aforementioned instruments as well as a summary of the data demonstrating relationships between instrument scores and important health care and personal outcomes (i.e., relations to other variables) have been published [60].

Broadly Applicable

Broadly applicable measures are those that are appropriate for a wide range of individuals, such as when a health care organization is trying to measure the well-being of all of its employees. Depending on the intended respondents, measures may need to be selected based on required reading level, applicability of questions to individuals in different job roles, cultural sensitivity, and other factors.

The MBI-HSS is the original and most widely used version of the MBI [25]. The only difference between the MBI-HSS and the MBI-HSS [MP] is the word “patients” is used in place of “recipients.” The MBI-HSS [MP] is most applicable to HCPs who have direct patient care roles. Other versions of the MBI are available for other occupational groups, but less is known about how scores on these versions relate to health care outcomes.

The PFI refers to patients and to work in general. The OBI and CBI were developed for use in any occupational group. The OBI and PWLS single-item refer to “my work” whereas the CBI refers to “work” and “clients.” The WBI refers to “my work” or “medical school” (depending on the version) and has been validated in multiple independent samples that have included more than 25,800 health care professionals and other U.S. workers, suggesting that it is broadly applicable [19-22]. It is worth pointing out that not all instruments have data on validity in more than one occupational group.

Additional Considerations

Utilizing an external organization to administer and analyze the results may help provide extra confidence of confidentiality and boost willingness to honestly answer questions. Limiting demographic items that could allow for identification of individuals (e.g., the only Hispanic woman physician in a department) is another strategy to help ensure confidentiality. Measures that assess depressive symptoms or substance use or inquire about more sensitive topics may be less well

received by HCPs. Administering anonymous or confidential surveys, however, eliminates the ability to directly identify and help those in distress. Providing information about local employee assistance programs and other avenues for how to seek help if experiencing distress at the end of a survey can help mitigate these concerns. Measures and accompanying items should address only topics the organization is willing and able to address. Asking about problem areas and then not addressing them may cause staff to feel ill will toward organizational leadership.

Conclusion

The available tools to measure HCP burnout and overall well-being have a variety of strengths and limitations. Most health care systems will be able to find a validated instrument or instruments that meet their particular needs and situation. *Table 3* summarizes seven common instruments in terms of the pragmatic dimensions discussed above and in terms of their overall strengths and limitations. The proprietary two-item MBI [MP] [28, 29] for burnout and the nine-item WBI [22] for overall well-being are pragmatic, broadly applicable tools with a good balance of strengths and limitations that health care organizations without other constraints may wish to use [12, 13]. Prior to administering a survey to assess HCP well-being, organizations should be ready to act on the results with planned human and financial resources allocated for such a response. Fortunately, meta-analysis and systemic reviews of intervention studies suggest that interventions can lead to improvements in HCP well-being [57, 58]. An annotated bibliography published by the Collaborative for Healing and Renewal in Medicine on evidence-based, well-being interventions can be found on the Alliance for Academic Internal Medicine website (<http://www.im.org/page/annotatedbibliography>). Knowing that improvements can be achieved can help make the case for organizations undertaking monitoring and improvement efforts for the first time. Sharing the results with responding HCPs, involving them in action planning and implementation, and discussing the impact of the response are important to achieving ongoing buy in and participation by the targeted group and ultimately crucial in successfully addressing HCP well-being.

Table 2 | Commonly Used Burnout and Composite Well-Being Measures by Pragmatic Characteristics

	Burden	Actionable	Sensitivity to Change	Broadly Applicable	Psychometrics
Burnout Measures					
Maslach Burnout Inventory-HSS [MP] (22 item) (MBI-HHS [MP])	<ul style="list-style-type: none"> 22 items Moderately complex to analyze Fee for use 	<ul style="list-style-type: none"> National benchmark data Robust data showing scores correlate with outcomes of interest such as medical error, malpractice, and turnover 	<ul style="list-style-type: none"> Longer time frame Can detect meaningful effect sizes from interventions 	HCPs	<ul style="list-style-type: none"> Strongest construct validity evidence in physicians and other HCPs
Maslach Burnout Inventory-HSS [MP] (2 single-item MBI-HHS [MP])	<ul style="list-style-type: none"> 2 items Relatively simple to analyze Fee for use 	<ul style="list-style-type: none"> Data showing scores correlate with outcomes of interest such as medical error, malpractice, and turnover 	<ul style="list-style-type: none"> Longer time frame 	HCPs	<ul style="list-style-type: none"> Strong construct validity evidence in U.S. physicians No construct validity evidence in other HCPs
Copenhagen Burnout Inventory (CBI)	<ul style="list-style-type: none"> 16 items Moderately complex to analyze Free [a] 	<ul style="list-style-type: none"> No national benchmark data Limited data showing scores correlate with outcomes of interest 	<ul style="list-style-type: none"> No time frame Unknown if sensitive to change 	Any occupation	<ul style="list-style-type: none"> No construct validity evidence in U.S. physicians or other HCPs Limited construct validity evidence in non-U.S. physicians and other HCPs
Oldenburg Burnout Inventory (OBI)	<ul style="list-style-type: none"> 19 items Moderately complex to analyze Free [a] 	<ul style="list-style-type: none"> No national benchmark data Limited data showing scores correlate with outcomes of interest 	<ul style="list-style-type: none"> No time frame Unknown if sensitive to change 	Any occupation	<ul style="list-style-type: none"> No construct validity evidence in U.S. physicians or other HCPs Limited construct validity evidence in non-U.S. physicians and other HCPs
Physician Worklife Survey (mini-Z) (PWLS)	<ul style="list-style-type: none"> 1 item Simple to analyze Free [a] 	<ul style="list-style-type: none"> No national benchmark data Limited data showing scores correlate with outcomes of interest 	<ul style="list-style-type: none"> No time frame Unknown if sensitive to change 	Any occupation [b]	<ul style="list-style-type: none"> Limited construct validity evidence in U.S. physicians No construct validity evidence in other HCPs; too brief to have strong psychometrics
Composite Well-Being Measures					
Well-Being Index (WBI)	<ul style="list-style-type: none"> 7-9 items Simple to analyze Free [a] 	<ul style="list-style-type: none"> National benchmark data Moderate data showing scores correlate with outcomes of interest 	<ul style="list-style-type: none"> Moderate time frame Unknown if sensitive to change 	Any occupation [b]	<ul style="list-style-type: none"> Moderately strong construct validity evidence in U.S. physicians and other HCPs
Stanford Professional Fulfillment Index (PFI)	<ul style="list-style-type: none"> 16 items Moderately complex to analyze Free [a] 	<ul style="list-style-type: none"> No national benchmark data Limited data showing scores correlate with outcomes of interest 	<ul style="list-style-type: none"> Short time frame May be sensitive to change 	HCPs	<ul style="list-style-type: none"> Limited construct validity evidence in U.S. physicians No construct validity evidence in other HCPs

SOURCE: Dyrbye et al., "A Pragmatic Approach for Organizations to Measure Health Care Professional Well-being," National Academy of Medicine.

NOTE: HCP = health care professional. [a] Free for research use and for use in quality improvement efforts by nonprofit organizations.

[b] Although called "Physician Worklife Survey," this item does not specifically refer to physicians or patients and thus could be used for other occupations; however, no validity data exist for use in other occupations.

Table 3 | Strengths and Limitations of Commonly Used Burnout and Composite Well-Being Measures

Measure	Strengths	Limitations
Burnout		
Maslach Burnout Inventory-HSS [MP] (22 item) (MBI-HHS [MP])	<ul style="list-style-type: none"> Strong psychometrics National benchmark data Robust data showing scores correlate with outcomes of interest Can detect meaningful effect sizes from interventions 	<ul style="list-style-type: none"> Cost Length Moderately complex to analyze May not be sensitive to change within a short time frame
Maslach Burnout Inventory-HSS [MP] (2 item) (2-single MBI-HHS [MP])	<ul style="list-style-type: none"> Short Strong psychometrics Robust data showing scores correlate with outcomes of interest 	<ul style="list-style-type: none"> Cost May not be sensitive to change
Copenhagen Burnout Inventory (16 items) (CBI)	<ul style="list-style-type: none"> May be used with all professions Free 	<ul style="list-style-type: none"> Length Moderately complex to analyze Limited data showing scores correlate with outcomes of interest among U.S. HCPs
Oldenburg Burnout Inventory (19 items) (OBI)	<ul style="list-style-type: none"> May be used with all professions Free 	<ul style="list-style-type: none"> Length Moderately complex to analyze Limited data showing scores correlate with outcomes of interest
Physician Worklife Survey (mini-Z; 1 item) (PWLS)	<ul style="list-style-type: none"> Short Free Simple to analyze May be used with all professions 	<ul style="list-style-type: none"> Limited data showing scores correlate with outcomes of interest Too brief to have strong psychometrics Limited to emotional exhaustion domain of burnout
Composite Well-Being Measures		
Well-Being Index (7-9 items) (WBI)	<ul style="list-style-type: none"> Multiple dimensions Relatively short Free Relatively simple to analyze National benchmark data Moderate data showing scores correlate with outcomes of interest among U.S. HCPs Broadly applicable 	<ul style="list-style-type: none"> Charge for using interactive online version Unknown sensitivity to change
Stanford Professional Fulfilment Index (PFI)	<ul style="list-style-type: none"> Multiple dimensions Free Limited data suggest may be sensitive to change 	<ul style="list-style-type: none"> Moderately complex to analyze No national benchmarking data Length Limited data showing scores correlate with outcomes of interest

SOURCE: Dyrbye et al., “A Pragmatic Approach for Organizations to Measure Health Care Professional Well-being,” National Academy of Medicine.

NOTE: HCP = health care professional

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