Dissemination and Implementation Measurement Compendium:

A Systematic Review of Structural, Organizational, Provider, Patient, and Innovation Level Measures

Stephenie R. Chaudoir, Ph.D.

Center for Health, Intervention, and Prevention

University of Connecticut

Department of Psychology

Bradley University

Alicia G. Dugan, Ph.D.

Center for Health, Intervention, and Prevention

Connecticut Institute for Clinical and Translational Science

University of Connecticut

Colin H. I. Barr, B.S.

Center for Health, Intervention, and Prevention

University of Connecticut

CICATS

Connecticut Institute for Clinical and Translational Science

TABLE OF CONTENTS

KEY POINTS

- Based on recent research and theorizing (e.g., Damschroder et al., 2009; Durlak & DuPre, 2008), we utilize a five factor framework which suggests that five broad types of factors—representing structural, organizational, provider, patient, and innovation level characteristics—affect the implementation of evidence-based innovations.

- We conducted a systematic review in order to identify measures designed to assess constructs representing these five factors within health-related contexts.

- Our search identified 33 scales that assessed one or more of these factors.

- Organization, provider, and innovation-level characteristics have the largest number of measures available for use, whereas structural and patient-level characteristics have the least.

- We recommend that researchers select measures that have strong psychometric properties and have been demonstrated to be reliable predictors of implementation outcomes. We also highlight that the lack of structural- and patient-level measures represents an opportunity for researchers to validate and publish new measures in implementation science literature.

BACKGROUND

Each year, billions of federal tax dollars are spent to support the development of evidence-based health innovations (National Institutes of Health, 2010)—interventions, practices, and guidelines designed to improve human health. Yet, only a small fraction of these innovations are ever implemented into practice and efforts to implement these practices can take many years (Balas & Boren, 2000). New and innovative approaches are greatly needed in order to accelerate the rate at which existing and emergent knowledge can be implemented in health-related settings where it is needed most.

Increasing the capacity of new and seasoned researchers to conceptualize and measure constructs that can influence dissemination and implementation (D&I) outcomes is one critical way to accelerate this process. The goal of the current compendium is to do just that—to conduct a systematic review in order to identify the measures available to assess constructs hypothesized to predict implementation outcomes.

A Five-Factor Framework Guiding Implementation Research

Recently, several frameworks have been developed in order to conceptualize and categorize the factors that affect the successful implementation of evidence-based health innovations. Durlak and DuPre (2008) reviewed meta-analyses and additional quantitative reports examining the predictors of successful implementation from over 500 studies. Their review finds that these predictors represent four main types of factors representing *innovation, provider, organizational*, and *structural* (or community)-level characteristics. These factors can be construed as representing micro to macro levels of analysis such that a specific innovation (e.g., evidence-based guideline) is implemented by providers (e.g., counselors, nurses, physicians) who are nested within an organization (e.g., medical clinics) which is nested within a broader structural context (e.g., health care system, social climate, community norms).

Similarly, Damschroder and colleagues (2009) reviewed 19 existing implementation theories and frameworks in order to identify common constructs that affect successful implementation across a wide variety of settings (e.g., health care, mental health services, corporations). Their synthesis yielded a typology (i.e., the Consolidated Framework for Implementation Research [CFIR]) that largely overlaps with Durlak and DuPre's (2008)

analysis. That is, they suggest that characteristics of the outer setting (i.e., structural context), inner setting (i.e., organization), provider, and innovation predict implementation success.

Consequently, these two frameworks suggest that *innovation, provider, organizational*, and *structural*-level characteristics affect implementation success. It is interesting to note that although the authors of these two frameworks adopted different strategies for deriving their frameworks, both converge to identify similar factors. That is, while Durlak and Dupre (2008) adopted an inductive or "bottom-up" approach by examining empirical studies to create a theoretical framework, Damschroder et al. (2008) adopted a deductive or "top-down" approach by using an a priori theoretical framework that guides examination of empirical findings in order to identify the relevant types of factors that affect implementation outcomes.

But, where does the patient fit in these accounts? Neither of these two frameworks specifically identified patient-level characteristics as a primary factor predicting implementation outcomes. However, Damschroder and colleagues (2009) do suggest that patient needs and resources affect what they term the "outer setting," or the larger social context in which the organization exists. That is, structural contexts (or outer settings) may vary in the degree to which they are patient-centered, or focused primarily on the needs of their specific patient populations. Consequently, contexts in which patients' perspectives are valued and integrated into care may be more likely to successfully implement a new health innovation. Further, these authors also note that patient experiences and feedback may be a specific attribute of the innovation evidence that may affect implementation outcomes. Consequently, innovations that have been created with input from patients (e.g., focus groups) and tested for patient feasibility may be more likely to be successfully implemented.

Therefore, in the current review, we adopt a five-factor framework representing *structural, organizational, patient, provider*, and *innovation*-level constructs that are hypothesized to predict implementation outcomes. Appendix A depicts these factors and illustrates that we conceptualize these factors as representing multiple levels of analysis from micro-level to macro-level.

Available Measures

What measures are currently available to assess these five broad types of factors hypothesized to predict implementation outcomes? The current review seeks to answer this basic

question and act as a guide to assist researchers in identifying and evaluating the types of measures that are available to assess structural, organizational, patient, provider, and innovation-level constructs in implementation research.

During the past decade, a number of measures have been developed to assess constructs that represent these five types of factors. For example, the Barriers to Research Utilization scale (BARRIERS; Funk et al., 1991; see Carson & Plonczynski, 2008 for a review) focuses on multiple factors and assesses how features of the organizational setting, medical providers, and health innovation each act as barriers to the implementation of evidence-based practice. In contrast, the Evidence-Based Practice Questionnaire (Upton & Upton, 2006) was designed to assess only one of these factors—providers' attitudes regarding evidence-based practice, in general.

A number of researchers have also provided reviews of limited portions of this literature. For example, French and colleagues (2009) conducted a systematic review in order to identify measures designed to assess features of the organizational context. They evaluated 30 measures derived from both the health care and management/organizational science literatures, and their review found support for the representation of seven primary attributes of organizational context across available measures: learning culture, vision, leadership, knowledge need/capture, acquiring new knowledge, knowledge sharing, and knowledge use. Other systematic reviews and meta-analyses have focused on measures that assess provider-level characteristics such as behavioral intentions to implement evidence-based practices (Eccles et al., 2006) and other research-related variables (e.g., attitudes toward and involvement in research activities) and demographic attributes (e.g., education; Squires, Estabrooks, Gustavsson, & Wallin, 2011).

To date, however, no systematic reviews have examined measures designed to assess characteristics representing the five types of factors—structural, organizational, provider, patient, and innovation—hypothesized to predict implementation outcomes. The purpose of the current review is to identify measures available to assess this full range of five types of factors. In doing so, this review is designed to create a resource that will increase the capacity of and speed with which researchers can identify and incorporate these measures into ongoing research.

METHOD

We located articles by searching MEDLINE, PsycINFO, and CINHAL databases and abstracts of articles published in the journal *Implementation Science* through March 2011. We searched with combinations of keywords representing three categories: D&I, *health*, and measures. We utilized thirteen keyword phrases in order to capture the wide array of terminology used to refer to D&I concepts (e.g., Rabin et al., 2008): *diffusion of innovations, dissemination, effectiveness research, implementation, knowledge to action, knowledge transfer, knowledge translation, research to practice, research utilization, research utilisation, scale up, technology transfer, translational research.* In our search of PsycINFO and CINHAL, we used database restrictions that allowed us to search for combinations of the keyword *health* in the abstract and each of the D&I keywords within the methodology sections of articles via PsycINFO (i.e., tests and measures) and CINHAL (i.e., instrumentation). Similarly, in our search of MEDLINE, we used a database restriction that allowed us to search for combinations of the keyword *health*, the D&I keywords, and the keywords *measure, questionnaire, scale,* or *tool* within the abstract only of articles listed as "validation studies." To be eligible for inclusion, articles had to be written in English, validate or utilize at least one scale designed to quantitatively assess a construct hypothesized to predict a D&I-related outcome (e.g., fidelity, exposure; Rabin et al., 2008).

Articles were reviewed in the 3-step process depicted in Appendix B. First, article abstracts and titles were reviewed for the main inclusion criteria. Second, two coders (SC and CB) read the articles and identified specific measures utilized in articles. We then obtained the original validation article of the measure and, in the third step, the same two coders (SC and CB) coded each measure derived from the included articles based on whether items represented structural, organizational, individual provider, individual patient, or innovation-related constructs. Specifically, we utilized the following criteria to code the measures:

- **Structural**: Constructs that assess aspects of the larger sociocultural context or community in which the specific organization(s) is/are nested (e.g., political norms, policies, relative resources/socioeconomic status).
- **Organizational**: Constructs that assess aspects of the organization(s) in which the innovation is being implemented (e.g., culture, norms, organizational endorsement).

- **Provider**: Constructs that assess aspects of the individual provider who will be implementing the innovation (e.g., attitudes, self-efficacy, experience).
- **Patient**: Constructs that assess aspects of the individual patient(s) who will receive the innovation directly or indirectly (e.g., perceived utility, feasibility of innovation).
- **Innovation**: Constructs that assess aspects of the innovation that will be implemented (e.g., adaptability, quality of evidence).

It is important to note that we classified measures based on the subject or content of the scale items rather than based on the viewpoint of who completed the measure. For example, the same scale could be used to assess the general culture of a medical clinic from two different perspectives—the perspective of the individual provider, or from the perspective of administrators. Though these two perspectives might be construed to represent both provider and organizational-level factors, in our review, both were coded as organizational factors because the subject of the assessment is the organization (i.e., its culture) regardless of who is providing the assessment.

RESULTS

Our search yielded a total of 33 measures. Appendix C provides the full list of measures we obtained. For each measure, we provide information about its name and original source, whether it includes items that assess each of the five factors, information about the characteristics measured, predictive validity, and implementation context. In the predictive validity column, we identify articles in which the measure has been used to predict an implementation-related outcome such as fidelity (i.e., the degree to which an innovation is implemented as originally prescribed) or effectiveness (i.e., efficacy of innovation in "real world" settings; Rabin et al., 2008). An asterisk indicates that the measure was demonstrated to be a statistically significant predictor of an implementation outcome in the article listed. In the implementation context column, we indicate the context in which the measure has been utilized: health care, workplace, education, or mental health/substance abuse settings. It is important to note that we utilized only the 45 articles eligible for final review in order to populate information for the predictive validity and implementation context. Thus, this information represents only

information available through these 45 articles and not from an exhaustive search of each measure within the available empirical literature.

Factors Assessed In Measures

Of the 33 measures we obtained, most (22; 66.7%) assessed only one type of factor. Only one measure—the Barriers and Facilitators Assessment Instrument (Peters, Harmsen, Laurant, & Wensing, 2002)—included items designed to assess each of the five factors examined in our review.

Of the five factors coded in our review, organizational factors (21; 63.6%) were the constructs most frequently assessed by these measures. Aspects of organizational culture and climate were assessed frequently (Glisson & James, 2002; Lehman, Greener, & Simpson, 2002) as were measures of organizational support or "buy in" for implementation of the innovation (Dückers Wagner, & Groenewegen, 2008; Helfrich, Li, Mohr, Meterko, & Sales, 2007; Thompson, 1997).

Provider-related factors (18; 54.5%) were also commonly assessed in these measures. Aspects such as research-related attitudes and skills (e.g., Funk et al., 1991; Melnyk, Fineout-Overholt, & Mays, 2008; Pain, Hagler, & Warren, 1999) were commonly assessed. Other provider factors such as personality characteristics (e.g., Big 5 Personality; Costa & McCrae, 1992) and self-efficacy (Rohrbach, Graham, & Hansen, 1993) were also assessed.

Attributes of the innovation were measured by one third of measures (11; 33.3%). Many of these measures assessed characteristics outlined in Roger's diffusion of innovations theory (2003) such as relative advantage, compatibility, complexity, trialability, and observability (Scott, Plotnikoff, Karunamuni, Bize, & Rodgers, 2008).

Structural factors and patient factors were the least likely to be assessed, with only 2 (6.1%) measures assessing each of these factors. The Barriers and Facilitators Assessment Instrument (Peters et al., 2002) assessed each of the five factors, including structural factors such as the social, political, societal context and patient factors such as patient characteristics. The Organizational Readiness for Change (Lehman et al., 2002) also assesses structural factors in terms of the institutional resources available to support implementation activities, and the Organization Readiness to Change Assessment (Helfrich et al., 2009) also assesses the degree to which patient preferences are addressed in the available evidence supporting an innovation.

Predictive Validity and Implementation Context

Surprisingly, almost half (16; 48.5%) of the measures located in our search did not assess predictive validity in their original validation studies or in the articles we reviewed in order to locate these measures. That is, though most measures were developed to assess factors hypothesized to predict implementation outcomes and most demonstrated satisfactory reliability, less than half of these measures were examined in conjunction with measures of implementation outcomes (e.g., fidelity, effectiveness). It is important to note that we did not conduct an exhaustive search of each measure to locate all studies that have utilized it in past research, so it is possible that the predictive validity of these measures has, in fact, been assessed in other studies that were not located in our review.

Consistent with our search strategies, most (25; 75.8%) measures were developed and/or implemented in health-care related settings. Most measures were utilized to examine factors that facilitate or inhibit uptake of evidence-based medical care guidelines (e.g., Bahtsevani, Willman, Khalaf, & Ostman, 2008; Funk et al., 1991; Humphris, Hamilton, O'Halloran, Fisher, & Littlejohns, 1999). However, several studies evaluated measures in educational (e.g., implementation of a preventive intervention in elementary schools; Klimes-Dougan, August, Lee, Realmuto, Bloomquist, Horowitz, J. L., & Eisenberg, 2009), mental health (technology transfer in substance abuse treatment centers; Lehman et al., 2002), or workplace (e.g., willingness to implement worksite health promotion programs; Jung et al., 2010) settings.

Appendix D provides a compendium of the measures that were available in their complete format from either the peer-reviewed literature or via email requests from the corresponding authors.

RECOMMENDATIONS

Based on our review and analysis of available measures, we have arrived at three main recommendations for researchers in selecting, utilizing, and creating D&I measures:

1. Select measures that have strong psychometric properties, including predictive validity. Basic psychometric properties—reliability (e.g., internal reliability, test-retest reliability) and validity (e.g., construct validity, predictive validity)—of any measure should always be evaluated prior to including the measure in research (American Psychological Association, 1999). This is especially true in the area of D&I measurement, given that it is a relatively new area of study and newly developed measures may have had limited use.

10

However, given the lack of predictive validity of most of the scales included in our search, it is especially important that researchers utilize scales that have demonstrated predictive validity of implementation outcomes. For example, though the BARRIERS scale was the most frequently utilized measure of those included in our review (i.e., utilized in 8 of 45 articles), none of those articles utilized the measure to predict an implementation outcome. Instead, this measure was used to characterize the setting as either amenable or not amenable to implementation, though no implementation activity was assessed in relation to the measure itself. Thus, there is a preponderance of scales that currently serve descriptive purposes only.

2. Though there are only a small number of measures designed to assess structural and patient-related characteristics that affect implementation outcomes, these limitations represent opportunities for researchers to adapt existing and create new measures in implementation science literature. Structural level factors such as political norms, policies, and relative resources/socioeconomic status can be important macro-level determinants of implementation outcomes. These types of characteristics may be especially difficult to operationalize because they require researchers to measure multiple different social or structural contexts (e.g., multisite trial) in order to assess variability in these characteristics across settings. Despite these challenges, measures that offer new ways of operationalizing these constructs will be particularly useful in moving implementation science forward.

Though patient-level factors may be somewhat easier to assess, there is a relative dearth of measures designed to assess these characteristics. Though we might assume that most innovations have been tested for patient feasibility in prior stages of research, this is not always a certainty. Thus, measures that assess the degree to which innovations are appropriate and feasible with the patient population of interest are especially important. Beyond feasibility, other important patient characteristics such as health literacy may also affect implementation, making it more likely that an innovation will be effectively implemented with some types of patients but not others. Measures that assess these and other patient-level characteristics will also be useful in moving implementation science forward.

Finally, given that many existing measures of more commonly assessed constructs (i.e., organizational, provider-level characteristics) demonstrate relatively weak psychometric properties—especially concerning predictive validity—researchers may also consider adapting existing or developing new measures to fit their needs.

3. Consider utilizing or adapting measures from related research literatures. The current review examines measures developed for or utilized in D&I health-related research only. Thus, it is important to note that this review does not provide an exhaustive review of all D&I-related measures, nor does it provide an exhaustive review of measures designed to assess the five main constructs—structural, organizational, provider, patient, and innovation-related characteristics—on which we base the current review.

Though the development of D&I-specific measures is still in its infancy, there are certainly other measures available for use from related literatures. For example, organizational level constructs assessing culture are readily available in a variety of related fields such as public administration (e.g., Jung et al., 2009) and organizational management (e.g., Schein, 2010). Several measures have already capitalized on these literatures, adapting and refining existing measures for use in D&I-relevant contexts (e.g., Glisson & James, 2002; Helfrich et al., 2007). At the provider level, the implementation of a new health innovation can be conceptualized as the practice of a health promotion behavior, and there are rich, theory-based literatures that identify the characteristics that emerge as strong predictors of health behavior change (e.g., Social Cognitive Theory: Bandura, 2001; Information, Motivation, Behavioral Skills: Fisher & Fisher, 1992). Several studies (Bonetti et al., 2010; Eccles et al., 2006) have already adopted this approach, utilizing measures of constructs from the Theory of Planned Behavior (Ajzen, 1991) to predict intentions to implement health innovations. Others have utilized widely validated measures of personality (i.e., Big 5 personality traits; Klimes-Dougan et al., 2009) as predictors. We suggest that these approaches—adapting existing measures for use in D&I-related research—offer fruitful strategies to effectively measure many constructs that will likely emerge as reliable predictors of implementation outcomes.

REFERENCES

*Article included in review

* Aiken, L. H., & Patrician, P. A. (2000). Measuring organizational traits of hospitals: The Revised Nursing Work Index. *Nursing Research, 49*, 146-153. doi:10.1097/00006199-200005000-00006

*Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211. doi:10.1016/0749-5978(91)90020-T

American Psychological Association, National Council on Measurement in Education, & American Educational Research Association. (1999). Standards for Educational and Psychological Testing. Washington, DC: American Educational Research Association.

*Bahtsevani, C., Willman, A., Khalaf, A., & Ostman, M. (2008). Developing an instrument for evaluating implementation of clinical practice guidelines: A test-retest study. *Journal of Evaluation in Clinical Practice, 14*, 839-846. doi:10.1111/j.1365-2753.2007.00916.x

Balas, E. A., & Boren, S. A. (2000). Managing clinical knowledge for health care improvement. In J. Bemmel, & A. T. McCray (Eds.), *Yearbook of medical informatics 2000: Patient-centered systems.* (pp. 65-70). Stuttgart, Germany: Schattauer.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1-26.

*Bonetti, D., Johnston, M., Clarkson, J., Grimshaw, J., Pitts, N., Eccles, M., . . . Walker, A. (2010). Applying psychological theories to evidence-based clinical practice: Identifying factors predictive of placing preventive fissure sealants. *Implementation Science, 5*, 25. doi:10.1186/1748-5908-5-25

* Brehaut, J. C., Graham, I. D., Wood, T. J., Taljaard, M., Eagles, D., Lott, A., . . . Stiell, I. G. (2010). Measuring acceptability of clinical decision rules: validation of the Ottawa acceptability of decision rules instrument (OADRI) in four countries. *Medical Decision Making: An International Journal Of The Society For Medical Decision Making, 30*, 398-408. doi:10.1177/0272989X09344747

Carlson, C. L., & Plonczynski, D. J. (2008). Has the BARRIERS Scale changed nursing practice? An integrative review. *Journal of Advanced Nursing, 63*, 322-333. doi:10.1111/j.1365-2648.2008.04705.x

*Cooke, R. A., & Rousseau, D. M. (1988). Behavioral norms and expectations. *Group & Organizational Studies, 13*, 245–273. doi:10.1177/105960118801300302

*Costa, P. T., Jr., & McCrae, R. R. (1992). Revised NEO Personality Inventory (NEO–PI–R) and the NEO Five Factor Inventory (NEO–FFI) professional manual. Odessa, FL: Psychological Assessment Resources.

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science, 4*, 40-55. doi:10.1186/1748-5908-4-50

*Dückers, M. L. A., Wagner, C., & Groenewegen, P. P. (2008). Developing and testing an instrument to measure the presence of conditions for successful implementation of quality improvement collaboratives. *BMC Health Services Research, 8*, 172-172. doi:10.1186/1472-6963-8-172

Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41*, 327. doi:10.1007/s10464-008-9165-0

*Eccles, M., Hrisos, S., Francis, J., Kaner, E., Dickinson, H., Beyer, F., & Johnston, M. (2006). Do self- reported intentions predict clinicians' behaviour: A systematic review. *Implementation Science, 1*, 28.

* Efstation, J. F., Patton, M. J., & Kardash, C. M. (1990). Measuring the working alliance in counselor supervision. *Journal of Counseling Psychology, 37*, 322–329. doi:10.1037//0022-0167.37.3.322

*Estabrooks, C. A., Squires, J. E., Cummings, G. G., Birdsell, J. M., & Norton, P. G. (2009). Development and assessment of the Alberta Context Tool. *BMC Health Services Research, 9*, 234-234.

Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin, 111*, 455-474. doi:10.1037//0033-2909.111.3.455

French, B., Thomas, L., Baker, P., Burton, C., Pennington, L., & Roddam, H. (2009). What can management theories offer evidence-based practice? A comparative analysis of
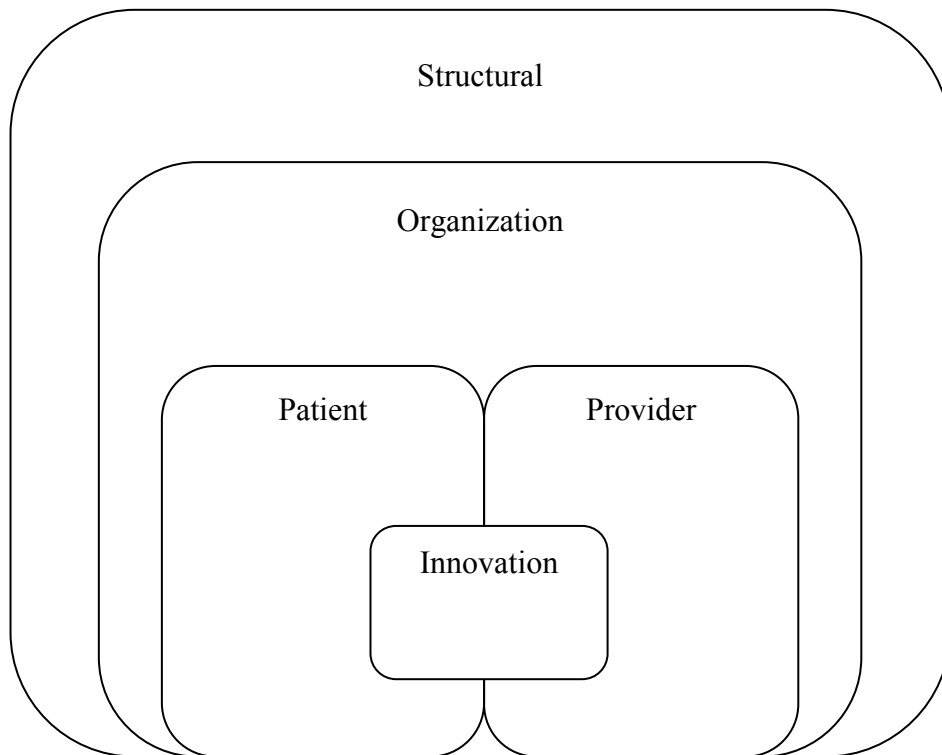
measurement tools for organisational context. *Implementation Science, 4*, 28. [doi:10.1186/1748-5908-4-28](doi:10.1186/1748-5908-4-28)

*Funk, S. G., Champagne, M. T., Wiese, R. A., & Tornquist, E. M. (1991). BARRIERS: The barriers to research utilization scale. *Applied Nursing Research, 4*, 39-45. [doi:10.1016/S0897-1897(05)80052-7](doi:10.1016/S0897-1897(05)80052-7)

*Glisson, C., & James, L. R. (2002). The cross-level effects of culture and climate in human service teams. *Journal of Organizational Behavior, 23*, 767-794. [doi:10.1002/job.162](doi:10.1002/job.162)

Glisson, C., Landsverk, J., Schoenwald, S., Kelleher, K., Hoagwood, K. E., Mayberg, S., Green, P., & The Research Network on Youth Mental Health. (2008). Assessing the organizational social context (OSC) of mental health services: Implications for research and practice. *Administration and Policy in Mental Health, 35*, 98-113. [doi:10.1007/s10488-007-0148-5](doi:10.1007/s10488-007-0148-5)

* Goh, S. C., & Richards, G. (1997). Benchmarking the learning capability of organizations. *European Management Journal, 15*, 575-583. [doi:10.1016/S0263-2373(97)00036-4](doi:10.1016/S0263-2373(97)00036-4)

* Green, L., Wyszewianski, L., Lowery, J., Kowalski, C., & Krein, S. (2007). An observational study of the effectiveness of practice guideline implementation strategies examined according to physicians' cognitive styles. *Implementation Science, 2*, 41. [doi:10.1186/1748-5908-2-41](doi:10.1186/1748-5908-2-41)

*Helfrich, C., Li, Y., Mohr, D., Meterko, M., & Sales, A. (2007). Assessing an organizational culture instrument based on the competing values framework: Exploratory and confirmatory factor analyses. *Implementation Science, 2*, 13. [doi:10.1186/1748-5908-2-13](doi:10.1186/1748-5908-2-13)

*Helfrich, C., Li, Y.-F., Sharp, N., & Sales, A. (2009). Organizational readiness to change assessment (ORCA): Development of an instrument based on the Promoting Action on Research in Health Services (PARIHS) framework. *Implementation Science, 4*, 38. [doi:10.1186/1748-5908-4-38](doi:10.1186/1748-5908-4-38)

*Humphris, D., Hamilton, S., O'Halloran, P., Fisher, S., & Littlejohns, P. (1999). Do diabetes nurse specialists utilise research evidence? *Practical Diabetes International, 6*, 47-50. [doi:10.1002/pdi.1960160213](doi:10.1002/pdi.1960160213)

*Hutchinson, A. M., & Johnston, L. (2004). Bridging the divide: a survey of nurses' opinions regarding barriers to, and facilitators of, research utilization in the practice setting. *Journal of Clinical Nursing, 13*, 304-315. doi:10.1046/j.1365-2702.2003.00865.x

*James, L. R., & Sells, S. B. (1981). Psychological climate. In D. Magnusson (Ed.), The situation: An interactional perspective. Hillsdale, NJ: Lawrence Erlbaum.

Jung, T., Scott, T., Davies, H. T. O., Bower, P., Whalley, P., McNally, R., & Mannion, R. (2009). Instruments for exploring organizational culture: A review of the literature. *Public Administration Review, 69*, 1087-1096. doi:10.1111/j.1540-6210.2009.02066.x

*Jung, J., Nitzsche, A., Neumann, M., Wirtz, M., Kowalski, C., Wasem, J. … Pfaff, H. (2010). The Worksite Health Promotion Capacity Instrument (WHPCI): Development, validation and approaches for determining companies' levels of health promotion capacity. *BMC Public Health, 10*, 550-559. doi:10.1186/1471-2458-10-550

*Klimes-Dougan, B., August, G. J., Lee, C. S., Realmuto, G. M., Bloomquist, M. L., Horowitz, J. L., & Eisenberg, T. L. (2009). Practitioner and site characteristics that relate to fidelity of implementation: The Early Risers prevention program in a going-to-scale intervention trial. *Professional Psychology: Research and Practice, 40*, 467-475. doi:10.1037/a0014623

*Lehman, W. E. K., Greener, J. M., & Simpson, D. D. (2002). Assessing organizational readiness for change. *Journal of Substance Abuse Treatment, 22*, 197–209. doi:10.1016/S0740-5472(02)00233-7

* McCormack, B., McCarthy, G., Wright, J., Slater, P., & Coffey, A. (2009). Development and testing of the context assessment index (CAI). *Worldviews on Evidence-Based Nursing, 6*, 27-35. doi:10.1111/j.1741-6787.2008.00130.x

*Melnyk, B. M., Fineout-Overholt, E., & Mays, M. Z. (2008). The evidence-based practice beliefs and implementation scales: Psychometric properties of two new instruments. *Worldviews on Evidence-Based Nursing, 5*, 208-216. doi:10.1111/j.1741-6787.2008.00126.x

National Institutes of Health (NIH). (2010). *PAR-10-038. Dissemination and implementation research in health (R01).* Retrieved from http://grants.nih.gov/grants/guide/pa-files/PAR-10-038.html
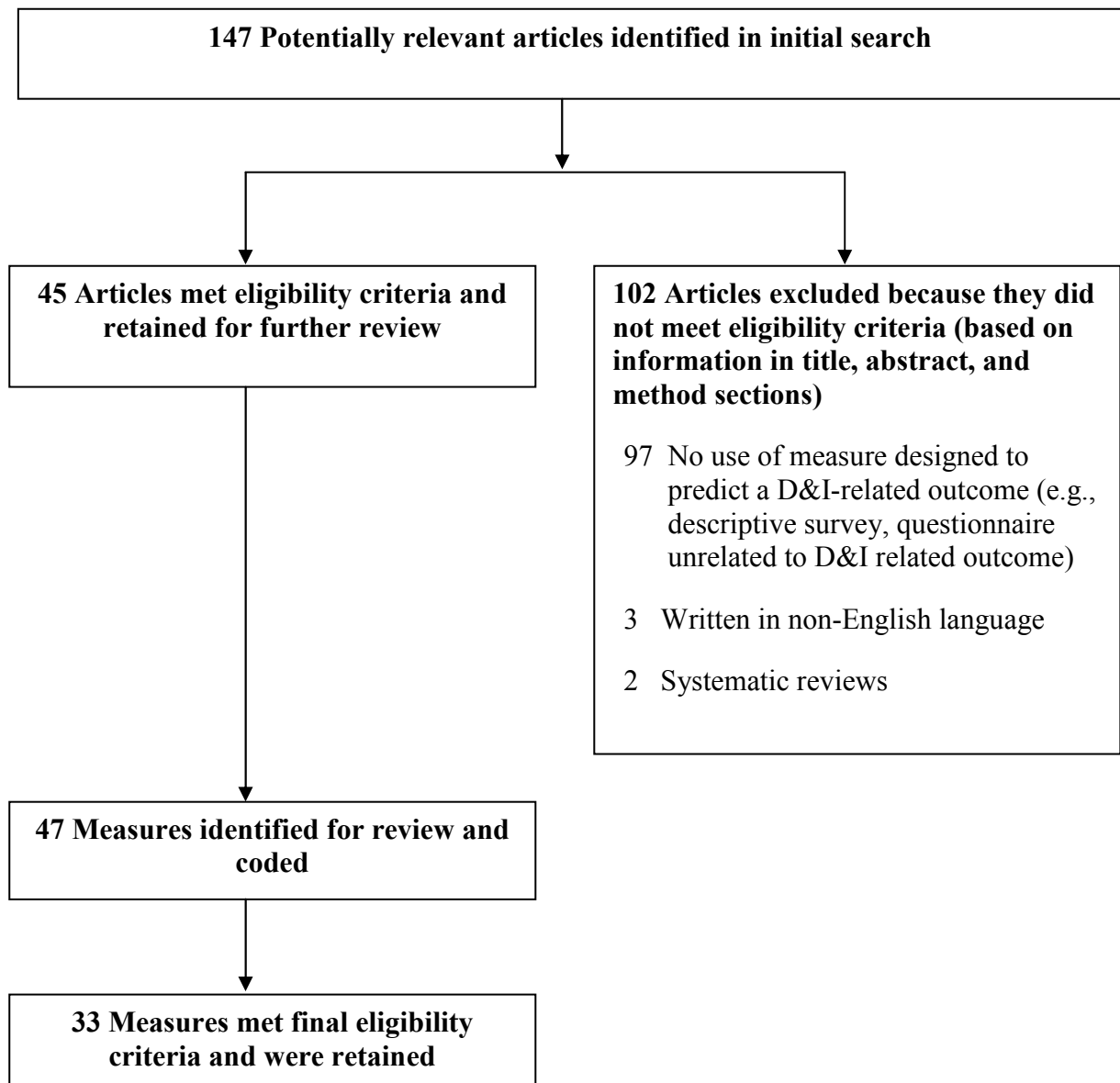
*Pain, K., Hagler, P., & Warren, S. (1996). Development of an instrument to evaluate the research orientation of clinical professionals. *Canadian Journal of Rehabilitation, 9*, 93-100.

*Peters, M. A. J., Harmsen, M., Laurant, M. G. H. , & Wensing, M. (2002). Ruimte voor verandering? Knelpunten en mogelijkheden voor verbeteringen in de patiëntenzorg [Room for improvement? Barriers to and facilitators for improvement of patient care]. Nijmegen, the Netherlands: Centre for Quality of Care Research (WOK), Radboud University Nijmegen Medical Centre.

*Poissant, L., & Curran, J. (2007). *The development of a questionnaire to assess organizational readniess to adopt e-health technologies.* Paper presented at the CAHSPR, Toronto, Canada.

Rabin, B. A., Brownson, R. C., Haire-Joshu, D., Kreuter, M. W., & Weaver, N. D. (2008). A glossary for dissemination and implementation research in health. *Journal of Public Health Management Practice, 14*, 117–123.

Rogers, E. M. (1995). Diffusion of Innovations (4th ed.). New York: Free Press.

*Rohrbach, L. A., Graham, J. W., & Hansen, W. B. (1993). Diffusion of a school-based substance-abuse prevention program: Predictors of program implementation. *Preventive Medicine, 22*, 237-260.

Schein, E. H. (2010). *Organizational culture and leadership.* San Francisco, CA: Jossey-Bass.

*Shiffman, R. N., Dixon, J., Brandt, C., Essaihi, A., Hsiao, A., Michel, G., & O'Connell, R. (2005). The GuideLine Implementability Appraisal (GLIA): Development of an instrument to identify obstacles to guideline implementation. *BMC Medical Informatics and Decision Making, 5*, 23-30. doi: 10.1186/1472-6947-5-23.

*Scott, S., Plotnikoff, R., Karunamuni, N., Bize, R., & Rodgers, W. (2008). Factors influencing the adoption of an innovation: An examination of the uptake of the Canadian heart health kit (HHK). *Implementation Science, 3*, 41-48. doi:10.1186/1748-5908-3-41

*Shortell, S. M., Jones, R. H., Rademaker, A. W., Gillies, R. R., Dranove, D. S., Hughes, E. F. X., . . . Huang, C. F. (2000). Assessing the impact of total quality management and organizational culture on multiple outcomes of care for coronary artery bypass graft surgery patients. *Medical Care, 38*, 207-217. doi:10.1097/00005650-200002000-00010

* Shortell, S. M., O'Brien, J. L., Carman, J. M., Foster, R. W., Hughes, E. F., Boerstler, H., O'Connor, E. J. (1995). Assessing the impact of continuous quality improvement total quality management: Concept versus implementation. *Health Services Research, 30*, 377-401.

*Squires, J. E., Estabrooks, C. A., Gustavsson, P., & Wallin, L. (2011). Individual determinants of research utilization by nurses: a systematic review update. *Implementation Science, 6,* 1-20. doi:10.1186/1748-5908-6-1

*Thompson, C. J. (1997). *Extent and factors influencing research utilization among critical care nurses*. Unpublished Dissertation, Texas Woman's University.

* Thoresen, C. J. (2000). *Antecedents and consequences of coping with setbacks at work: A theory drive framework.* Unpublished doctoral dissertation, University of Iowa.

*Upton, D., & Upton, P. (2006). Development of an evidence-based practice questionnaire for nurses. *Journal of Advanced Nursing, 53*, 454-458. doi:10.1111/j.1365-2648.2006.03739.x

* Van Mullem, C., Burke, L. J., Dohmeyer, K., Farrell, M., Harvey, S., John, L. … Zapp, R. (1999). Strategic planning for research use in nursing practice. *The Journal of Nursing Administration, 29*, 38-45. doi:10.1097/00005110-199912000-00008

* Yamada, J., Stevens, B., Sidani, S., Watt-Watson, J., & de Silva, N. (2010). Content validity of a process evaluation checklist to measure intervention implementation fidelity of the EPIC intervention. *Worldviews on Evidence-Based Nursing, 7*, 158-164. doi:10.1111/j.1741-6787.2010.00182.x

* Zammuto, R. F., & Krakower, J. Y. (1991). Quantitative and qualitative studies of organizational culture. In R. W. Woodman & W. A. Pasmore (Eds). *Research in organizational change and development (Vol. 5)*. Greenwich, CT: JAI Press.

APPENDIX A: A Five-factor Framework Predicting Implementation Outcomes

Structural

Organization

Patient

Provider

Innovation

APPENDIX B: Systematic Literature Review Process

```
┌─────────────────────────────────────────────────────────────┐
│     147 Potentially relevant articles identified in initial search │
└─────────────────────────────────────────────────────────────┘
```

45 Articles met eligibility criteria and retained for further review	102 Articles excluded because they did not meet eligibility criteria (based on information in title, abstract, and method sections)
	97 No use of measure designed to predict a D&I-related outcome (e.g., descriptive survey, questionnaire unrelated to D&I related outcome)
	3 Written in non-English language
	2 Systematic reviews

47 Measures identified for review and coded

33 Measures met final eligibility criteria and were retained

APPENDIX C: Table of Included Measures

Scale Name & Source	Structural (S)	Organizational (O)	Individual: Provider (PR)	Individual: Patient (PA)	Innovation (I)	Construct Information	Predictive Validity	Implementation Context
Alberta Context Tool (ACT; Estabrooks et al., 2009)		X				O: culture, leadership, evaluation, social capital, informal interactions, formal interactions, structural and electronic resources, organizational slack	Estabrooks et al., 2009* Cummings et al., 2010*	Healthcare
Barriers to Research Utilization Scale (BARRIERS; Funk et al., 1991)		X	X		X	O: Setting barriers and limitations PR: Research skills, values, and awareness of EBP I: Quality and presentation of research	n/a	Healthcare
Barriers and Facilitators Assessment Instrument (Peters et al., 2002)	X	X	X	X	X	S: Social, political, societal context O: Organizational context PR: Care provider characteristics PA: Patient characteristics I: Innovation characteristics	Peters et al., 2002*	Healthcare
Big 5 Personality (e.g., NEO-FFI; Costa & McCrae, 1992)			X			PR: Personality attributes (openness, conscientiousness, extraversion, agreeableness, neuroticism)	Klimes-Dougan et al., 2009*	Education

Instrument			Focus	Reference	Setting
Clinical Practice Guidelines Implementation Instrument (Bahtsevani et al., 2008)	X	X	O: context features I: evidence	n/a	Healthcare
Competing Values Framework (Helfrich et al., 2007; adapted from Shortell et al., 1995; Zammuto & Krakower, 1991)	X		O: Organizational culture (hierarchical, entrepreneurial, team, and rational)	n/a	Healthcare
Context Assessment Index (McCormack et al., 2009)	X		O: collaborative practice, evidence-informed practice, respect for persons, practice boundaries, evaluation	n/a	Healthcare
Coping Style: Coping With Setbacks Work Questionnaire (Thoresen, 2000), Supervisory Working Alliance Inventory (Efstation et al., 1990)		X	PR: Coping style	Klimes-Dougan et al., 2009*	Education
Dückers Organizational Measure (Dückers et al., 2008)	X		O: organizational support, team organization, external change agent support	n/a	Healthcare
Edmonton Research Orientation Survey (EROS; Pain et al., 1999)		X	PR: Research orientation	n/a	Healthcare
e-Health state of readiness questionnaire (Poissant & Curran, 2007)	X	X	O: work processes, leadership, communication, support PR: personal commitment, beliefs about technology, skills/knowledge I: e-health effectiveness	n/a	Healthcare
EPC (Green et al., 2002,		X	PR: Cognitive response style	Green et al., 2007*	Healthcare

Instrument				Construct	Citation	Sector
2007, aka Typology Questionnaire)						Healthcare
Evidence-Based Practice Beliefs Scale (Melnyk et al., 2008)	X			PR: Attitudes about EBP	Melnyk et al., 2008*	Healthcare
Evidence-Based Practice Questionnaire (Upton & Upton, 2006)	X			PR: Attitudes and knowledge of EBP	Upton & Upton, 2006*	Healthcare
Facilitators Scale (Hutchinson & Johnston, 2004)	X		X	O: Support for research; PR: Education; I: Improving utility of research	n/a	Healthcare
GuideLine Implementability Appraisal (GLIA; Shiffman et al., 2005)			X	I: Implementability	n/a	Healthcare
Nursing Work Index (Aiken et al., 2001)	X			O: hospital characteristics	n/a	Healthcare
Organization Readiness to Change Assessment (ORCA; Helfrich et al., 2009)	X	X	X	O: culture, leadership, measurement, readiness for change, resources, characteristics, role; PA: Evidence: Patient preferences; I: Evidence: Disagreement, evidence, clinical experience	Hagedorn & Heideman, 2010*	Healthcare
Organizational/Psychological Climate (Glisson & James, 2002; James & James, 2002; James & Sells, 1981)	X	X		PR: Job satisfaction, depersonalization, emotional exhaustion, role conflict	Klimes-Dougan et al., 2009*; Wang et al., 2010	Education; Mental Health/Substance Abuse
Organizational Culture (Glisson & James, 2002; Cooke & Rousseau, 1998)	X			O: Constructive Culture (motivation, individualism, support), Passive Defensive Culture (consensus, conformity, subservience)	Klimes-Dougan et al., 2009*; Shotell et al., 2000	Education; Healthcare
Organizational Learning	X			O: Clarity of purpose, leadership,	n/a	Workplace

Instrument					Constructs	Validation	Setting
Survey (OLS; Goh et al., 2007)				X	experimentation and rewards, transfer of knowledge, teamwork		Mental Health/ Substance Abuse
Organizational Readiness for Change (Lehman et al., 2002)	X	X	X		S: Institutional resources O: Organizational climate PR: Staff attributes	Lehman et al., 2002*	Mental Health/ Substance Abuse
Organizational Social Context† (Glisson et al., 2008)		X	X		O: Climate, culture PR: Work attitudes	n/a	Healthcare
Ottawa Acceptability of Decision Rules Instrument (OADRI; Brehaut et al., 2010)				X	I: Acceptability of clinical practice guidelines	Brehaut et al., 2010*	Healthcare
Process Evaluation Checklist (Yamada et al., 2010)				X	I: Usefulness of intervention training, perceived effectiveness	n/a	Healthcare
Quality Improvement Implementation Survey (Shortell et al., 2000)		X			O: Culture, leadership, information and analysis, strategic planning quality, human resource utilization, quality management, quality results, customer satisfaction	Shortell et al., 2000	Healthcare
Research Factor Questionnaire (Thompson, 1997)	X	X	X		O: Organizational support for research based practice PR: Research attitude, involvement in research activities	n/a	Healthcare
Research Knowledge, Attitudes and Practices of Research Survey (VanMullem et al., 1999)		X	X		PR: Research knowledge, attitudes, practice	n/a	Healthcare
Research Utilization Questionnaire (RUQ; Humphris et al., 1999)		X	X		O: availability and support PR: attitude	n/a	Healthcare
Scott Innovation Scale (Scott et al., 2008)		X		X	O: Type of practice I: Relative advantage,	Scott et al., 2008	Healthcare

24

Measure				Constructs	Citations	Setting
The Pre-Implementation Expectancies (Rohrbach et al., 1993)	X	X	X	compatibility, complexity, trialability, observability O: Teacher morale PR: Enthusiasm for Implementation, preparedness to implement, implementation self-efficacy I: Beliefs about the program	Klimes-Dougan et al., 2009* Rohrbach et al., 1993*	Education
Theory of Planned Behavior Constructs (i.e., attitudes, norms, perceived behavioral control, intention (Ajzen, 1991)		X		PR: Attitudes, norms, perceived behavioral control, intention	Bonetti et al., 2010* Eccles et al., 2006* Eccles et al., 2009* Scott et al., 2008*	Healthcare
Worksite Health Promotion Capacity Instrument (WHPCI; Health Promotion Willingness subscale: Jung et al., 2010)	X			O: Health promotion willingness	n/a	Workplace

Notes. EBP = evidence based practice. n/a = not available: no articles in review assessed predictive validity. *Measure was a statistically significant predictor of an implementation outcome. † This scale includes the organizational culture and organizational climate scales also developed by the same author (Glisson & James, 2002).

25

APPENDIX D: Measures Available in Complete Form

This appendix provides a compendium of the measures that are available from either the peer-reviewed literature or with permission from the corresponding authors:

Barriers to Research Utilization Scale (BARRIERS; Funk et al., 1991)

Barriers and Facilitators Assessment Instrument (Peters et al., 2002)

Clinical Practice Guidelines Implementation Instrument (Bahtsevani et al., 2008)

Competing Values Framework (Helfrich et al., 2007; adapted from Shortell et al., 1995; Zammuto & Krakower, 1991)

Context Assessment Index (McCormack et al., 2009)

Dückers Organizational Measure (Dückers et al., 2008)

e-Health State of Readiness Questionnaire (Poissant & Curran, 2007)

EPC (Green et al., 2002, 2007; aka Typology Questionnaire)

Evidence-Based Practice Beliefs Scale (Melnyk, Fineout-Overholt, & Mays, 2008)

Evidence-Based Practice Questionnaire (Upton & Upton, 2006)

Facilitators Scale (Hutchinson & Johnston, 2004)

GuideLine Implementability Appraisal (GLIA; Shiffman et al., 2005)

Nursing Work Index (Aiken et al., 2001)

Organization Readiness to Change Assessment (ORCA; Helfrich et al., 2009)

Organizational Learning Survey (OLS; Goh et al., 2007)

Organizational Readiness for Change (Lehman et al., 2002)

Ottawa Acceptability of Decision Rules Instrument (OADRI; Brehaut et al., 2010)

Quality Improvement Implementation Survey (Shortell et al., 2000)

Theory of Planned Behavior Constructs (i.e., attitudes, norms, perceived behavioral control, intention (Ajzen, 1991)

Worksite Health Promotion Capacity Instrument (WHPCI; Health Promotion Willingness subscale: Jung et al., 2010)

Note: Measures were recreated here based on information available in published articles and correspondence with authors. Several measures did not have full information (e.g., scale anchors) available.

Barriers to Research Utilization Scale (BARRIERS)

Please indicate to what degree you find each item is perceived to be a barrier to the use of research findings in nursing.

		To No Extent	To A Little Extent	To A Moderate Extent	To A Great Extent	No Opinion
1.	The nurse does not see the value of research for practice.	1	2	3	4	N/O
2.	The nurse sees little benefit for self.	1	2	3	4	N/O
3.	The nurse is unwilling to change/try new ideas.	1	2	3	4	N/O
4.	There is not a documented need to change practice.	1	2	3	4	N/O
5.	The nurse feels the benefits of changing practice will be minimal.	1	2	3	4	N/O
6.	The nurse does not feel capable of evaluating the quality of the research.	1	2	3	4	N/O
7.	The nurse is isolated from knowledgeable colleagues with whom to discuss the research.	1	2	3	4	N/O
8.	The nurse is unaware of the research.	1	2	3	4	N/O
9.	Administration will not allow implementation.	1	2	3	4	N/O
10.	Physicians will not cooperate with implementation.	1	2	3	4	N/O
11.	There is insufficient time on the job to implement new ideas.	1	2	3	4	N/O
12.	Other staff are not supportive of implementation.	1	2	3	4	N/O
13.	The facilities are inadequate for implementation.	1	2	3	4	N/O
14.	The nurse does not feel she/he has enough authority to change patient care procedures.	1	2	3	4	N/O
15.	The nurse does not have time to read research.	1	2	3	4	N/O

16.	The nurse feels results are not generalizable to own setting.	1	2	3	4	N/O
17.	The research has methodological inadequacies.	1	2	3	4	N/O
18.	The conclusions drawn from the research are not justified.	1	2	3	4	N/O
19.	The research has not been replicated.	1	2	3	4	N/O
20.	The literature reports conflicting results.	1	2	3	4	N/O
21.	The nurse is uncertain whether to believe the results of the research.	1	2	3	4	N/O
22.	Research reports/articles are not published fast enough.	1	2	3	4	N/O
23.	Implications for practice are not made clear.	1	2	3	4	N/O
24.	Research reports/articles are not readily available.	1	2	3	4	N/O
25.	The research is not reported clearly and readably.	1	2	3	4	N/O
26.	Statistical analyses are not understandable.	1	2	3	4	N/O
27.	The relevant literature is not compiled in one place.	1	2	3	4	N/O
28.	The research is not relevant to the nurse's practice.	1	2	3	4	N/O

Items 1-8 represent Factor 1: Characteristics of the adopter: The nurse's research values, skills, and awareness. Items 9-16 represent Factor 2: Characteristics of the organization: Setting barriers and limitations. Items 17-22 represent Factor 3: Characteristics of the innovation: Qualities of the research. Items 23-28 represent Factor 4: Characteristics of the communication: Presentation and accessibility of the research.

Funk, S. G., Champagne, M. T., Wiese, R. A., & Tornquist, E. M. (1991). BARRIERS: The barriers to research utilization scale. *Applied Nursing Research, 4*, 39-45. doi:10.1016/S0897-1897(05)80052-7

Barriers and Facilitators Assessment Instrument

The Barriers and Facilitators Assessment Instrument is a 27 item scale that measures barriers to and facilitators for improvement of patient care, with a focus on preventative care. The scale uses a 5-point Likert Scale: Fully disagree, Disagree, Do not agree nor disagree, Agree and Fully Agree. The instructions and complete scale can be downloaded from http://www.wokresearch.nl/UserFiles/Docs/product_112.pdf

Peters, M. A. J., Harmsen, M., Laurant, M. G. H., & Wensing, M. *Ruimte voor verandering? Knelpunten en mogelijkheden voor verandering in de patiëntenzorg* [Room for improvement? Barriers to and facilitators for improvement of patient care]. Nijmegen: Centre for Quality of Care Research (WOK), Radboud University Nijmegen Medical Centre, 2002.

Clinical Practice Guidelines Implementation Instrument

Use of CPG

Do you use any clinical guidelines in your practice   Yes   No   Don't know.

How many clinical guidelines do you use in your clinical   1-5   6-10   11-15   >15
practice

Present circumstances with regard to clinical experiences

Do you actively discuss/reflect upon the value of clinical   Yes   No   Don't know
experiments in your clinical practice?

How do you perceive the present circumstances in your clinical practice with regard to
clinical experiences?   *(scales between 0.00 and 10.00)*

0.00	10.00
Clinical experiences are discussed/reflected upon unsystematically without critical reflection	Clinical experiences are discussed/reflected upon systematically with critical reflection
Clinical experiences are not valued as a form of evidence	Clinical experiences are valued as a form of evidence
It lacks judgment of clinical experiences at individual and group level	Clinical experience are judged at individual and group level
There is a lack of mutual understanding within the health profession groups concerning the value of clinical experience	There is mutual understanding within the health profession groups concerning the value of clinical experience
Clinical experiences are valued as the only form of valid knowledge in decision making	Clinical experiences are valued as one of several forms of valid knowledge in decision making

Present circumstances with regard to patient's experiences

Do you actively discuss/reflect upon the value of patient's   Yes   No   Don't know
experiences in your clinical practice?

How do you perceive the present circumstances in your clinical practice with regard to
patient's experiences? *(scales between 0.00 and 10.00)*

0.00	10.00
Patient's experiences are not valued as a form of evidence	Patient's experiences are valued as a form of Evidence
Patient's experiences are valued as the only valid knowledge in decision making	Patient's experiences are valued as one of several forms of valid knowledge in decision making
Patients are not involved in the planning of care actions	Patients are involved in the planning of care actions

| No partnership exists between patients and health professionals | A partnership exists between patients and health Professionals |
| Patient's biographies and experiences are not used | Patient's biographies and experiences are used |

Questions and scales related to the context of care and circumstances in clinical practice

Was there anything specific that promoted the implementation of the guidelines in your clinical practice?   Yes   No   Don't know

How do you perceive the present circumstances in your clinical practice in terms of the context of care, forms of evaluation and the function of facilitator? *(scales between 0.00 and 10.00)*

0.00	10.00
The context is characterized by traditional (command and control) leadership	The context is characterized by transformational leadership
The context is not receptive to change	The context is receptive to change
The context is characterized by a culture that promotes a task driven organization	The context is characterized by a culture that promotes a learning organization
Clinical, performance, economic, and experience evaluations rely on single rather than multiple methods	Multiple methods are used for clinical, performance, economic, and experience evaluations
The function and role of facilitator aims at doing for others (for example searching for research literature)	The function and role of facilitator aims at enabling others (for example teach searching for literature)
The context is characterized by a culture that is unclear about values and beliefs	The context is characterized by a culture that is clear about prevailing values and beliefs
There is absence of feedback concerning individual, team, and system performance	There is feedback on individual, team, and system performance
There is absence of facilitators or facilitation methods are inappropriate	Presence of facilitators and appropriate facilitation methods

[Questions are related to the use of CPG as well as circumstances in clinical practice concerning clinical and patient's experiences. Questions are either closed format (yes, no, don't know) with space for comments or a visual analogue scale using 10 cm line between two contradictory statements.]

Bahtsevani, C., Willman, A., Khalaf, A., & Ostman, M. (2008). Developing an instrument for evaluating implementation of clinical practice guidelines: a test-retest study. *Journal Of Evaluation In Clinical Practice, 14*, 839-846. doi:10.1111/j.1365-2753.2007.00916.x

Competing Values Framework

This set of questions relates to your facility's culture. The following items contain four descriptions of health care facilities. Please distribute 100 points among the four descriptions depending on how similar each description is to your facility. None of the descriptions is any better than the others; they are just different.

For example: In question 1, if Facility A seems very similar to mine, B seems somewhat similar, and C and D do not seem similar at all, I might give 70 points to A and the remaining 30 points to B.

Facility Character   (Please distribute 100 points)
1. 70
2. 30
3. 0
4. 0

Competing Values Framework (original version)

Institutional Characteristics (Please distribute 100 points)

_____ Institution A is a very personal place. It is like an extended family. People see [sic] to share a lot of themselves.

_____ Institution B is very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks

_____ Institution C is very formalized and structured place. Bureaucratic procedures generally govern what people do.

_____ Institution D is very production oriented. A major concern is with getting the job done. People aren't very personality involved.

Institution Leader (Please distribute 100 points)

_____ The head of institution A is generally considered to be a mentor, a sage, or a father or mother figure.

_____ The head of institution B is generally considered to be an entrepreneur, an innovator, or a risk taker.

_____ The head of institution C is generally considered to be a coordinator, an organizer, or an administrator.

_____ The head of institution D is generally considered to be a producer, a technician, or a hard driver.

Institution "Glue" (Please distribute 100 points)

_____ The glue that holds institution A together is loyalty and tradition. Commitment to this school runs high

_____ The glue that holds institution B together is a commitment to innovation and development. There is an emphasis on being first

_____ The glue that holds institution C together is formal rules and policies. Maintaining a smooth-running institution is important here

_____ The glue that holds institution D together is the emphasis on tasks and goal accomplishment. A production orientation is commonly shared

Institution Emphases (Please distributed 100 points)

_____ Institution A emphasizes human resources. High cohesion and morale in the school are important.

Institution B emphasizes growth and acquiring new resources. Readiness to meet

_____   new challenges is important.

_____   Institution C emphasizes permanence and stability. Efficient, smooth operations are important.

_____   Institution D emphasizes competitive actions, and achievement. Measurable goals are important.

[The Competing Values Framework is used to assess organizational culture as a predictor of quality improvement implementation, employee and patient satisfaction, and team functioning. Zammuto and Krakower (1991) originally created the Competing Values Framework scale, and their scale is provided below. Additional variations of the scale can be found by downloading "Additional file 2. Item wording from adapted Competing Values Framework instrument used by Shortell and colleagues." and "Additional file 3. Item wording from adapted Competing Values Framework instrument used by the Veterans Health Administration" from http://www.implementationscience.com/content/2/1/13].

Original source:

Zammuto, R. F. and J. Y. Krakower (1991). Quantitative and qualitative studies of organizational culture. In *Research in organizational change and development*. R. W. Woodman and W. A. Pasmore. Greenwich, CT, JAI Press. 5.

Use of the scale within a health care setting:

Helfrich, C., Li, Y., Mohr, D., Meterko, M., & Sales, A. (2007). Assessing an organizational culture instrument based on the competing values framework: Exploratory and confirmatory factor analyses. *Implementation Science, 2*, 13. doi:10.1186/1748-5908-2-13

Context Assessment Index

FOR EACH OF THE FOLLOWING STATEMENTS, PLEASE PUT A CROSS IN ONE BOX ONLY.

SA- STRONGLY AGREE; A -AGREE; D - DISAGREE; SD -STRONGLY DISAGREE

		SA	A	D	SD
01	Personal and professional boundaries between HCPs[a] are maintained				
02	Decisions on care and management are clearly documented by all staff				
03	A proactive approach to care is taken				
04	All aspects of care/treatment are based on evidence of best practice				
05	The nurse leader acts as a role model of good practice				
06	HCPs provide opportunities for patients to participate in decisions about their own care				
07	Education is a priority				
08	There are good working relations between clinical and non-clinical staff				
09	Staff receive feedback on the outcomes of complaints				
10	HCPs in the MDT have equal authority in decision making[b]				
11	Audit and/or research findings are used to develop practice				
12	A staff performance review process is in place that enables reflection on practice and goal setting and is regularly reviewed				
13	Staff have explicit understanding of their own attitudes and beliefs toward the provision of care				
14	Patients are encouraged to be active participants in their own care				
15	There is high regard for patients privacy and dignity				
16	HCPs and health care support workers understand each others' role				
17	The management structure is democratic and inclusive				
18	Appropriate information (large written print, tapes, etc.) is accessible to patients				
19	HCPs and patients work as partners, providing individual patient care				
20	Care is based on a comprehensive assessment				
21	Challenges to practice are supported and encouraged by nurse leaders and nurse managers				

22	Discussions are planned between HCPs and patients				
23	The development of staff expertise is viewed as a priority by nurse leaders				
24	Staff use reflective processes (e.g., action learning, clinical supervision, or reflective diaries) to evaluate and develop practice				
25	Organisational management has high regard for staff autonomy				
26	Staff welcome and accept cultural diversity				
27	Evidence-based knowledge on care is available to staff				
28	Patients have choice in assessing, planning, and evaluating their care and treatment				
29	HCPs have the opportunity to consult with specialists				
30	HCPs feel empowered to develop practice				
31	Clinical nurse leaders create an environment conducive to the development and sharing of ideas				
32	Guidelines and protocols based on evidence of best practice (patient experience, clinical experience, and research) are available				
33	Patients are encouraged to participate in feedback on care, culture, and systems				
34	Resources are available to provide evidence-based care				
35	The organisation is non-hierarchical				
36	HCPs share common goals and objectives about patient care				
37	Structured programmes of education are available to all HCPs				

[a]Health care practitioners; [b]Multidisciplinary team.

[The Context Assessment Index is a 37 item scale developed to assist practitioners in assessing and understanding the context in which they work and the effect this has on implementing evidence into practice.]

McCormack, B., McCarthy, G., Wright, J., Slater, P., & Coffey, A. (2009). Development and testing of the context assessment index (CAI). *Worldviews on Evidence-Based Nursing, 6*, 27-35. doi:10.1111/j.1741-6787.2008.00130.x

Coping Style:
Supervisory Working Alliance Inventory

Version for supervisors

	Item	Not Very						Very
1.	I help my trainee work within a specific treatment plan with his/her trainee	1	2	3	4	5	6	7
2.	I help my trainee stay on track during our meetings.	1	2	3	4	5	6	7
3.	My style is to carefully and systematically consider the material that my trainee brings to supervision.	1	2	3	4	5	6	7
4.	My trainee works with me on specific goals in the supervisory session.	1	2	3	4	5	6	7
5.	In supervision, I expect my trainee to think about or reflect on my comments to him/her.	1	2	3	4	5	6	7
6.	I teach my trainee through direct suggestion	1	2	3	4	5	6	7
7.	In supervision, I place a high priority on our understanding the client's perspective.	1	2	3	4	5	6	7
8.	I encourage my trainee to take time to understand what the client is saying and doing.	1	2	3	4	5	6	7
9.	When correcting my trainee's errors with a client, I offer alternative ways of intervening with that client.	1	2	3	4	5	6	7
10.	I encourage my trainee to formulate his/her own interventions with his/her clients.	1	2	3	4	5	6	7
11.	I encourage my trainee to talk about the work in ways that are comfortable for him/her.	1	2	3	4	5	6	7
12.	I welcome my trainee's explanations about his/ her client's behavior.	1	2	3	4	5	6	7
13.	During supervision, my trainee talks more than I do.	1	2	3	4	5	6	7
14.	I make an effort to understand my trainee.	1	2	3	4	5	6	7
15.	I am tactful when commenting about my trainee's performance.	1	2	3	4	5	6	7
16.	I facilitate my trainee's talking in our sessions.	1	2	3	4	5	6	7
17.	In supervision, my trainee is more curious than anxious when discussing his/her difficulties with clients.	1	2	3	4	5	6	7
18.	My trainee appears to be comfortable working with me.	1	2	3	4	5	6	7
19.	My trainee understands client behavior and treatment technique similar to the way I do.	1	2	3	4	5	6	7
20.	During supervision, my trainee seems able to stand back and reflect on what I am saying to him/her.	1	2	3	4	5	6	7
21.	I stay in tune with my trainee during supervision.	1	2	3	4	5	6	7
22.	My trainee identifies with me in the way he/she thinks and talks about his/her clients.	1	2	3	4	5	6	7
23.	My trainee consistently implements suggestions made in supervision.	1	2	3	4	5	6	7

Version for trainees

	Item	Not Very						Very
			…………….					
1.	I feel comfortable working with my supervisor.	1	2	3	4	5	6	7
2.	My supervisor welcomes my explanations about the client's behavior.	1	2	3	4	5	6	7
3.	My supervisor makes the effort to understand me	1	2	3	4	5	6	7
4.	My supervisor encourages me to talk about my work with clients in ways that are comfortable for me.	1	2	3	4	5	6	7
5.	My supervisor is tactful when commenting about my performance.	1	2	3	4	5	6	7
6.	My supervisor encourages me to formulate my own interventions with the client.	1	2	3	4	5	6	7
7.	My supervisor helps me talk freely in our sessions.	1	2	3	4	5	6	7
8.	My supervisor stays in tune with me during supervision.	1	2	3	4	5	6	7
9.	I understand client behavior and treatment technique similar to the way my supervisor does.	1	2	3	4	5	6	7
10.	I feel free to mention to my supervisor any troublesome feelings I might have about him/her.	1	2	3	4	5	6	7
11.	My supervisor treats me like a colleague in our supervisory sessions.	1	2	3	4	5	6	7
12.	In supervision, I am more curious than anxious when discussing my difficulties with clients.	1	2	3	4	5	6	7
13.	In supervision, my supervisor places a high priority on our understanding the client's perspective.	1	2	3	4	5	6	7
14.	My supervisor encourages me to take time to understand what the client is saying and doing.	1	2	3	4	5	6	7
15.	My supervisor's style is to carefully and systematically consider the material I bring to supervision	1	2	3	4	5	6	7
16.	When correcting my errors with a client, my supervisor offers alternative ways of intervening with that client.	1	2	3	4	5	6	7
17.	My supervisor helps me work within a specific treatment plan with my clients.	1	2	3	4	5	6	7
18.	My supervisor helps me stay on track during our meetings.	1	2	3	4	5	6	7
19.	I work with my supervisor on specific goals in the supervisory session.	1	2	3	4	5	6	7

Efstation, J. F., Patton, M. J., & Kardash, C. M. (1990). Measuring the working alliance in counselor supervision. *Journal of Counseling Psychology, 37*, 322–329. doi:10.1037//0022-0167.37.3.322

Duckers Organizational Measure

	Item	Strongly disagree …………….. Strongly agree						
11	In the department(s) where the project is implemented we see that the project is important to the strategic management	1	2	3	4	5	6	7
12	In the department(s) where the project is implemented we see that the strategic management supports the project actively	1	2	3	4	5	6	7
13	the hospital gives the support we need in the department(s) to make the project a success	1	2	3	4	5	6	7
14	does everything in its power to increase the willingness to change	1	2	3	4	5	6	7
15	the board pays attention to the activities of the project team	1	2	3	4	5	6	7
1	(In) the project team there is good communication and coordination	1	2	3	4	5	6	7
2	(In) the project team the division of tasks is perfectly clear	1	2	3	4	5	6	7
3	(In) the project team everyone is doing what he or she should do	1	2	3	4	5	6	7
4	(In) the project team is responsible for progress of project	1	2	3	4	5	6	7
5	(In) the project team is in charge of project implementation	1	2	3	4	5	6	7
7	At collaborative meetings I always gain valuable insights	1	2	3	4	5	6	7
8	External change agents provide sufficient support and instruments	1	2	3	4	5	6	7
9	External change agents raised high expectations about performance and improvement potential	1	2	3	4	5	6	7
10	External change agents made clear from the beginning what the goal of the project is and the best way to achieve it	1	2	3	4	5	6	7

Items 11 to 15 represent Factor 1: Organizational support. Items 1 to 5 represent Factor 2: Team organization. Items 7 to 10 represent Factor 3: External change support

Dückers, M. L. A., Wagner, C., & Groenewegen, P. P. (2008). Developing and testing an instrument to measure the presence of conditions for successful implementation of quality improvement collaboratives. *BMC Health Services Research, 8*, 172-172. doi:10.1186/1472-6963-8-172

e-Health State of Readiness Questionnaire

Definition of E-Health: The use of information technologies to deliver or enhance health information and health services. In a broader sense it also refers to a way of thinking globally about health information and a commitment to improve health care using information and communication technology.

Instructions: Please read each statement carefully and place an X in the column that most accurately reflects your opinion of the statement. It is important that you comment on each statement.

Section 1 Overall,	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1. I find constantly changing e-health technology in my work environment difficult to manage.	1	2	3	4	5
2. I prefer to use e-health technologies that I am confident will not change	1	2	3	4	5
3. E-health technology can improve patient outcomes	1	2	3	4	5
4. Patient care can be improved through the use of e-health	1	2	3	4	5
5. E-health technology can enhance a team approach to care	1	2	3	4	5
6. E-health technology can enhance best practice	1	2	3	4	5
7. E-health technology will enhance my work activities	1	2	3	4	5
8. I may lose some of my autonomy using e-health technology	1	2	3	4	5
9. I feel a lot of pressure to be more efficient because of e-health technology	1	2	3	4	5
10. I feel a lot of pressure to be more effective by using e-health technology.	1	2	3	4	5
11. My team works together to implement e-health technology	1	2	3	4	5
12. I use electronic information from a number of sources to inform the work that I do	1	2	3	4	5
13. I am satisfied with currently available e-health technology	1	2	3	4	5
14. I have a responsibility to learn how to use e-health technology to perform my work	1	2	3	4	5
15. I see myself as a champion/leader for e-health technology in my organization	1	2	3	4	5
16. The effort I contribute to the use of e-health technology matches the benefit I receive	1	2	3	4	5

17.	I will benefit from using e-health technology	1	2	3	4	5
18.	Using e-health technology can improve my efficiency	1	2	3	4	5
19.	E-health technology makes my job easier	1	2	3	4	5
20.	I understand the purpose of e-health technology	1	2	3	4	5
21.	I understand the need to implement e-health technology	1	2	3	4	5
22.	I feel confident using e-health technology	1	2	3	4	5
23.	I usually try hard to learn how to use new e-health technology	1	2	3	4	5
24.	I have had successful experiences with using e-health technology	1	2	3	4	5
25.	I find e-health technology generally complex	1	2	3	4	5

Section 2 Overall, I think my organization:	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1. is committed to making e-health projects successful	1	2	3	4	5
2. has experienced too much change over the past year	1	2	3	4	5
3. is generally successful with implementing e-health technology changes	1	2	3	4	5
4. effectively communicates information about upcoming e-health technology changes	1	2	3	4	5
5. effectively shares information with other health care organizations	1	2	3	4	5
6. shares descriptions of experiences related to implementation of e-health technology with other teams	1	2	3	4	5
7. offers staff opportunities to provide input into the early phases of e-health implementation and change	1	2	3	4	5
8. communicated what was expected of me related to e-health technology	1	2	3	4	5
9. is committed to meeting the needs the community through the use of e-health technology	1	2	3	4	5
10. values the use of standardized care plans/clinical pathways to guide practice	1	2	3	4	5
11. provides adequate resources for e-health technology	1	2	3	4	5

		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
12.	has an adequate number of IT staff for technical support	1	2	3	4	5
13.	provides timely and flexible support to users of e-health technology	1	2	3	4	5
14.	has access to experts who understand both e-health technology and health care	1	2	3	4	5
15.	supports the use of e-health technology to carry out my work activities	1	2	3	4	5
16.	has a champion/leader for e-health technology	1	2	3	4	5
17.	can manage several on-going large e-health technology projects at the same time	1	2	3	4	5
18.	has the flexibility to reorganize resources to address changing e-health needs	1	2	3	4	5
19.	has a strategic plan that reflects e-health technology in the values and goals	1	2	3	4	5
20.	has clear policies and procedures related to e-health technology.	1	2	3	4	5

Section 3 Overall, I think e-Health technology in my organization:	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1. generally performs at an adequate speed	1	2	3	4	5
2. is reliable	1	2	3	4	5
3. is flexible, allowing for growth and change	1	2	3	4	5
4. is compatible with other technologies I am using	1	2	3	4	5
5. is easily accessible	1	2	3	4	5
6. is a good investment	1	2	3	4	5
7. is user-friendly	1	2	3	4	5
8. aligns with professional practice standards	1	2	3	4	5
9. is secure	1	2	3	4	5
10. provides adequate support for patient privacy	1	2	3	4	5
11. can improve continuity of care between health care organizations	1	2	3	4	5
12. can improve continuity of care between teams/services within my organization	1	2	3	4	5

Poissant, L., & Curran, J. (2007). *The development of a questionnaire to assess organizational readiness to adopt e-health technologies.* Paper presented at the CAHSPR, Toronto, Canada.

EPC Instrument

We are interested in your views about medical information. Please rate your agreement or disagreement with each statement on the following scale.

SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

1.	Clinical experience is more important than randomized controlled trials	SA	A	N	D	SD
2.	I am comfortable practicing in ways different than other doctors	SA	A	N	D	SD
3.	Evidence-based medicine makes a lot of sense to me	SA	A	N	D	SD
4.	I don't have the time to read up on every practice decision	SA	A	N	D	SD
5.	It is best to change the way I treat a certain problem when my local colleagues are making the same changes	SA	A	N	D	SD
6.	I follow practice guidelines if they are not much hassle	SA	A	N	D	SD
7.	The opinions of respected authorities should guide clinical practice	SA	A	N	D	SD
8.	I am too busy taking care of patients to keep up with the recent literature	SA	A	N	D	SD
9.	Clinical experience is the most reliable way to know what really works	SA	A	N	D	SD
10.	I am uncomfortable doing things differently from the way I was trained	SA	A	N	D	SD
11.	I am often critical of accepted practices	SA	A	N	D	SD
12.	Patient care should be based where possible on randomized controlled trials, rather than the opinions of respected authorities	SA	A	N	D	SD
13.	My colleagues consider me to be someone who marches to my own drummer	SA	A	N	D	SD
14.	I follow practice guidelines as long as they don't interfere too much with the flow of patients	SA	A	N	D	SD
15.	It is not prudent to practice out of step with other physicians in my area	SA	A	N	D	SD
16.	The best practice guidelines are based on the results of randomized controlled trails	SA	A	N	D	SD
17.	Evidence-based medicine is not very practical in real patient care	SA	A	N	D	SD

Green, L., Wyszewianski, L., Lowery, J., Kowalski, C., & Krein, S. (2007). An observational study of the effectiveness of practice guideline implementation strategies examined according to physicians' cognitive styles. *Implementation Science, 2*, 41. doi:10.1186/1748-5908-2-41

Evidence-Based Practice Beliefs Scale (EBP Beliefs Scale)

Participants are asked how often in the past 8 weeks did they perform the item.

Item	Strongly Disagree	…………			Strongly Agree
I am sure that I can implement EBP in a time efficient way.	1	2	3	4	5
I am sure that I can implement EBP.	1	2	3	4	5
I believe that I can search for the best evidence to answer clinical questions in a time efficient way.	1	2	3	4	5
I am confident about my ability to implement EBP where I work.	1	2	3	4	5
I believe that I can overcome barriers in implementing EBP.	1	2	3	4	5
I am sure about how to measure the outcomes of clinical care.	1	2	3	4	5
I know how to implement EBP sufficiently enough to make practice changes.	1	2	3	4	5
I am sure that I can access the best resources in order to implement EBP.	1	2	3	4	5
I am sure that implementing EBP will improve the care that I deliver to my patients.	1	2	3	4	5
I believe that critically appraising evidence is an important step in the EBP process.	1	2	3	4	5
I am clear about the steps of EBP.	1	2	3	4	5
I am sure that evidence-based guidelines can improve clinical care.	1	2	3	4	5
I believe that EBP results in the best clinical care for patients.	1	2	3	4	5
I believe the care that I deliver is evidence-based.	1	2	3	4	5
I believe EBP is difficult. (reverse scored)	1	2	3	4	5
I believe that EBP takes too much time. (reverse scored)	1	2	3	4	5

[The responses are summed for the 16 item (two questions are reversed coded) for a total score between 16 and 80]

Melnyk, B. M., Fineout-Overholt, E., & Mays, M. Z. (2008). The evidence-based practice beliefs and implementation scales: Psychometric properties of two new instruments. *Worldviews on Evidence-Based Nursing, 5*, 208-216. doi:10.1111/j.1741-6787.2008.00126.x

Evidence Based Practice Questionnaire (EBPQ)

1.	How often have you formulated a clearly answerable question as the beginning of the process towards filling this gap?	1	2	3	4	5	6	7
2.	How often have you tracked down the relevant evidence once you have formulated the question?	1	2	3	4	5	6	7
3.	How often have you critically appraised, against set criteria, any literature you have discovered?	1	2	3	4	5	6	7
4.	How often have you integrated the evidence you have found with your expertise?	1	2	3	4	5	6	7
5.	How often have you evaluated the outcomes of your practice?	1	2	3	4	5	6	7
6.	How often have you shared this information with colleagues?	1	2	3	4	5	6	7
7.	My workload is too great for me to keep up-to-date with all the new evidence	1	2	3	4	5	6	7
8.	I resent having my clinical practice questioned	1	2	3	4	5	6	7
9.	Evidence-based practice is a waste of time	1	2	3	4	5	6	7
10.	I stick to tried and trusted methods rather than changing to anything new	1	2	3	4	5	6	7
11.	Research skills	1	2	3	4	5	6	7
12.	IT skills	1	2	3	4	5	6	7
13.	Monitoring and reviewing of practice skills	1	2	3	4	5	6	7
14.	Converting your information needs into a research question	1	2	3	4	5	6	7
15.	Awareness of major information types and sources	1	2	3	4	5	6	7
16.	Ability to identify gaps in your professional practice	1	2	3	4	5	6	7
17.	Knowledge of how to retrieve evidence	1	2	3	4	5	6	7
18.	Ability to analyse critically evidence against set standards	1	2	3	4	5	6	7
19.	Ability to determine how valid (close to the truth) the material is	1	2	3	4	5	6	7
20.	Ability to determine how useful (clinically applicable) the material is	1	2	3	4	5	6	7
21.	Ability to apply information to individual cases	1	2	3	4	5	6	7
22.	Sharing of ideas and information with colleagues	1	2	3	4	5	6	7
23.	Dissemination of new ideas about care to colleagues	1	2	3	4	5	6	7
24.	Ability to review your own practice	1	2	3	4	5	6	7

Items 1 to 6 represent the subscale: Practice of evidence-based practice. Items 7 to 10 represent the subscale: Attitude towards evidence-based practice. Items 11 to 24 represent the subscale: Knowledge/skills associated with evidence-based practice.

[All items are scored on a 1-7 scale. A higher score indicates a more positive attitude towards clinical effectiveness/EBP, or use and knowledge of clinical effectiveness and EBP.]

Upton, D., & Upton, P. (2006). Development of an evidence-based practice questionnaire for nurses. *Journal of Advanced Nursing, 53*, 454-458. doi:10.1111/j.1365-2648.2006.03739.x

Facilitators Scale

Please indicate to what degree you find each item to be a facilitator of research utilization.

		To No Extent	To A Little Extent	No Opinion	To A Moderate Extent	To A Large Extent
1.	Increasing the time available for reviewing and implementing research findings	1	2	3	4	5
2.	Conducting more clinically focused and relevant research	1	2	3	4	5
3.	Providing colleague support network/mechanisms	1	2	3	4	5
4.	Advanced education to increase your research knowledge base	1	2	3	4	5
5.	Enhancing managerial support and encouragement of research implementation	1	2	3	4	5
6.	Improving availability and accessibility of research reports	1	2	3	4	5
7.	Improving the understand-ability of research reports	1	2	3	4	5
8.	Employing nurses with research skills to serve as role models	1	2	3	4	5

[*In addition respondents are asked to nominate and rate from, 1 to 3, items they considered to be the greatest facilitators of research utilization.*]

Hutchinson, A. M., & Johnston, L. (2004). Bridging the divide: a survey of nurses' opinions regarding barriers to, and facilitators of, research utilization in the practice setting. *Journal of Clinical Nursing, 13*, 304-315. doi:10.1046/j.1365-2702.2003.00865.x

GuideLine Implementability Appraisal (GLIA)

The GuideLine Implementability Appraisal (GLIA) is a 31 item toll to help assess the implementability of clinical guidelines. The 31 items are arranged into 10 dimensions: 1) Global: General characteristics of the guideline as a whole. 2) Decidability: Precisely under what conditions to do something. 3) Executability: Exactly what to do under the circumstances defined. 4) Presentation and formatting: Degree to which the recommendation is easily recognizable and succinct. 5) Measurable outcomes: Degree to which the guideline identifies markers or endpoints to track the effects of implementation of this recommendation. 6) Apparent validity: Degree to which the recommendation reflects the intent of the developer and the strength of the evidence. 7) Flexibility: Degree to which a recommendation permits interpretation and allows for alternatives in its execution. 8) Effect on process of care: Degree to which the recommendation impacts upon the usual workflow of a care setting. 9) Novelty/innovation: Degree to which the recommendation proposes behaviors considered unconventional by clinicians or patients. 10) Computability: Ease with which a recommendation can be operationalized in an electronic information system. The instructions and the complete tool can be downloaded from:
http://gem.med.yale.edu/glia/login.htm

Shiffman, R. N., Dixon, J., Brandt, C., Essaihi, A., Hsiao, A., Michel, G., & O'Connell, R. (2005). The GuideLine Implementability Appraisal (GLIA): Development of an instrument to identify obstacles to guideline implementation. *BMC Medical Informatics and Decision Making, 5*, 23-30. doi: 10.1186/1472-6947-5-23

Nursing Work Index – Revised (NWI-R)

For each item in this selection, please indicate the extent to which you agree that the following items *are present in your current job.* Indicate your degree of agreement by circling the appropriate number.

Present In Current Job	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
1. Adequate support services allow me to spend time with my patients	1	2	3	4
2. Physicians and nurses have good working relationships	1	2	3	4
3. A good orientation program for newly employed nurses	1	2	3	4
4. A supervisory staff that is supportive of nurses	1	2	3	4
5. A satisfactory salary	1	2	3	4
6. Nursing controls its own practice	1	2	3	4
7. Active inservice/continuing education programs for nurses	1	2	3	4
8. Career development/clinical ladder opportunity	1	2	3	4
9. Opportunity for staff nurses to participate in policy decisions	1	2	3	4
10. Support for new and innovative ideas about patient care	1	2	3	4
11. Enough time and opportunity to discuss patient care problems with other nurses	1	2	3	4
12. Enough registered nurses on staff to provide quality patient care	1	2	3	4
13. A nurse manager who is a good manager and leader	1	2	3	4
14. A chief nursing officer is highly visible and accessible to staff	1	2	3	4
15. Flexible or modified work schedules are available	1	2	3	4
16. Enough staff to get work done	1	2	3	4
17. Freedom to make important patient care and work decisions	1	2	3	4
18. Praise and recognition for a job well done	1	2	3	4
19. Clinical nurse specialists who provide patient care consultation	1	2	3	4
20. Team nursing as the nursing delivery system	1	2	3	4
21. Total patient care as the nursing delivery system	1	2	3	4
22. Primary nursing as the nursing delivery system	1	2	3	4
23. Good relationships with other departments such as housekeeping and dietary	1	2	3	4
24. Not being placed in a position to do things that are against my nursing judgments	1	2	3	4
25. High standards of nursing care are expected by the administration	1	2	3	4
26. A chief nursing executive is equal in power and	1	2	3	4

	authority to other top-level hospital executives				
27.	Much teamwork between nurses and doctors	1	2	3	4
28.	Physicians give high-quality medical care	1	2	3	4
29.	Opportunities for advancement	1	2	3	4
30.	Nursing staff is supported in pursing degrees in nursing	1	2	3	4
31.	A clear philosophy of nursing pervades the patient care environment	1	2	3	4
32.	Nurses actively participate in efforts to control costs	1	2	3	4
33.	Working with nurses who are clinically competent	1	2	3	4
34.	The nursing staff participates in selecting equipment	1	2	3	4
35.	A nurse manager backs up the nursing staff in decision making even if the conflict is with a physician	1	2	3	4
36.	An administration that listens and responds to employee concerns	1	2	3	4
37.	An active quality-assurance program	1	2	3	4
38.	Staff nurses are involved in the internal governance of the hospital (e.g., practice and policy committees)	1	2	3	4
39.	Collaboration (joint practice) between nurses and physicians	1	2	3	4
40.	A preceptor program for newly hired RNs	1	2	3	4
41.	Nursing care is based on nursing rather than a medical model	1	2	3	4
42.	Staff nurses have the opportunity to serve in hospitals and nursing committees	1	2	3	4
43.	The contributions that nurses make to patient care are publicly acknowledged	1	2	3	4
44.	Nurse managers consult with staff on daily problems and procedures	1	2	3	4
45.	The work environment is pleasant, attractive, and comfortable	1	2	3	4
46.	Opportunity to work on a highly specialized unit	1	2	3	4
47.	Written, up-to-date nursing care plans for all patients	1	2	3	4
48.	Patient assignments foster continuity of care (i.e., the same nurse cares for the patient from one day to the next)	1	2	3	4
49.	Regular, permanently assigned staff nurses never have to float to another unit	1	2	3	4
50.	Staff nurses actively participate in developing their work schedules (i.e., what days they work; days off, etc.)	1	2	3	4
51.	Standardized policies, procedures, and ways of doing things	1	2	3	4

		1	2	3	4
52.	Use of nursing diagnoses	1	2	3	4
53.	Floating, so that staffing is equalized among units	1	2	3	4
54.	Each nursing units determines its own policies	1	2	3	4
55.	Use of a problem-orientated medical record	1	2	3	4
56.	Working with experienced nurses who "know the hospital	1	2	3	4
57.	Nursing care plans are verbally transmitted from nurse to nurse	1	2	3	4

Five items (4, 6, 17, 24 and 35) represent the autonomy subscale. Seven items (1, 11, 12, 23, 16, 46 and 48) represent the control of practice setting subscale. Three items (2, 27 and 39) represent the nurse-physician relationship subscale. Ten items (1, 2, 6, 11, 12, 13, 17, 24 and 48) represent the organizational support subscale).

Aiken, L. H., & Patrician, P. A. (2000). Measuring organizational traits of hospitals: The Revised Nursing Work Index. *Nursing Research, 49*, 146-153. doi:10.1097/00006199-200005000-00006

Organizational Readiness to Change Assessment (ORCA)

The Organizational Readiness to Change Assessment is a 77-item instrument to assess core and sub-elements of the Promoting Action on Research Implementation in Health Services framework (PARIHS framework). An annotated copy of the instrument is available from:
http://www.biomedcentral.com/content/supplementary/1748-5908-4-38-S1.pdf

Helfrich, C., Li, Y.-F., Sharp, N., & Sales, A. (2009). Organizational readiness to change assessment (ORCA): Development of an instrument based on the Promoting Action on Research in Health Services (PARIHS) framework. *Implementation Science, 4*, 38. doi:10.1186/1748-5908-4-38

Organizational Learning Survey (OLS)

1.	There is widespread support and acceptance of the organization's mission statement
2.	I do not understand how the mission of the organization is to be achieved
3.	The organization's mission statement identifies values to which all employees must conform.
4.	We have opportunities for self-assessment with respect to goal attainment
5.	Senior managers in this organization resist change and are afraid of new ideas
6.	Senior managers and employees in this organization share a common vision of what our work should accomplish
7.	Managers in this organization can accept criticism without becoming overly defensive.
8.	Managers in this organization often provide useful feedback that helps to identify potential problems and opportunities
9.	Managers in this organization frequently involve employees in important decisions.
10.	I can often bring new ideas into the organization
11.	From my experience, people who are new in this organization are encouraged to question the way things are done
12.	Managers in this organization encourage team members to experiment in order to improve work processes
13.	Innovative ideas that work are often rewarded by management
14.	In my experience, new ideas from employees are not treated seriously by management
15.	I often have an opportunity to talk to other staff about successful] programs or work activities in order to understand why they succeed.
16.	Failures are seldom constructively discussed in our organization
17.	New work processes that may be useful to the organization as a whole are usually shared with all employees
18.	We have a system that allows us to learn successful practices from other organizations
19.	Current organizational practice encourages employees to solve problems together before discussing them with a manager.
20.	We cannot usually form informal groups to solve organizational problems
21.	Most problem solving groups in this organization feature employees from a variety of functional areas

Items 1 to 4 represent the factor: Clarity of Purpose and Mission. Items 5 to 9 represent the factor: Leadership Commitment and Empowerment. Items 10 to 14 represent the factor: Experimentation. Items 15 to 18 represent the factor: Transfer of Knowledge. Items 19 to 21 represent the factors: Teamwork and Group-Problem Solving.

Goh, S. C., & Richards, G. (1997). Benchmarking the learning capability of organizations. *European Management Journal, 15*, 575-583. doi:10.1016/S0263-2373(97)00036-4

Organizational Readiness to Change

The Organizational Readiness to Change is a 115 Likert-type instrument to assess organizational functioning and readiness for change. Four major areas included are in the instrument are: motivation for change, institutional resources of the program, personality attributes of the staff, and organizational climate of the program. The instrument and related information can be obtained from http://www.ibr.tcu.edu/downloads.html *Two versions of the instrument are available, a version of leaders and a version for staff.*

Lehman, W. E. K., Greener, J. M., & Simpson, D. D. (2002). Assessing organizational readiness for change. *Journal of Substance Abuse Treatment, 22*, 197–209. doi:10.1016/S0740-5472(02)00233-7

The Ottawa Acceptability of Decision Rules Instrument

Please indicate your level of agreement with each of the following statements about the Canadian C-Spine Rule by clicking on the appropriate box. If you do not currently use this rule in practice, please answer the questions as if you were considering using the rule (the rule would be easy to use, etc.).

Please indicate your level of agreement with each of following statements about the rule	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree	No Opinion/ Don't know
The rule is easy to use.							
The rule is easy to remember.							
The rule is useful in my practice.							
The wording of the rule is clear and unambiguous.							
My colleagues support use of the rule.							
Patients benefit from use of the rule.							
Using the rule results in improved use of resources.							
Using the rule would increase the chance of lawsuits.							
The evidence supporting the rule is flawed							
I'm already using another rule or similar strategy.							
The rule does not account for an important clinical cue.							
The environment I work in makes it difficult to use the rule.							

Brehaut, J. C., Graham, I. D., Wood, T. J., Taljaard, M., Eagles, D., Lott, A., . . . Stiell, I. G. (2010). Measuring acceptability of clinical decision rules: validation of the Ottawa acceptability of decision rules instrument (OADRI) in four countries. *Medical Decision Making: An International Journal Of The Society For Medical Decision Making, 30*, 398-408. doi:10.1177/0272989X09344747

Quality Improvement Implementation Survey II (QIIS)

The Quality Improvement Implementation Survey II is questionnaire used to assess organizational culture, implementation approaches, the degree of quality improvement, quality management, and quality improvement. The Quality Improvement Implementation section of the QIIS contains seven scales: leadership, customer satisfaction, quality management, information and analysis, quality results, employee quality training, employee quality planning involvement. The instrument and related information can be obtained from: http://shortellresearch.berkeley.edu/CABG-THR.htm

Shortell, S. M., Jones, R. H., Rademaker, A. W., Gillies, R. R., Dranove, D. S., Hughes, E. F. X., . . . Huang, C. F. (2000). Assessing the impact of total quality management and organizational culture on multiple outcomes of care for coronary artery bypass graft surgery patients. *Medical Care, 38*, 207-217. doi:10.1097/00005650-200002000-00010

*Shortell, S. M., O'Brien, J. L., Carman, J. M., Foster, R. W., Hughes, E. F., Boerstler, H., O'Connor, E. J. (1995). Assessing the impact of continuous quality improvement total quality management: Concept versus implementation. *Health Services Research, 30*, 377-401.

Theory of Planned Behavior
(adapted by Bonetti et al., 2010)

Bonetti et al. (2010) created a questionnaire based on existing instruments and theoretical frameworks to predict and evidence-based behavior – the placing of fissure sealants. The questionnaire predominantly uses a 7-point Likert scale (1 = Strongly Disagree to 6 = Strongly Agree). A complete version of the questionnaire can be obtained by downloading "Additional file 3. Questionnaire" from
http://www.implementationscience.com/content/5/1/25

Bonetti, D., Johnston, M., Clarkson, J., Grimshaw, J., Pitts, N., Eccles, M., . . . Walker, A. (2010). Applying psychological theories to evidence-based clinical practice: Identifying factors predictive of placing preventive fissure sealants. *Implementation Science, 5*, 25. doi:10.1186/1748-5908-5-25

Worksite Health Promotion Capacity Instrument
Health Promotion Willingness subscale

	Item	do not agree at all		………………								agree completely
1.	The company's management demonstrates a very strong willingness to actively promote employee health.	0	1	2	3	4	5	6	7	8	9	10
2.	There are influential people in our company who disregard the importance of health promotion entirely and who work against it.	0	1	2	3	4	5	6	7	8	9	10
3.	In our company, the prevailing opinion is that health is exclusively a personal matter.	0	1	2	3	4	5	6	7	8	9	10
4.	In our company, the subject of employee health promotion is often discussed.	0	1	2	3	4	5	6	7	8	9	10
5.	In our company, we firmly believe that we can carry out workplace health promotion efficiently.	0	1	2	3	4	5	6	7	8	9	10
6.	In our company, we are strongly convinced that, in general, it is possible to promote employee health.	0	1	2	3	4	5	6	7	8	9	10

[Items 2 and 3 are reverse coded, do not agree at all (positive assessment) is coded as 10; agree completely (negative assessment) is coded as 0]

Jung, J., Nitzsche, A., Neumann, M., Wirtz, M., Kowalski, C., Wasem, J. … Pfaff, H. (2010). The Worksite Health Promotion Capacity Instrument (WHPCI): Development, validation and approaches for determining companies' levels of health promotion capacity. *BMC Public Health, 10*, 550-559. doi:10.1186/1471-2458-10-550