

# LEADING CHANGE TOOLKIT™

TO HELP CHANGE AGENTS AND  
CHANGE TEAMS MAKE LASTING  
IMPROVEMENTS IN HEALTH CARE

## Assessing Competency in Evidence Based Medicine (ACE)

*Summary of tool's pragmatic and content validity*

*Summary of Pragmatic properties*

The ACE tool had an overall **objective pragmatic score** of **14** out of **20**. According to this objective pragmatic assessment, the Assessing Competency in EBM strengths include being available in the public domain, having acceptable language, and not requiring training for administration. The ACE tool lost scores because interpretation of the total score is not clearly outlined.

Based on two RNAO stakeholders, the ACE tool was rated **2.5** out of **4** for **likelihood to use**. The ACE tool has an overall **stakeholder facing assessments** score of **18** out of **24**.

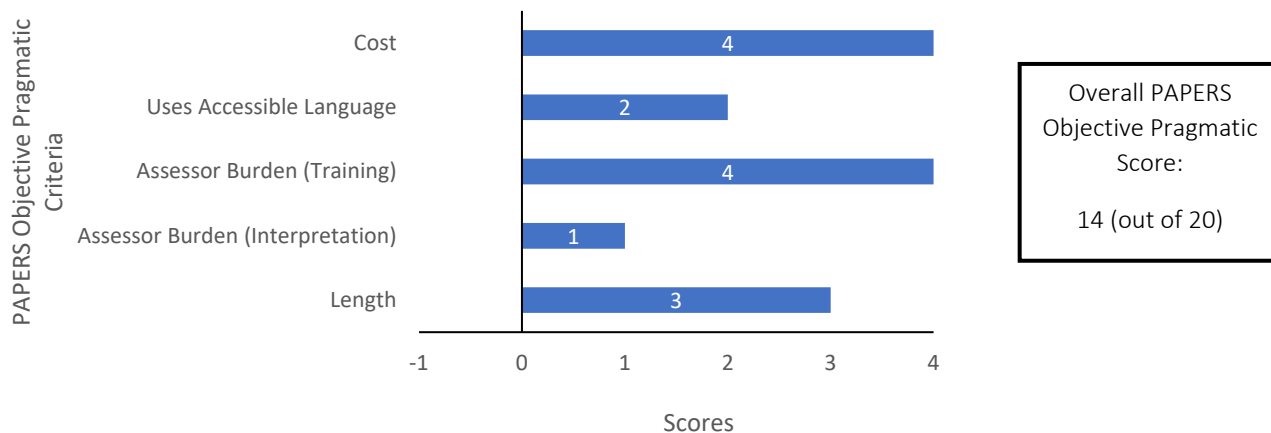
### Tool Pragmatic Properties

Tools were assessed for pragmatic properties with the PAPERS tool (Stanick et al. 2019); a validated tool for measuring a tool's acceptability, ease of use, appropriateness, and usefulness. Objective pragmatic properties were assessed by two research assistants independently and with consensus for each tool. Stakeholder facing pragmatic properties were assessed independently by at least two stakeholders (e.g., champions) for each tool. A mean score was calculated from participants' responses for each of the stakeholder facing PAPERS survey questions.

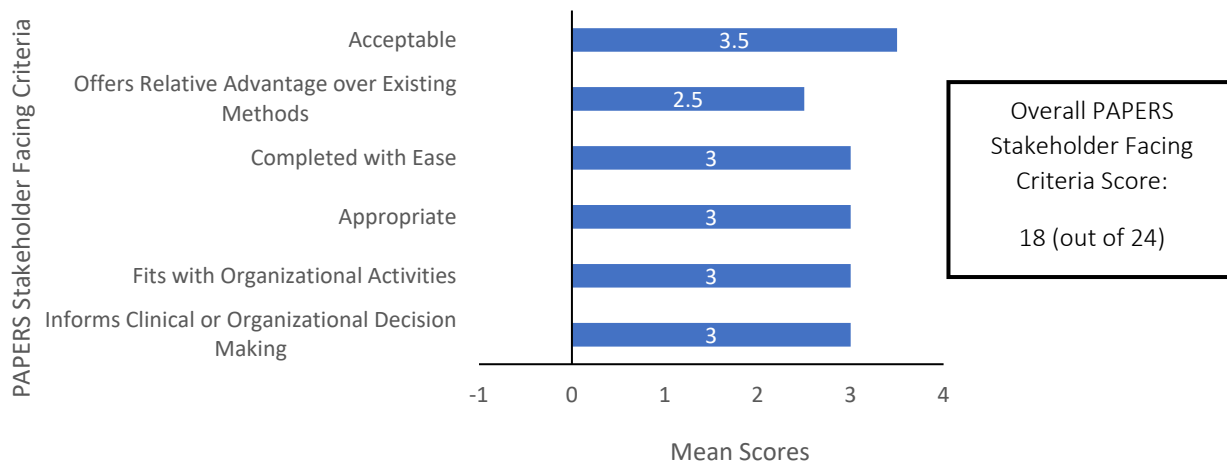
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*PAPERS Objective Pragmatic Criteria - Scoring details below*



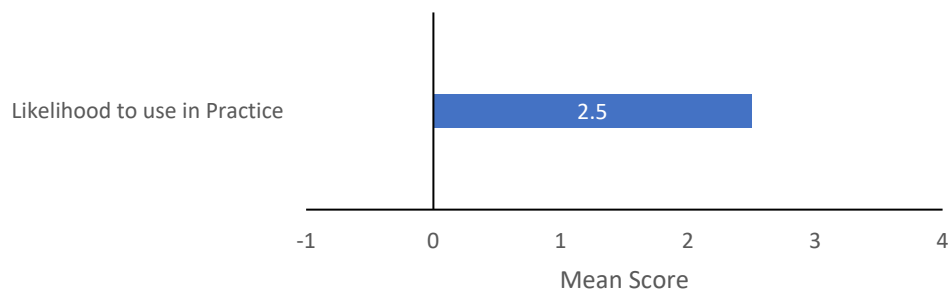
*PAPERS Stakeholder Facing Criteria (n = 2 stakeholders) - Scoring details below*



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*Likelihood to Use the Tool in Practice (n = 2 stakeholders) - Scoring details below*



## Content Validity

### *Summary of Content Validity*

According to our assessment using an adapted version of a checklist by Mokkink et al. (2010), the ACE tool has evidence of content validity.

Content validity refers to degree to which the content of the tool is an adequate reflection of the construct being measured. In the case of the Assessing Competency in Evidence Based Medicine (ACE) tool, this refers to the extent that individuals can use the ACE tool to assess barriers/facilitators to knowledge use and monitor knowledge use through the:

- Construction of an answerable question from the clinical scenario
- Systematic retrieval of the best available evidence
- Critical appraisal of the evidence for validity, clinical relevance, and applicability
- Application of results

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| General Requirements  | Y | No |
|---|---|----|
| 1. Was there an assessment of whether all items refer aspects of the construct to be measured?  | X |    |
| 2. Was there an assessment of whether all items are relevant for the study population? (e.g., age, gender, disease characteristics, country, setting)       | X |    |
| 3. Was there an assessment of whether all items are relevant for the purpose of the measurement instrument? (discriminative, evaluative, and/or predictive) | X |    |
| 4. Was there an assessment of whether all items together comprehensively reflect the construct to be measured?  | X |    |

**Adapted from:** Mokkink, L.B., Terwee, C.B., Knol, D.L., Stratford, P.W., Alonso, J., Patrick, D.L., Bouter, L.M. and De Vet, H.C. (2010). The COSMIN checklist for evaluating the methodological quality of studies on measurement properties: a clarification of its content. *BMC medical research methodology*, 10(1), 1-8.

According to our assessment using an adapted version of a checklist by Mokkink et al. (2010), the ACE has evidence content validity:

#### Content Validity Requirement 1:

- Expert opinions were used to assess content validity, with a finding of acceptable results for steps 1 to 4 of EBM process (Ilic et al., 2014).

#### Content Validity Requirements 2:

- The tool was validated in a sample of medical trainees with variable training and experience in EBM (novice, intermediate and advance). However, the tool developers states that validation of the tool in other disciplines is required (Ilic et al., 2014).

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## Content Validity Requirements 3:

- The ACE can be used to assess competency in applying steps 1 to 4 of the EBM process as individuals who have more training with EBM were found to have higher mean scores than individuals who have less EBM training. Hence the ACE tool is discriminative (Ilic et al., 2014).

## Content Validity Requirements 4:

- The ACE tool was developed and validated to guide clinicians to formulate and systematically answer clinical questions pertaining to deciding appropriate therapy. Its tool developers stated that the ACE tool must be adapted, validated, and tested to guide clinicians to formulate and answer other clinical questions (e.g., questions related to aetiology, harm, diagnosis, and prognosis) (Ilic et al., 2014).

## Limitations:

- No information was provided regarding the composition of the expert panel and the details of the iterative process that was undertaken.

## References

- Ilic, D., Nordin, R. B., Glasziou, P., Tilson, J. K., & Villanueva, E. (2014). Development and validation of the ACE tool: assessing medical trainees' competency in evidence-based medicine. *BMC medical education*, 14(1), 1-6. <https://doi.org/10.1186/1472-6920-14-114>
- Mokkink, L.B., Terwee, C.B., Knol, D.L., Stratford, P.W., Alonso, J., Patrick, D.L., Bouter, L.M. and De Vet, H.C. (2010). The COSMIN checklist for evaluating the methodological quality of studies on measurement properties: a clarification of its content. *BMC medical research methodology*, 10(1), 1-8.

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Stanick, C. F., Halko, H. M., Nolen, E. A., Powell, B. J., Dorsey, C. N., Mettert, K. D., Weiner, B. J., Barwick, M., Wolfenden, L., Damschroder, L. J., & Lewis, C. C. (2019, Nov 20). Pragmatic measures for implementation research: development of the Psychometric and Pragmatic Evidence Rating Scale (PAPERS). *Translational Behavioral Medicine*. <https://doi.org/10.1093/tbm/ibz164>