Team Check-Up Tool (TCT)

Pragmatic Testing and Content Validity Data

Summary of Pragmatic properties
The TCT had an overall **objective pragmatic score** of **15** out of **20**. According to this objective pragmatic assessment, the TCT's strengths include being available in the public domain, having acceptable language, not requiring training for administration, and having less than 50 items. The TCT lost scores because not enough instructions exist for interpreting scores.

Based on two RNAO stakeholders, the TCT was rated **2.5** out of **4** for **likelihood to use**. The TCT has an overall **stakeholder facing assessments** score of **15.5** out of **24**.
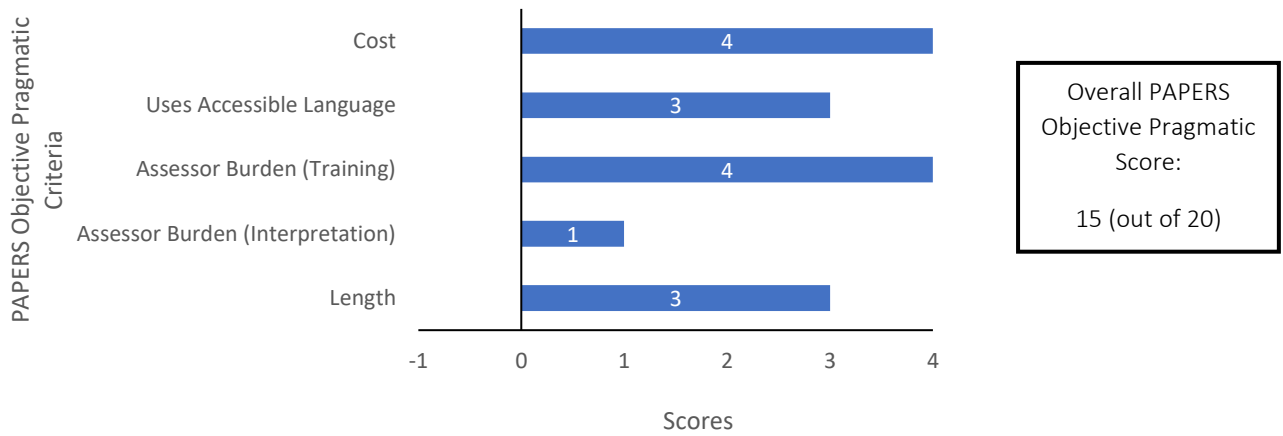
Tool Pragmatic Properties
   Tools were assessed for pragmatic properties with the PAPERS tool (Stanick et al. 2019); a validated tool for measuring a tool's acceptability, ease of use, appropriateness, and usefulness. Objective pragmatic properties were assessed by two research assistants independently 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.
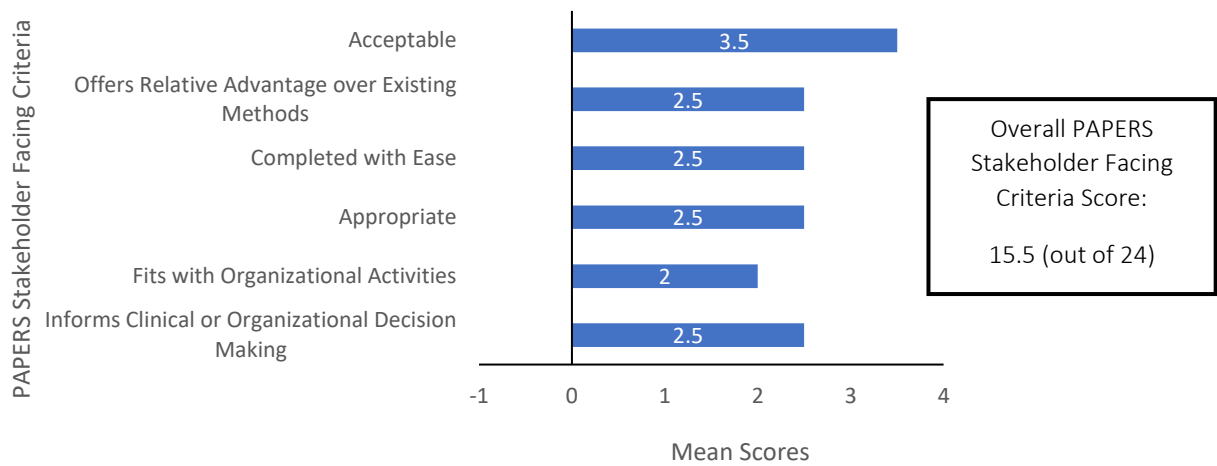
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*PAPERS Objective Pragmatic Criteria - Scoring details below*

PAPERS Objective Pragmatic Criteria

	Score
Cost	4
Uses Accessible Language	3
Assessor Burden (Training)	4
Assessor Burden (Interpretation)	1
Length	3

Scores (-1, 0, 1, 2, 3, 4)

Overall PAPERS Objective Pragmatic Score:

15 (out of 20)

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

PAPERS Stakeholder Facing Criteria

	Mean Score
Acceptable	3.5
Offers Relative Advantage over Existing Methods	2.5
Completed with Ease	2.5
Appropriate	2.5
Fits with Organizational Activities	2
Informs Clinical or Organizational Decision Making	2.5

Mean Scores (-1, 0, 1, 2, 3, 4)

Overall PAPERS Stakeholder Facing Criteria Score:

15.5 (out of 24)

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

Likelihood to use in Practice	2.5

Mean Score: -1, 0, 1, 2, 3, 4
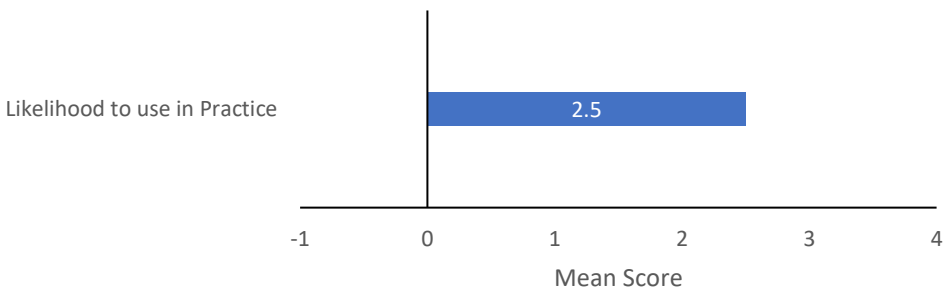
Content Validity

Summary of Content Validity

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

Content validity refers to the degree to which the content of the tool is an adequate reflection of the construct being measured. In the case of the Team Check-Up Tool (TCT), this refers to the extent that individuals can use the TCT to identify problem, determine the Know/Do Gap, and identify, review and select knowledge, assess barriers/facilitators to knowledge use and monitor knowledge use according to the following components of quality improvement:

- Intervention and education activities
- Perceived intervention-related behaviours (use of interventions)
- Implementation processes and context
- Perceived barriers to team progress

General Requirements	Yes	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 TCT has evidence of content validity.

Content Validity Requirement 1:

- The TCT's development was informed by Cohen and Bailey (1997)'s Team Effectiveness Framework, which described the interrelations between organizational context, task design, team processes, team psychosocial traits and team effectiveness outcomes (Marsteller et al., 2017).

- The tool developers conducted two focus groups (*n* = 25 participants for each focus groups) in each of the Keystone ICU and Surgery collaboratives who have utilized the TCT for at least 12 months. Further, the tool developers conducted another feedback session with 100 participants from the ICU collaborative. The focus group and the feedback sessions were performed to identify which items they perceive are important or least important, whether other items are required to be added, and how useful the TCT is for their quality improvement projects (Marsteller et al., 2017).

- A panel of eight experts rated the relevance of each of the TCT items in measuring the implementation and context of quality improvement on a four-point Likert scale. The tool developers calculated item-level content validity indices (I-CVIs) and scale-level CVIs (S-CVIs) from the experts' evaluations (Marsteller et al., 2017).

Content Validity Requirement 2:
- The participants of the two focus groups (*n* = 25 participants per focus group) were required to have participated in a learning session pertaining to QI implementation in the ICU and have used the TCT at least once. The tool developers did not provide further description of the focus group participants or any description of the participants of the larger (*n* =100) feedback session (Marsteller et al., 2017).

- The eight-expert panel that evaluated the relevance of the TCT items had expertise in quality improvement, implementation and context measurement, nursing, and clinical practice. The panel of experts were reported to be a mixed of individuals who have used and individuals who have not used the TCT. However, these experts received a brief orientation on the purpose of the TCT, and how it is generally administered and used (Marsteller et al., 2017).

Content Validity Requirement 3:

- The tool developers defined an acceptable item-level content validity indices (I-CVIs) for each item as an I-CVI ≥ 0.75 and defined an acceptable scale-level CVIs (S-CVIs) as a S-CVI ≥ 0.9 (Marsteller et al., 2017).

- Most of the TCT items had an I-CVI ≥ 0.75 (nine out of 13, 69.2%). The I-CVI of the items (items #7, #11, #12, and #13) that had lower I-CVI ranged from 0.5 to 0.625. Based on the summary of the expert panels' rationale for their rating, the items that scored poorly had low ratings because the phrasing of the questions were too general and required more specific details. The full TCT was reported to have a S-CVI of 0.87, which is very close but did not reach the pre-determined target set by the tool developers (Marsteller et al., 2017).

Content Validity Requirement 4:

- The expert panel assessments determined that most of the TCT items are relevant in measuring the factors pertinent to the process and context of implementation experienced by quality improvement teams. Although, the TCT did not reach the predetermined target of 0.9 S-CVI, the tool developers stated that a S-CVI of 0.87 still indicates that the TCT has high content validity (Marsteller et al., 2017).

- The tool developers reported that the participants from focus groups and the feedback sessions generally reported that the items of the TCT were meaningful. The findings from these focus groups and feedback sessions provided some suggestions of items that were considered by the tool developers in creating the final draft of TCT (Marsteller et al., 2017).

Limitations:

- The lack of detailed descriptions of the individuals that participated in the focus groups and feedback sessions makes it difficult to ascertain the extent of validity and transferability of the feedback they have provided.

References

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of management*, *23*(3), 239-290.

Marsteller, J. A., Hsu, Y. J., Chan, K. S., & Lubomski, L. H. (2017). Assessing content validity and user perspectives on the Team Check-up Tool: expert survey and user focus groups. *BMJ quality & safety*, *26*(4), 288-295.

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