A Systematic Literature Review on Evaluation of Digital Tools for Authoring Evidence-Based Clinical Guidelines

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“Systematically developed statements to assist practitioner and patient decisions about appropriate healthcare for specific circumstances” [1]

Evidence-based Clinical guidelines

Emphasises the importance of linking

- Recommendations based on scientific research
- Through a rigorous systematic identification and appraisal of all relevant research” [2]

Why is this study important?

To facilitate the clinical guideline development process

Digital Tools for Authoring Evidence-based Clinical Guidelines
... Why is this study important?

Digital Tools for Authoring Evidence-based Clinical Guidelines

Results from previous study (\#4 Organizations)

Identified substantial shortcomings of tools

Concluded: A review of tool evaluation is necessary
Why is this study important?

Digital Tools for Authoring Evidence-based Clinical Guidelines

Results from previous study (Identified tools #21)

No available systematic reviews
There are many available tools. No available standard tool. Evaluation is necessary. Systematically reviews of the literature on authoring tools evaluation.
Exploded Organizations & Research Communities

- PubMed and Google Scholar

- GL authoring organizations:
  - Guidelines International Network (G-I-N)
  - NICE (National Institute For Health and Clinical Excellence), UK
  - Agency for Healthcare Research and Quality (AHRQ), USA
  - National Health and Medical Research Council, Australia
  - Norwegian Health Library
  - St. Olav’s University Hospital Trust (Norway)
  - Health Trust- Norwegian hospital (Norway)

- DECIDE International Conference, UK, 2014
- The Norwegian Directorate of Health supplier conference, Oslo, 2014
# 21 unique identified tools

**Full Support**
- MAGIC app
- GRADEpro GDT
- User Group Clinical Guideline Services
- Håndboka

**Authoring recommendations**
- CAN-IMPLEMENT®
- GL adaption
- DECIDE
- SoF

**Systematic review**
- Bridge Wiz
- R
- DistillerSR
- Cochrane RevMan
- DOCTOR EVIDENCE
- Covidence
- JBI SUMARI
- SRDR Systematic Review Data Repository
- ePPI Reviewer
- CREBP

**Systematic review repository**
- SRDR Systematic Review Data Repository
- Epistemonikos

**Semi-auto citation screening**
- abstrackr

**GL repository**
- Guidelines International Network

**Detection of duplicates in SR**
- CREBP

**Evidence profile repository**
- DBEP
Literature Selection Process

12,686 abstracts screened for relevance

182 (90 duplicate removed) articles reviewed for full text

6 articles identified by backward snowballing method

26 articles included for data extraction
Results: No subject of any evaluation

- DECIDE tool
- Doctor Evidence platforms
- JBI-SUMARI
- GIN guideline library
Results:

Most evaluated tool: GRADEpro GDT

4 articles: unclear how evaluation was conducted:
- GRADEpro GDT
- User Group
- Clinical Guideline Services
- Cochrane RevMan
- ePPI Reviewers
- Distiller SR

Formative evaluation: GRADEpro GDT

Systematic review: reviewed tools features
- Cochrane RevMan
- ePPI Reviewers
- Distiller SR
7 Identified Evaluation Themes

Full support of the GL development process (#1)

Usefulness: implemented features or perceived usefulness and usability (#4)

Formatting alternatives (#3)

Evaluation of the implemented functions and features (#10)

Tool performance (#4)
error rate, time taken, duplicate detection, recall, reduce workload

Effect of using tool on time and cost reduction (#1)

Comparing of tools (#8)
Themes 7: Comparing of the tools

GL Adaption

Systematic review

Software engineering

Not an evaluation

Systematic review

Not an evaluation
Themes 7: Comparing of the tools

- Features, usability, compatibility, strength & weakness
- Advantages vs. disadvantages
- Systematic review vs. Duplicate detection
- Can be replaceable?
To date, little is known about the usefulness of tools in practice.

Mostly speculation concerning tools potential use.

How tools that do not fully support the authoring process can be integrated regarding data exchange?

Evaluation of the integration of the tool regarding data exchange (import/export) and streamline different steps.

We encourage GL authors and authoring organizations to report back on their experiences.
We envisage an optimized process

- Identify the scope
- Plan the development
- Perform the systematic review
- Appraise the evidence
- Extract and synthesize data
- Develop recommendations
- Draft the GL
- Create a publishing layout
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