Purpose:

Clinical Decision Support is a process of providing healthcare team filtered, useful, organized information, at the right time, to optimize the decision-making process for improved outcomes (Timbie, Damberg, Schnieder, Bell, 2012). The use of Clinical Decision Support (CDS) and Clinical Decision Support Systems (CDSS) allow clinicians to access information which may save time, optimize workflow, assist in making better decisions. Clinical Decision Support (CDS) and Clinical Decision Support Systems (CDSS), in relation to electronic health records (EHR) are comprised of tools aimed to guide clinical decisions in the form of medication alerts, health maintenance alerts and prompts, best practice prompts, and access to timely reference clinical information (Richardson & Ash; 2011). Clinical Decision Support (CDS) and Clinical Decision Support Systems (CDSS), in relation to electronic health records (EHR) are comprised of tools aimed to guide clinical decisions in the form of medication alerts, health maintenance alerts and prompts, best practice prompts, and access to timely reference clinical information (Richardson & Ash; 2011).

Methods:

This review was conducted using the methodology suggested by Whittemore & KnafI for Integrated Research Reviews (2005) and Brown (2018) aims to answer the question, “Is there a criterion for success of Clinical Decision Support (CDS) Tools and Systems in Electronic Health Records that improve health outcomes and end-user satisfaction?”. A systematic search of the peer-reviewed literature was completed using the following databases: Cochrane, CINAHL, MEDLINE Complete, Information Science & Technology, Science & Technology Collection, Academic Search Ultimate, and bibliography mining. Key words used in searching were: “clinical decision support,” and “electronic health record,” and “goal”. Search criteria was limited to articles published between the years of 2008-2018 for all databases. Exclusions from EHR implementations in commercial setting, multi-variable, and those that lacked, outcome, performance, or user satisfaction evaluations eliminated ninety articles, English versions not available, and topics unrelated to CDS and CDSS.

Results:

A review of literature was conducted evaluating 143 articles which generated thirty-eight duplicates. Exclusions eliminated ninety articles. One hundred and five articles were initially identified; Fifteen included in final sample. Articles including one level one, one level two, one level three, eleven level fours, and one level five, met the inclusion criteria and considered appropriate to use in this review. All articles were critically appraised using evaluative checklists and the EBR Tool (Brown, 2017; Long & Gannaway, 2015).

Conclusion:

prevalent in the frameworks for success. Wright et al. (2014), Timbie et al. (2012), Miller et al. (2014), Evans et al. (2015), Ash et al. (2012), incorporated evaluation clinical workflow as a component of their framework. Local configuration refers to the system design that adapts to fit the environment where Wright et al. (2014), Richardson et al. (2011), Evans et al. (2015), Ash et al. (2012), Zhou et al. (2012), and Rinott et al. (2011), emphasized the importance of integration. Fowler et al. (2014) and O’Connor et al. (2011) found that usability is a factor for success. Richardson et al. (2011), Zhou et al. (2012), and Miller et al. (2014), believed in designing systems that were user centric; Grant et al. found that patient centric effective (2016). Effective governance allows organizations to garner feedback from users, insure that the change aligns with system strategies, and comply with regulatory constraints. Continued higher levels of research need to be conducted to support identified factors.

Title:
Integrative Research Review: Factors for Successful Clinical Decision Support Tools and Systems

Keywords:
Clinical Decision Support, Frameworks and Success Factors

References:


**Abstract Summary:**
The use of Clinical Decision Support (CDS) and Clinical Decision Support Systems (CDSS) allow clinicians to access information which may save time, optimize workflow, assist in making better decisions. Consensus on effective strategies of CDS and CDSS is unknown, as research is limited.

**Content Outline:**
1. Background and Significance of Clinical Decision Support (CDS) and Clinical Decision Support Systems (CDSS)
2. Definition and purpose of CDS and CDSS
3. Clinical significance as evidenced in research
4. Frameworks produced to support CDS
5. Methodology
6. Approach

1. Integrative Research Review (IRR)
II. Methodology

2. Whittemore & Knafl Methodology
3. Systematic literature search
4. Keywords
5. a) "Clinical Decision Support" and "Electronic Health Record" and "Goal"
6. Inclusion criteria
7. a) Full-text articles
8. b) Topic related to CDS and CDSS success factors
9. Exclusion criteria
10. a) Commercial setting
11. b) Multi-variable evaluations
12. c) Studies that lacked outcome, performance, or user satisfaction
13. d) English versions not available
14. e) Topic unrelated to CDS or CDSS
15. Databases searched
17. Years searched
18. a) 2008-2018
19. b) Additional bibliographic mining performed

III. Results

1. Critical appraisal

1. Evaluative checklists, EBR tool, appraisal guidelines

1. Level of evidence
2. 142 total studies were located, one located with bibliographical mining

2. 15 total studies used in this IRR
3. One: level one; one: level two; one: level three; eleven: level four; eleven: level five
4. Synthesis of findings
5. CDS and CDSS are clinically significant
6. Workflow, local configuration, usability, and governance are success factors
7. Controversy between user centric and patient centric designs

4. Higher levels of research need to be conducted to support findings

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**Author Summary:** Clinical Decision support is pivotal to effective healthcare. Strategies employed by organizations in reference to CDS and CDSS will change the trajectory and speed of their success. It promotes positive data use but can create electronic noise. Noise numbs critical thinking senses. My role as a Clinical Informaticist Leader is to promote the use of technology to enhance caregiving and patient experience. I strongly believe in the contributions of successful CDS and CDSS.