Table B.2: Diagnostic Errors, Clinical Decision Support—Systematic Reviews and Meta-Analyses

Note: Full references are available in the [Section 1.1 reference list](#Section1point1refs).

| **Author, Year** | **Description of Patient Safety Practice** | **Settings and Population** | **Summary of Findings** | **Comments** |
| --- | --- | --- | --- | --- |
| **el-Kareh et al., 20131** | Diagnostic decision support systems and diagnosis-related health information technology (HIT) | Systematic review of HIT to reduce diagnostic error. The search strategy did not include limitations for settings or populations. | The use of HIT in diagnosis is still in its early stages. Many aspects of the diagnostic process have been targeted, but few tools and systems have been shown to improve diagnosis in actual clinical settings. | Included in Riches, 2016, systematic review and meta-analysis |
| **Graber et al., 20127** | Interventions to prevent, reduce, or mitigate diagnostic errors, including CDS to support and improve cognition | Systematic review of cognitive interventions to reduce diagnostic error. The search strategy did not include limitations for settings or populations. | ISABEL has good sensitivity in both pediatric and adult settings, with sensitivity in the adult setting approaching 100%. Research on the use of Google searches yields the correct diagnosis in only 58% of difficult cases. | None |
| **Nurek et al., 201540** | Computerized diagnostic decision support systems (CDDSS) | Meta-review of existing systematic reviews of CDS systems in primary care to improve diagnosis. Subjects (primary end-users of CDS) include individual clinicians; no specific criteria for setting. | Identified the following requirements for successful integration of a CDS: a more standardized computable approach to knowledge representation is needed, one that can be readily updated as new knowledge is gained, and a deep integration with the EHR is needed in order to trigger at appropriate points in cognitive workflow. | None |
| **Riches et al., 20168** | Differential diagnosis (DDX) generators | Systematic review and meta-analysis investigate the efficacy and utility  of DDX generators. Subjects include the individual user of the tool and the clinical case being entered into the tool; no specific criteria for setting. | The pooled accurate diagnosis retrieval rate of DDX tools was high, with high heterogeneity (pooled rate=0.70, 95% CI, 0.63 to 0.77; I2=97%, p<0.0001). DDX generators did not demonstrate improved diagnostic retrieval compared with clinicians, but small improvements were seen in the before and after studies, in which clinicians had the opportunity to revisit their diagnoses following DDX generator consultation. | None |
| **Wagholikar et al., 201221** | Computer-assisted diagnosis models | Systematic review of modeling techniques to provide diagnostic support. The search strategy did not include limitations for settings or populations. (Search was focused on models.) | General trends in research of medical decision support:   * Improvement in the accuracy of MDS application may be possible by modeling of vague and temporal data, research on inference algorithms, integration of patient information from diverse sources, and improvement in gene profiling algorithms. * Research would be facilitated by public release of de-identified medical datasets and development of open-source data-mining tool kits. * Comparative evaluations of different modeling techniques are required to understand characteristics of the techniques and to guide developers in the choice of technique for a particular medical decision problem. * Evaluations of MDS applications in the clinical setting are necessary to foster physicians’ use of these decision aids. | None |