Differential diagnosis generators in UK primary medical care: A feasibility study using the Isabel diagnostic tool

Conference: Oxford 2015 - Evidence and innovation in primary care  
Talk Code: EP3D.1

The problem

An estimated 12% of errors in primary medical care are thought to be a result of diagnostic errors, equating to between 3 to 60 diagnostic errors within NHS primary care per day. Diagnostic errors also account for 63% of medical malpractice claims against GPs. In addition to the huge financial cost, diagnostic errors endanger patient safety and can cause significant disability and death. Significantly it is recognised that many of these incidents are preventable. Addressing diagnostic error is complex and suggested interventions to reduce error are presently limited. The potential of Differential Diagnosis Generators (DDX) tools to address diagnostic error has been highlighted in the literature, however their feasibility for use in routine general medical practice remains unclear.

The approach

We undertook a mixed-methods prospective feasibility study of one DDX tool, Isabel, in an inner-city general practice serving 18,000 patients from diverse backgrounds. The study comprised semi-structured qualitative interviews with 11 clinicians prior to the installation of Isabel and again after 6 months of Isabel being available for use. Training and access to Isabel was provided to all clinicians with diagnostic capabilities for 6 months during which a remote monitoring system also captured usage data including frequency of use and duration as well as the clinical impact such as the ordering of tests and referrals.

Findings

During the pre-Isabel interviews, the majority of clinicians indicated perceived benefits of using other electronic systems e.g. GP Notebook which were occasionally used as diagnostic aides, particularly for difficult to diagnose conditions such as presentation of non-specific symptoms, mismatch between presenting symptoms and textbook diagnoses, rare diseases and infections as well as patients with multimorbidities. Although some concerns were raised regarding the number of differential diagnoses being generated by Isabel, increased time and impact on consultation, most clinicians indicated willingness to trial Isabel. Preliminary usage data, based on 4 months of usage demonstrates a peak in usage during the first month comprising of 133 queries which then tailed off in subsequent months with 53, 17 and 27 queries respectively. A total of 10 computer generated surveys were completed during this time where Isabel helped with confirming a diagnosis (n=2), broadened a differential list (n=7), impacted on ordering a diagnostic test (n=3), ordering medication (n=1) and helped refer more appropriately (n=3). Further results including post-Isabel interview data will be presented at the conference due to study completion.

Consequences
Preliminary evidence suggests that clinicians in primary care can use DDX tools such as Isabel to influence their decision making process in relation to diagnoses. However the relatively low usage of the tool in the context of the total number of consultations that GPs undertake suggests that opportunities where it can be used are limited.

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