A systematic review of the history and physical examination to diagnose influenza

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CRD summary
The review investigated the accuracy of using history and physical examination to diagnose influenza. The authors concluded that individual signs and symptoms are of limited value in diagnosing influenza. The conclusion follows from the presented data, but should be regarded with caution given the limitations in the review methodology.

Authors' objectives
To assess the accuracy of history and physical examination (HPE) in diagnosing influenza.

Searching
The reviewers searched MEDLINE (up to November 2001) and DARE, screened the references of identified studies and contacted experts in the field. The search terms for the electronic search were provided.

Study selection
Study designs of evaluations included in the review
Independent cohort studies and randomised controlled trials (RCTs) were eligible for inclusion. All included studies were cohort studies.

Specific interventions included in the review
Studies of HPE for the diagnosis of influenza A and/or influenza B were eligible for inclusion. The individual included studies examined a total of 59 different individual or combinations of characteristics, such as the presence of abdominal pain, rigour or chills (full details were reported). The studies were conducted in community or out-patient settings, mostly in primary care and during an influenza epidemic.

Reference standard test against which the new test was compared
Studies that reported a laboratory test as the reference standard were eligible for inclusion. The specific tests used in the included studies were enzyme-linked immunosorbent assay, four-fold rise in influenza titres, fluorescent monoclonal antibodies, culture or positive serology, and direct immunofluorescence.

Participants included in the review
The review did not specify any inclusion criteria for the participants. The majority of participants in the included studies were patients with suspected influenza; other studies included patients with respiratory infection. The studies included both adults and children. The mean age of the participants ranged from 33.2 to 76 years; in one study the mean age in children was 5 years.

Outcomes assessed in the review
The studies had to provide sufficient information to calculate the sensitivity and specificity to be eligible for inclusion.

How were decisions on the relevance of primary studies made?
Two reviewers screened the identified papers independently. Any disagreements were resolved by consensus discussion, or by referral to a third reviewer.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Two reviewers abstracted the data independently, and any disagreements were resolved by consensus discussion with a third reviewer. For each study, the sensitivity, specificity, and positive and negative likelihood ratios (LRs) were calculated.

**Methods of synthesis**
How were the studies combined?
Where more than one study evaluated the same test, the pooled sensitivity and specificity were calculated using a random-effects model, LRs were derived from the summary measures, and the area under the receiver operating characteristic (ROC) curve was calculated. Studies of influenza A and/or B were combined for the summary data.

How were differences between studies investigated?
The characteristics of the individual studies, including information on each analysed variable and diagnosis (influenza A, B, or A and B), were tabulated. However, heterogeneity between the studies does not appear to have been investigated further.

**Results of the review**
Seven studies (n=6,790) were included.

- Rigor (positive LR 7.2; 1 study), the combination of fever and presenting within 3 days of the onset of illness in patients over 65 years of age (positive LR 4.0; 1 study), and sweating (positive LR 2.9; 1 study) were best at ruling in influenza when present.

- The absence of any systemic symptoms (negative LR 0.36; 1 study), coughing (negative LR 0.38; 4 studies; area under ROC curve 0.679), not being able to cope with daily activities (negative LR 0.39; 1 study), and being confined to bed (negative LR 0.50; 1 study) decreased the likelihood of influenza.

- The variables cough (0.679; 4 studies), subjective temperature (0.672; 4 studies), nasal congestion (0.654; 3 studies), and objective temperature (0.653; 3 studies) had the highest calculable areas under the ROC curve.

**Authors' conclusions**
Individual signs and symptoms are of limited value for the diagnosis of influenza.

**CRD commentary**
The review addressed a broad research question encompassing a wide range of individual tests. The searches were limited and it cannot be ruled out that relevant studies might have been missed. There were strategies in place to avoid error and bias in the study selection and data extraction processes. The quality of the included studies was not assessed, thus results from these studies and any synthesis might not be reliable. The included studies used very different variables to diagnose influenza, which meant that few studies provided data on the same characteristic. Only point estimates of the diagnostic accuracy without confidence intervals were presented. Where studies were pooled, heterogeneity amongst the studies was not examined and so the consistency of the studies is unknown. Overall, the conclusion follows from the presented data but, owing to the limitations of the review methodology, it should regarded with caution.

**Implications of the review for practice and research**
Practice: The authors stated that key symptoms in a clinical decision rule should be used to stratify patients into low-, moderate- or high-risk groups.

Research: The authors stated that well-designed studies in primary care settings are needed to develop and validate clinical decision rules based on systematically combined symptoms.
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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.