Letter to the Editor

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Computer-based Diagnostic Support Systems

To the Editor:—I read with great interest the study by Elstein et al. on the use of computer based diagnostic support systems.[1] I felt, however, that one of the restrictions they placed on data provided as input to computer programs may have unrealistically limited program effectiveness. So-called definitive tests were withheld from the programs. I believe their definition of definitive is too broad. Consider their example of a high white blood cell level in a patient with appendicitis. While I think giving the computer program the results of a biopsy or a nuclear medicine scan would be too much, it is highly unrealistic to expect a computer program to be effective without basic laboratory tests that would be ordered as a matter of course for a patient with this specific presentation.

As the authors state, the real use of computer-based diagnostic programs is to bring to the practitioner's attention diagnoses not otherwise thought of. An example from my practice might serve to illustrate the problem I have identified. An otherwise healthy young woman I recently saw complained of fatigue. I was surprised to find she had an "unexplainably" low serum potassium level. I initially did not need the help of a diagnostic program to figure out which basic laboratory tests to order, such as serum pH and urine electrolytes. The program did become useful, however, in suggesting diagnoses that didn't occur to me after I had the initial laboratory results. Both diagnostic programs I tried (QMR and Iliad) suggested what ultimately was the correct diagnosis, renal tubular acidosis. Had I initially withheld the "definitive" test(s), such as serum pH, the program would have given me a useless, long, and unsorted list of conditions. For computer-diagnostic programs to be useful to practicing physicians, studies must use these programs in a more realistic manner.

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Reference ■

1. Elstein A, et al. Effects of a decision support system on the diagnostic accuracy of users: a preliminary report. J Am Med Inform Assoc. 1996;3:422–8.

■ **In reply:** It is evident that a problem arises in the definition and scope of the "definitive" diagnostic tests that were deliberately omitted from our case abstracts. Given the wide range of variation that exists in clinical practice, it is quite possible that there might be conflicting definitions of which tests woul be regarded as "basic lab tests" and which would be "definitive diagnostic tests" to be ordered when trying to rule in or rule out a specific diagnostic hypothesis. This problem was raised during the review of the manuscript, and we were asked to include a table of the cases, together with tests that were excluded so that the readers could determine the applicability of our evaluation strategy to their situations. Because our research is still in progress and data collection continues, we are not in a position to disclose details of the cases employed. We therefore included an example of what we meant by a definitive diagnostics test—not an actual example excluded from an actual case. As the reader points out, our example was suboptimal because we used a diagnosis in which the definitive diagnostic test was also a basic lab test. We will make a list of the cases and the findings excluded for each case available after the research using the cases is complete.

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