Introduction
Differential diagnosis (DDx) generators have existed for some time, but their use has not been widely adopted in practice. We identified and described the features of a current list of DDx generators.

Methods
We performed a Google search and a literature search using a series of subject headings (MESH) and keywords to identify programs that qualify as differential diagnosis generators. Through consensus, the author group identified four criteria critical for a differential diagnosis generator to be useful. First, the program needed to present a list of potential diagnoses rather than text or article references. Second, the program must rank or indicate critical diagnoses that need to be considered or eliminated. Third, the program needed to accept at least two signs, symptoms or disease characteristics. Finally, the program needed to provide the ability to compare the clinical presentation of the different diagnoses presented. The study was limited to programs providing diagnoses in general medicine. Programs focused on one disease process or clinical specialty were excluded. The study was limited to programs developed for the use of healthcare professionals (HCPs), not patients or consumers. Qualitative evaluation criteria were agreed upon by consensus prior to evaluating their use.

Results
Eleven programs were excluded due to specialty specific focus. Another seven programs were excluded after an initial review for reasons that included: inability to compare diagnoses, to enter two symptoms or characteristics, or to rank diagnoses, and generators that were simply a static tree structure with cross linking of internal reference points. Five programs were reviewed with evaluation criteria that are listed in the first column of the results table. When information was not available to the end user, the company producing the software was queried for clarification.

Conclusions:
The programs were useful in presenting and ranking possible diagnoses. Links to both EBM and non-EBM content were plentiful. Our ability to test EHR integration was limited. The DDx generators should prove helpful teaching tools. Use in practice will depend on EHR integration and the number of false alarms generated.

A Qualitative Review of Differential Diagnosis Generators
William F. Bond, MD, MS,1 Linda M. Schwartz, MDE,1 Kevin R. Weaver, DO,1 Donald Levick MD, MBA;1 Michael Giuliano, MD, MED, MHPE;2 Mark L. Graber, MD3,4
1Lehigh Valley Health Network, Allentown, Pennsylvania; 2Hackensack University Medical Center, Hackensack, NJ; 3VA Medical Ceter, Northport, New York; 4State University of New York at Stony Brook, Stony Brook, NY

Table 1. Evaluation Criteria Definitions

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Definition</th>
<th>Diagnosis Prot</th>
<th>DDxPro</th>
<th>First Consult©</th>
<th>Isabel©</th>
<th>ReDo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of EHR Integration</td>
<td>Degree of EHR integration and the number of false alarms generated.</td>
<td>No.</td>
<td>Partial. Specific evidence-based recommendations from specialty societies.</td>
<td>Yes, multiple data fields can be populated from EHR.</td>
<td>Yes, multiple data fields can be populated from EHR.</td>
<td>Yes, multiple data fields can be populated from EHR.</td>
</tr>
<tr>
<td>Usefulness</td>
<td>The program allow for PubMed linking to allow access to full text of library/subscriber content.</td>
<td>No</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
</tr>
<tr>
<td>User Interface Quality</td>
<td>The program allow for PubMed linking to allow access to full text of library/subscriber content.</td>
<td>No</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
<td>Available as an add-on to MDConsult. Available as an add-on to MDConsult.</td>
</tr>
</tbody>
</table>

1LH7 - Level 7 Interoperability Standards

References: