

Searching Online Books of Infectious Diseases: A New Way to Load Decision-Support Software with the Most Up-to-Date Information

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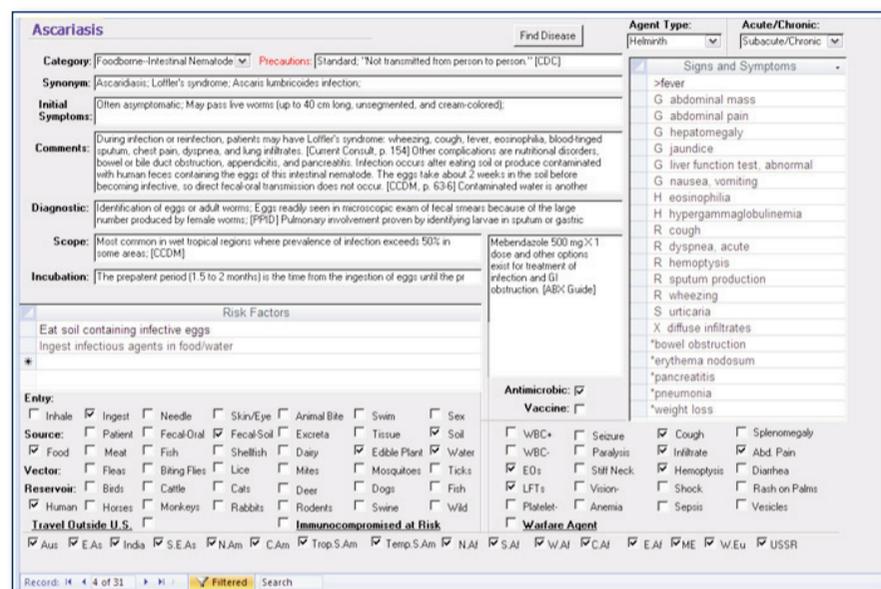
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BACKGROUND

Electronic books of medicine are now available on the Internet for text searching. These books provide a new way to collect the clinical findings for each infectious disease, which can then be stored in a database designed for useful queries.

METHODS

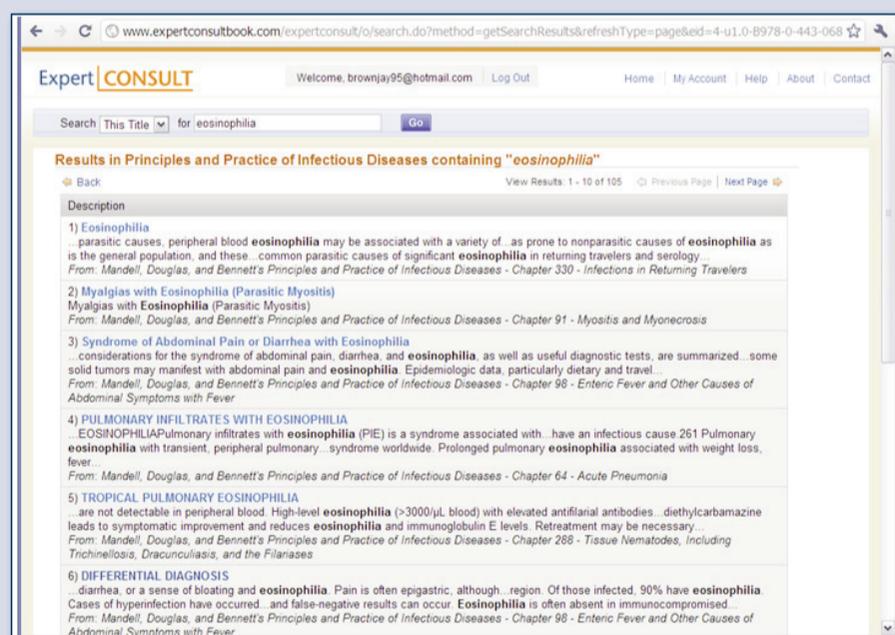
Microsoft Access was used to create a relational database of infectious diseases for decision support. The database profiles 275 communicable diseases, and each disease is linked to one or more findings. There are 99 findings (signs and symptoms). Each finding was used as a search term in three available online books: Principles and Practice of Infectious Diseases (PPID), Infectious Diseases (Cohen), and Control of Communicable Diseases Manual (CCDM). All of the references found by searching (hits) were checked in the books. Any newly discovered disease-finding relationships were added to the database along with documentation of the source of the information. Each finding was also checked against similar findings in the GIDEON database of infectious diseases, and many links were added with the GIDEON source documented.



Screenshot of Infectious Disease Database (Microsoft Access User-Interface)

RESULTS

The results of the online searches were used to check and revise the findings linked to each disease. Most of the findings were used without modification, but some were changed to terms that retrieved more results. For example, "pus in stool" was changed to "fecal leukocytes." Twenty findings were deleted from the database because they lacked specificity. For example, the finding "kidney function test, abnormal" was dropped, but "acute renal failure" was retained. A search in PPID retrieved 158 hits for "abdominal pain" and 105 hits for "eosinophilia." CCDM found 26 hits for "abdominal pain" and 17 hits for "eosinophilia." Comparing the database before and after the retrievals from online searching, the number of diseases linked to findings increased from 115 to 128 for "abdominal pain" and from 36 to 40 for "eosinophilia." The number of diseases linked to both findings increased from 27 to 31.



Screenshot of Web Search Results for "eosinophilia" in PPID

CONCLUSIONS

Searching online books of infectious diseases is a new way to load the current state of knowledge into a relational database for decision-support. Each query of such a database produces a set of all infectious diseases that match one or more of the search criteria entered. Each search criteria is essentially an index that is useful for building a list of differential diagnoses. Improving the sensitivity and specificity of these indexes will increase the likelihood that this decision-support tool can help the clinician to make the correct diagnosis.