Statement of Purpose / Executive Summary:

The North Atlantic Health Sciences Libraries Association's Executive Board and members signed below would like to offer constructive suggestions about the New PubMed interface that replaced the existing interface this year. There are many useful new features, including indexing upgrades, general interface design, and other changes such as exporting and citing options. We know how hard the developers have worked; it is always much easier to critique something than it is to create it. It says something about how good a tool is when people have such strong reactions to changes. As we have worked in New PubMed more, we have come to appreciate most of the updates. It is understood that PubMed is moving to an iterative design model and changes will continue to occur; however, we have some concerns that we would like you to consider.

As noted in a recent PLoS Bio publication[1], user tests of PubMed show that over 80% of clicks happen on the first page of results; yet, some of the most powerful tools PubMed has to offer users have been removed from the first page. Our most pressing concern is the default to Best Match order, which presents problems for both the general research community and expert searchers. Other concerns are surmountable for experts who are already familiar with the tools, but a new or non-expert user without legacy experience will have a steeper learning curve.

Best Match

Issues for researchers, clinicians, and non-expert searchers

1. While Best Match does take currency into account, it prioritizes relevancy over currency, which might work in a non-clinical setting, but in the practice of evidence-based medicine, currency is paramount. It is difficult to think of a case in which it is acceptable to knowingly present people with information that may be outdated, just because it meets the criteria of the search algorithm. The most appropriate default sorting option can only be Publication Date or Most Recent. If what comes up is too granular for the searchers' needs, the searcher will readily discover and make use of the available filters, or if they make the conscious choice, they can re-sort by Best Match, at their own risk.
2. Evidence-based medicine involves obtaining a bird's-eye view of the research landscape, and new PubMed defaults to a biased view of that landscape, making it more difficult to see how popular a topic at a given point in time.
   a. For example, as of 2/25/2020, a simple search for hypertension sorted by Best Match returns top four results dated 2007, 2014, 2014, and 1991. This default sort has resulted in confusion on the part of students and

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[1] Fiorini N, Canese K, Starchenko G, et al. Best Match: New relevance search for PubMed. PLoS Biol. 2018;16(8):e2005343. Published 2018 Aug 28. doi:10.1371/journal.pbio.2005343

residents who are unclear on how Best Match works, and why the default sorting order has changed.

Issues for librarians and expert searchers

1. The machine learning algorithm presents problems with reproducibility for both people conducting expert research and those retrieving results or re-running a search in the future.
   a. This is not just a matter of declaring which sort order was used in the original search; Best Match is a machine-learning algorithm that will, by nature evolve and change over time, making reproducibility impossible.
2. While an expert searcher or a librarian knows to turn off the Best Match display option while conducting a systematic review or other search that requires reproducibility, a general researcher, clinician, or non-expert searcher might not know to do this, thereby compromising their search protocol or their reproduction thereof.

Search Details

Issues for researchers, clinicians, and non-expert searchers

1. While the search details are still available from the Advanced Search page, albeit hidden, if the user does not realize this, search details are easily overlooked. Moving the search details box from the main results page and eliminating the ability to easily alter those details reduces the likelihood that non-expert users will examine the mechanism of searching and correct errors.
2. The search details box on the main search page is an exceptional teaching tool. It introduces users to the complex system of automatic term mapping that happens behind the scenes of the database and the level of precision that can be attained by using that system to their advantage. Hiding that information not only does users a disservice by removing serendipitous (and planned) learning opportunities, but it also underestimates the intelligence of its average user to use such information.
3. The above changes limit the ease and likelihood of users to examine and refine the search process at the granular level necessary for reliable search results, especially with systematic reviews and clinical practice guidelines. This is particularly problematic, given that clinical decisions are made based on these searches.

Issues for librarians and expert searchers

1. While librarians and expert searchers who receive extensive training can overcome this hurdle, it is inconvenient to be unable to directly edit search details. One suggestion we have is to create an additional option under either the Details or Actions buttons to add search details to the query box for ease of editing.

MeSH

Issues for researchers, clinicians, and non-expert searchers

1. While we acknowledge that access to the MeSH database is still available on the PubMed homepage, on general search results pages MeSH options are not available. There is no way to quickly look up a MeSH term or its scope note from the search results screen, such as the pull-down menu from the legacy version, or a link in the footer. This discourages users from harnessing the benefits of controlled vocabulary.

Issues for librarians and expert searchers

1. Again, we recognize that access to MeSH is still available from within a record, from the landing page and from the advanced search page; but, removing access to MeSH from the search results page is a major inconvenience for expert searchers who toggle between MeSH trees, scope notes, and PubMed frequently. A helpful example:

   > A librarian performs a simple search in legacy PubMed and is on the search results page. She looks at the terms used and realizes that one might have a MeSH analog. She types that term into the search bar and uses the pull-down menu to query the MeSH database. While looking at the MeSH record for that term, she realizes that there is a more accurate term elsewhere on the tree, confirmed by looking through the scope notes. It is the difference between calculated MeSH use (querying the database before searching) and serendipitous MeSH use (querying the database while searching).

Conclusion

The National Library of Medicine Strategic Plan 2017–2027 notes that "the advent of self-directed search, e-publishing and consolidation of hospital library services challenges librarians and libraries," yet aspects of New PubMed present considerable challenges for users seeking accurate, reliable, and reproducible results on which to base clinical decisions. New PubMed obscures features that may be employed by researchers, clinicians, and non-expert searchers to increase accuracy and reliability,

while emphasizing those that do not. New PubMed also presents challenges to expert searchers by decreasing the means by which to dissect how queries are parsed. While we recognize that expert searchers and librarians tend to be edge-case scenario users, they are an important edge-case user group because clinical decisions are made based on the systematic reviews and practice guidelines that their searches yield. More generally, aspects of the new PubMed make users work harder to find the information they need (which is often different than what they want). Another example of this is that NCBI account can no longer access their past six months of PubMed activity. Users, particularly students and clinician have come to expect this. While we understand that users can download their search strategies from the advanced page, that relies on busy clinicians and students remembering to do so; the beauty of the NCBI account recent history is that it functioned in the background. We hope that this letter conveys our respect for the work of the NLM and the resources that it provides, along with our constructive criticism of a tool on which librarians rely and use daily.

Thank you for your consideration.

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Donna Belcinski Connecticut

Courtney Brombosz, Connecticut

Gary S. Atwood Vermont

Susan A. Warthman

Maureen Dunn, New Hampshire

Mimi Guessferd, New Hampshire

Jeannine Cyr Gluck, Connecticut

Janet S Bolduc, MSLS, Maine

Stephanie Friree Ford - MA

Eugenia Opuda, Maine

Ashley Duguay - MAINE

Jane Natches, Massachusetts

Frances A. Delwiche, Vermont

Paige Scudder New Hampshire

Marissa Gauthier, Connecticut

Gayle Hutchins Tudisco NH

Jeanie Vander Pyl, Massachusetts

Melissa Funaro, Connecticut

Diane Hanscom, Resource Discovery and Access Librarian (Husson University Library); Maine

Bridget Gunn, Massachusetts

Nancy R. Curtis, Maine

Rebecca A. Morin, Massachusetts

Joseph Harzbecker, MS(LS), MA, AHIP Massachusetts

Amanda Richman, Rhode Island

Elizabeth Dyer, Maine

Donna Belcinski Connecticut

Victoria Rossetti
Barbara Swartzlander, Maine
Anne Romano Connecticut
Nancy Bianchi Vermont
Megan C. McNichol, Massachusetts
Carin Dunay, Maine
Linda Kerecman, Maine
Jeanie Vander Pyl, Massachusetts