**Neck Pain in Medline and MeSH: Charting the semantic relationship of a MeSH term to article title words**

The following is content from a poster presented at 2009 Annual Meeting of the Medical Library Association.

**Introduction**

The author of a scholarly journal article is generally expected to affix a title to her article in order to provide the reader with a clue as to what the article is about. Similarly, if that article appears in a journal indexed by Medline, an indexer comes along and affixes a series of MeSH terms to it. This second effort is also aimed at describing what the article is about, but in the very specialized language of MeSH. In both instances, the author first and foremost, and then the MeSH indexer, struggle with the question of “aboutness.” What is this article about and how can I best convey that in a few words?

The study outlined here aims at tracing the semantic interrelationship of these two activities, that of the author with her title words and the indexer with his MeSH vocabulary. The study begins by quantifying and analyzing the duplication or non-duplication of “neck pain” and its variants appearing as article title words for a set of records in which Neck Pain also appears as a MeSH Major Topic. By closely and quantitatively assessing the varying strength of the semantic relationship between title words and the MeSH term, we hope to gain insight into the thorniness of the aboutness problem, and arrive at a fuller appreciation of both the value and limitations of MeSH and other systems of controlled vocabulary.
Neck Pain
Discomfort or more intense forms of pain that are localized to the cervical region. This term generally refers to pain in the posterior or lateral regions of the neck. Year introduced: 1997

--MeSH Browser (2009)

Methodology

The main set and variant subsets of records used for this study are limited to records entered into Medline during a five-year period, 1999 through 2003. This period was chosen in order to ensure that (a) the records occur late enough following the introduction of Neck Pain as a MeSH term (in 1997) for its usage to be firmly established and (b) the records are old enough that the inputting and indexing process has stabilized. The main set and subsets are also limited to articles in English relating to humans.

The PubMed search resulting in the set of articles with Neck Pain as a Mesh Major Topic was formulated as follows:


Subsets were produced using the following search formulations in PubMed (excluding here the limiting terms, for the sake of simplicity):


Results

Main set = 445 records with Neck Pain as a MeSH Major Topic. Four subsets were identified, each with records exhibiting a progressively weaker semantic relationship between the MeSH term and title words:

<table>
<thead>
<tr>
<th>Subset</th>
<th>Title Words</th>
<th>Number of Records</th>
<th>Percentage of Main Set</th>
<th>Semantic Relation to MeSH Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>neck pain (as a phrase)</td>
<td>152</td>
<td>34.2%</td>
<td>very strong</td>
</tr>
<tr>
<td>2</td>
<td>neck and pain (separately)</td>
<td>65</td>
<td>14.6%</td>
<td>strong</td>
</tr>
<tr>
<td>3</td>
<td>neck or pain (but not both)</td>
<td>100</td>
<td>22.5%</td>
<td>weak</td>
</tr>
<tr>
<td>4</td>
<td>neither neck nor pain</td>
<td>128</td>
<td>28.8%</td>
<td>very weak</td>
</tr>
</tbody>
</table>

The records of Subset 1 exhibit the strongest semantic relationship between title words and the MeSH term. The records of Subset 4 exhibit the weakest semantic relationship.
Part 2 of this study, which is beyond the scope of this poster, will extend the analysis to a close examination of the presence or absence of synonymous or related terms among the title words in subsets 3 and 4.

Conclusions

Over half of the records in the main set possess titles which could be considered weak or very weak in their semantic relationship to the MeSH Major Topic Neck Pain (which, for the purposes of this study, may be considered the topic that defines the set).

This finding may not come as a great surprise to librarians who constantly instruct their students to be mindful of and utilize controlled vocabulary in formulating a search strategy. From one point of view, the semantic variance of title words from the MeSH term is illustrative of the important role of controlled vocabulary in traversing a broad semantic landscape. From another angle, our finding raises the question of why there is such variance among authors in applying consistent terminology for a concept as relatively simple as neck pain.

The results of this study point toward further questions which may be answered by a more refined analysis of the records contained in the main set, and particularly the records contained in subsets 3 and 4. What synonymous or related terms are to be found among the titles of these records? Do patterns of terminology appear, which point towards search strategies, such as hedging, which could complement informed use of a database’s controlled vocabulary?

Finally, this study, limited as it is to records defined by a single MeSH Major Topic, suggests the question of whether records relevant to that topic might exist outside the set. That is, could the Medline indexers have missed a few relevant records when assigning MeSH terms to articles? The answer is, of course, yes; but a close semantic analysis of that extended set of records might be both instructive to the searcher and revealing of the fuzzy contours of human knowledge. Hence this pain in my neck.

Sources consulted


**Acknowledgments**

I would like to thank my physical therapist for her skillful attention to my MeSH-related discomfort or more intense forms of pain that are localized to the cervical region.