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| Comment Article Indexing Practices For MEDLINE | August 262011 |
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# Abstract

**Objective:** The purpose of this project was to evaluate the efficacy of the current comment article indexing policy at the National Library of Medicine (NLM) and to determine the feasibility of automatically indexing comment articles for MEDLINE.

**Methods:** Trends in comment article publishing and indexing were assessed through PubMed searching. To determine feasibility of automatically indexing comment articles, two potential sources of Medical Subject Headings (MeSH) were evaluated: terms from the original research article being commented on and title terms suggested by the Medical Text Indexer (MTI). Terms assigned by human indexers to comments were compared to these two sets of terms and the overlap was analyzed.

**Results:** Approximately 70% of terms assigned by indexers to comment articles matched terms assigned to the article being commented on. Of the remaining terms that didn’t match, about two thirds were found in the same MeSH tree as terms assigned to the commented on article. Comments with the additional publication types Letter, News, Editorial, or Journal Article all had similar levels of matching terms. The percentage of terms that matched when using only MTI title terms was much lower. However, a combined approach using terms from the commented on article and additional title terms suggested by MTI increased the percentage of matches to above the level for commented on article terms alone.

**Conclusion:** We suggest several possible solutions for the future of comment indexing. Automatic indexing, either with terms from the commented on article alone or using the combined approach, is the best possible solution for handling comments based on the findings in this study. Automatic indexing of comments will lead to savings in contract indexing costs, while maintaining high quality indexing for these articles.

# Introduction

 Evidence-based medicine has emerged over the past twenty years as a new paradigm for medical education and practice [1]. The shift in emphasis from “intuition, unsystematic clinical experience, and pathophysiological rationale” to “examination of evidence from clinical research” [2] has led to a proliferation in tools available for practitioners to help sift through scientific evidence. Publishing trends have also changed over this time period, and reflect the paradigm shift. In addition to original research articles, literature reviews, case reports, editorials, and letters, we are now seeing a profusion of papers that comment on previously published research articles. With so much information available, biomedical professionals must increasingly rely on the expertise of their peers to evaluate published findings and decrease the burden of time needed for literature review.

 As trends in publishing change, NLM staff must adapt indexing policies to keep the content of MEDLINE relevant, substantive, and exhaustive. Each year, approximately 140 journals are added to MEDLINE for indexing. The journals are typically indexed cover to cover; indexing staff assess the journal content to determine if all sections are appropriate for indexing. Without indexing policies that reflect the current state of the literature, it is difficult to determine which portions of a journal meet the indexing criteria. In recent years, there has been an increase in the number and type of commentaries seen in the scientific literature. In addition to frequently published “invited commentary,” which appears in the same issue as the original research article, many journals now contain a separate section devoted to comments on research papers published in different journals. A few journals devote their entire content to comments on papers published elsewhere. The range in comment article quality and substance has also greatly increased, making it difficult to assess which comment articles should be indexed.

 In this study, we examine the current indexing policy for handling comment articles and assess the feasibility of automatically indexing comment articles. There are a variety of comment and commentary formats that are outside the scope of this study. For example, an article found in a commentary section of a journal that describes current trends in a particular field is not considered a comment article for this study. We define “comment article” based on the indexing policy found in the *NLM Fact Sheet: Errata, Retraction, Duplicate Publication and Comment Policy for MEDLINE* (<http://www.nlm.nih.gov/pubs/factsheets/errata.html>):

“Comments are substantive articles, letters or editorials that challenge, refute, support, or expand upon another published item[…] A mere mention of one or more articles in the text or references does not constitute a comment. The commenting article must have been written primarily for the purpose of making a comment—that is, of drawing the reader’s attention to the referent article.” A commenting citation is indexed with the Publication Type of Comment [pt]. Beginning in 1989, NLM has created bibliographic linkages in MEDLINE between commenting articles and the articles to which they refer.”

In accordance with this policy, we denote the original research article that a comment refers to as the “referent article” in this report. All indexed articles are assigned a publication type, typically Letter [pt], News [pt], Editorial [pt], or Journal Article [pt]. As a part of the indexing process, articles are then examined to determine if they meet the above criteria of a comment article. If so, Comment [pt] is assigned as an additional publication type, the comment is linked to the referent article, and the comment is indexed non-depth to capture the main points of the article.

Keeping up with changes to MEDLINE journal content, as well as adapting to newly selected MEDLINE journals, has led to several comment indexing policy amendments. Changes to indexing policy are made by approving Technical Memoranda (TM) that can then be found in the Indexing Manual. These supplements supersede outdated Manual policy until the Manual itself is updated. Substantive comments that are letters or editorials have always been indexed; however, linking of comments to referent articles was a policy amendment applied to journals published from 1989 on as mentioned above. Information on this initial linking policy can be found in TM 269 (see Appendix A). Further information on the publication type Comment [pt] can be found in Chapters 17 and 39 of the Indexing Manual. Chapter 17 describes the type of article that should be designated as a comment and states that only comments that are published in the same journal as the referent article can be given the Comment [pt] designation.

Selection of several evidence-based medicine journals for indexing (*ACP Journal Club*, *Evidence-Based Nursing*, and *Evidence-Based Mental Health*) led to difficulty in applying the Indexing Manual policy on Comments. Analytical summaries make up the majority of these journals’ content, and this type of article did not fit the criteria for comment citation, indexing, or linking. TM 440 (see Appendix B) was approved to address this issue, and allowed for creation of PubMed citations for these articles. It also allowed for linking of analytical summaries to the referent article (regardless of where the article was published), as well as adding the publication type Comment to the analytical summaries. However, these articles do not fit the criteria for comment indexing because they primarily serve to summarize the original research, and, therefore, do not have MeSH terms assigned. The comment linking policy was recently further amended with TM 492 (see Appendix C) to allow for PubMed citations to be made for grouped analytical summaries. A grouped analytical summary is authored and listed as a single item in the journal’s table of contents and consists of summaries of multiple articles. This type of analytical summary is now given a single citation in PubMed, and TM 492 also dictates that grouped analytical summaries be given the Comment [pt] and linked to all of the original research articles they refer to. Table 1 provides a summary of the current indexing policy:

**Table 1. Summary of Current Comment Indexing Policy**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Comment** | **Cited in PubMed** | **Indexed** | **Assigned Comment [pt]** | **Linked to Referent Article** |
| Comment with Referent Article in Same Journal | Yes | Non-depth | Yes | Yes |
| Comment with Referent Article in Different Journal | Yes | Non-depth | No | No |
| Analytical Summary Referring to Single or Multiple Articles in Same or Different Journal | Yes | No | Yes | Yes |

The PubMed database contains citations for articles indexed for MEDLINE (the MEDLINE subset), as well as citations for non-indexed articles (the non-MEDLINE subset). Changes to the policy on how comments should be handled have led to an increase in the number of links that must be made between citations in PubMed. Analytical summaries, which are not indexed and are part of the non-MEDLINE subset, are now linked to indexed articles in the MEDLINE subset based on TM 440/492. This blurring of the line between the two subsets of PubMed citations has made it difficult for indexers to determine which articles should be indexed and linked. This difficulty in determining how to handle comment articles has prompted inquiry into the suitability of current comment indexing policy.

# Methodology

An investigation to determine the prevalence of comment articles was performed. Data was also gathered to determine whether PubMed users search directly for comment articles. Lastly, a study of the overlap in MeSH terms assigned to comments compared to three different potential sources of automatic indexing terms was performed. Methods for these studies are found below.

***Comment Article Statistics***

The number of comment articles cited in the MEDLINE and non-MEDLINE subsets of PubMed was determined through PubMed searching. Comment tags in an article’s MEDLINE record are used for linking a comment to the referent article. Comment articles have the “Comment On” tag, and items with this tag can be retrieved using the search term “hascommenton” in PubMed. Referent articles have the “Comment In” tag, and can be retrieved using the search term “hascommentin” in PubMed. To search the MEDLINE subset of PubMed, the search string “medline [sb]” can be added to a query. Similarly, “pubmednotmedline [sb]” retrieves articles in the non-MEDLINE subset. To determine the number of MEDLINE subset comment articles published in 2009, the following PubMed search was performed:

PubMed Query: hascommenton AND medline [sb]

 Limits activated: Pub Date from 2009/01/01 to 2009/12/31

Results: 29,780

Similar searches were used to determine the number of comments published each year from 1986-2010 for the MEDLINE and non-MEDLINE subsets. Although the Comment publication type was not introduced until 1989, we included 1986-1988 in our searches to demonstrate that the number of comments prior to 1989 was virtually zero.

The number of journals that published MEDLINE subset comments in 2009 was determined by examining the MEDLINE records for all 2009 comments. Bibliographic data for these comments was first exported from PubMed to an Excel file (Microsoft, Redmond, WA). The number of unique journals was then determined from information found in the journal title field of the records.

A similar method was used to identify the number of comment/referent article pairs that were in the same journal or different journals. Information found in the title field of the exported records was compared to the Comment On field (CON). The Comment On field contains the citation for the referent article, and the comparison between comment and referent article journal was performed for each of the ~30,000 comments published in 2009. Each comment was scored as either being in the same journal or different journal as the referent article and the numbers in each of these groups were tallied. It was also noted whether a comment had several referent article Comment On citations, as these represent the comments that refer to multiple articles.

***PubMed Search Statistics for Comment Articles***

User statistics on comment searching in PubMed were generated by Lee Szilagyi, Biomedical Text Product Manager in the Public Services Section at the National Center for Biotechnology Information (NCBI).

***Comparison of Indexing on Comments versus the Referent Article***

 A comparison of terms assigned to comment articles and referent articles was performed by Jim Mork from the Lister Hill National Center for Biomedical Communications. A “C” language program was created to go through all files in the 2011 MEDLINE Baseline automatically and identify articles with the “Comment On” designation, as well as the associated referent articles. The 2011 MEDLINE Baseline is a static collection of all MEDLINE citations that were present in the database on November 19, 2010 (<http://mbr.nlm.nih.gov/>). It therefore includes all comments found in MEDLINE up to that date. “Complete MEDLINE Comment Set” will be used for clarity in the text of this report to identify this data set. After identifying comment/referent article pairs, the MeSH headings assigned to each were compared and the percentage of matches was calculated. This analysis did not include associated subheadings. The MeSH heading comparison also involved a calculation of the overlap in Major Topics. These MeSH terms are considered to represent a main idea or focus of an article and are also referred to as IM (Index Medicus) terms or starred or asterisked terms. The remaining non-matching terms from each comment article were further examined to determine whether they were in the same MeSH tree as terms assigned to the referent article.

A similar analysis was performed to examine the overlap of terms for comment articles of different publication types. Comment articles are assigned the Comment publication type in addition to one of the four obligatory publication types (Letter, News, Editorial, or Journal Article). Comment articles were divided into these four publication type classes and the overlap of comment/referent article MeSH terms was determined as above.

***Comparison of Referent Article Terms to Medical Text Indexer Suggested Title Terms***

The Medical Text Indexer (MTI) uses a complex set of algorithms to suggest possible indexing terms for journal articles. Jim Mork performed an analysis of MTI suggested terms compared to terms assigned by an indexer to determine whether MTI could be used in automatically indexing these articles. Comments do not generally have abstracts, so MTI primarily suggested terms based on the title of the comment article. Terms suggested by MTI were evaluated by determining the recall, precision, and F1 measure when comparing the suggested terms to the terms assigned by an indexer. The recall value is the percentage of human indexing terms that were matched by MTI, and the precision value is the percentage of suggested terms that were matches. The F1 measure is an estimate of the accuracy of the test indexing and takes into account both the recall and precision scores. These measures were also determined for the terms from the referent article for each comment, as well as a combined method of combining terms suggested by MTI and from the referent article. Analysis of the recall measure was performed for the Major Topic subset of terms as well.

# Results

***Number of Comment Articles in MEDLINE***

 The number of comment articles published during each calendar year for the MEDLINE subset was determined and plotted in Figure 1. 2010 was not included because indexing for this time period is still in progress. The number of comment articles each year prior to 1989 was close to zero in this analysis because the Comment publication type was not used until this time. The number of comment articles has increased steadily since then, and there were approximately 30,000 comment articles indexed for MEDLINE in the year 2009. This number equates to about 4% of articles indexed that year. These 2009 comment articles spanned a total of 2,265 unique journals, which represents 42% of the journals indexed. As of April 2011, there were over 430,000 total comment articles in the MEDLINE subset. At the current rate of increase, approximately 170,000 comment articles will be indexed over the next five years (2011-2015).

***Comments on Articles in the Same versus Different Journals***

 The current policy for comments indexed for MEDLINE is to make links only to articles within the same journal. Exceptions to this policy are rare, and are made based on user feedback. Therefore, less than 1% of the approximately 30,000 comments published in 2009 are linked to articles in a different journal (see Table 2). Additionally, Table 3 shows that the vast majority of comments linked to articles in the same journal were to a single article rather than multiple articles (94% on a single article versus 6% on multiple articles).

**Table 2. Number and Percentage of 2009 Comments on Articles in Same or Different Journals**

| **Category** | **Number of Articles** | **Percent of Total** |
| --- | --- | --- |
| Same Journal | 29,520 | 99.10% |
| Different Journal | 244 | 0.82% |
| Mix | 25 | 0.08% |
| **Total** | **29,789** | **100%** |

**Table 3. Number and Percentage of 2009 Comments on Single versus Multiple Articles in Same or Different Journals**

| **Category** | **Number of Articles** | **Percent of Total** |
| --- | --- | --- |
| Same Journal, Single Article | 27,888 | 93.62% |
| Same Journal, Multiple Articles | 1,632 | 5.48% |
| Different Journal, Single Article | 229 | 0.77% |
| Different Journal, Multiple Articles | 15 | 0.05% |
| Multiple Articles, Mix of Same & Different Journals | 25 | 0.08% |
| **Total** | **29,789** | **100%** |

***Number of Comments in the Non-MEDLINE Subset Each Year***

Until recently, very few articles were designated as comments in the non-MEDLINE subset based on the indexing policy. However, recently implemented Technical Memoranda (TM 440 in 2002 and TM 492 in 2010) allow for non-indexed analytical summaries to be designated with the Comment publication type and linked to referent articles. This broadened the policy and led to an increase in the number of linked Comment articles in the non-MEDLINE subset of PubMed. Figure 2 shows the number of articles designated as comments in the non-MEDLINE subset. These articles have the Comment publication type and a comment link but are not indexed. Although indexing of comments published in 2010 is not complete, data for that year were included to show the increase in number of comment designations after TM 492. The number should be even higher than shown here, once indexing for that year is complete.

TM 492

TM 440

***PubMed Search Statistics for Comment Articles***

 In order to determine whether PubMed users actively search for comment articles, statistics on the number of searches that include various comment search strings were obtained from NCBI. The number of searches containing a particular search string is shown in Table 4, as well as the number of sessions in which a user searched for each search string. Very few comment searches were done in March of 2011, which was chosen because March is a high PubMed usage period. For comparison, the total number of PubMed Web searches done in quarter two of fiscal year 2011 (January 1, 2011 – March 31, 2011) was 233,636,849 (<https://wiki.nlm.nih.gov/confluence/display/NLMSTATS/PubMed>).

**Table 4. PubMed Statistics on Comment Search Strings**

| **Statistics For March 2011\*** | **Number of Searches** | **Number of Sessions** |
| --- | --- | --- |
| Search contains 'hascommenton' | 5 | 4 |
| Search contains 'hascommentin' | 6 | 6 |
| Search='hascommenton' | 1 | 1 |
| Search='hascommentin' | 2 | 2 |
|  |  |  |
| **Direct Search Strings**  |  |  |
| searchterm="comment" | 11 | 10 |
| searchterm="commentary" | 30 | 26 |
| searchterm="comment [pt]" | 4 | 2 |
| searchterm="comment[pt]" | 7 | 6 |
| searchterm="comment [ti]" | 0 | 0 |
| searchterm="comment[ti]" | 0 | 0 |
|  |  |  |
| **Total** | **66** | **57** |

\*Excludes bots, crawlers, internal NCBI traffic, and traffic from NLM.

***Comparison of Indexing on Comments versus the Referent Article***

 A comparison of MeSH terms assigned to comments and referent articles was performed. The percentage of all MeSH terms assigned to comment articles that matched terms found on the referent article is shown in Figure 3 for the years 2008-2010 and the Complete MEDLINE Comment Set. Approximately 70% of terms applied when indexing a comment article matched terms that had been applied to the referent article in all three years. When looking at just the MeSH Major Topic terms, the percentage of matches rose by about 5% to about 75%.

***Non-Overlapping MeSH Terms***

 Approximately 30% of terms assigned to comment articles were not assigned to the referent article. Further analysis of the terms that did not match revealed that about two thirds of the non-matching terms assigned to comment articles were in the same MeSH tree as a term assigned to the referent article. The exact percentages for 2008-2010 and the Complete MEDLINE Comment Set are shown in Figure 4 and a further breakdown of the distance separating the terms in the MeSH trees can be found in Appendices F-I.

**Figure 4A. MeSH Term Matches for 2008-2010 Comments when Compared to the Referent Article**

Exact Match 69%

Same Tree 19%

No Match 12%

**2008**

Exact Match 70%

Same Tree 19%

No Match 11%

**2009**

Exact Match 71%

Same Tree 18%

No Match 11%

**2010**

**Figure 4B. MeSH Term Matches for Complete MEDLINE Comment Set when Compared to the Referent Article**

Exact Match 66%

Same Tree 21%

No Match 13%

**Complete MEDLINE Comment Set**

***Comment Articles and Other Publication Types***

 In addition to the Comment publication type, a comment article will also have one of the following publication types: Letter, News, Editorial, or Journal Article. The percentage of each publication type combination in the 2009 subset of MEDLINE comment articles and in the Complete MEDLINE Comment Set are shown in Figure 5. Letter was the most frequently accompanying publication type as expected, and News the least frequent.

**Figure 5A. Comment & Other Publication Type for 2009**



**Figure 5B. Comment & Other Publication Type for the Complete MEDLINE Comment Set**

***Comments with Different Publication Types have Similar Levels of MeSH Term Overlap***

 MeSH terms assigned to comments and referent articles were analyzed further by publication type for 2009 comments and the Complete MEDLINE Comment Set. Comments in all four publication type categories had levels of overlap similar to the average for each entire data set (see Figure 6). The overlap value for 2009 comment Major Topics was 74% (see Figure 3). In comparison, comments that are News, Editorials, and Journal Articles had higher overlap than this (78%, 78%, and 77% respectively) while Comment/Letters had a lower overlap value (70%) (see Figure 6B). The overlap value for the Complete MEDLINE Comment Set Major Topics was 70% (see Figure 3). In comparison, comments that are News, Editorials, and Journal Articles had higher Major Topic overlap than this (78%, 74%, and 74% respectively) while Comment/Letters had a slightly lower overlap value (68%) (see Figure 6D). Full publication type data analyses can be found in Appendices J-M.

**Figure 6A. MeSH Term Matches for 2009 Comments by Publication Type**

**Figure 6B. Major Topic Matches for 2009 Comments by Publication Type**

Exact

Match

74%

Same Tree

16%

No Match

10%

Exact

Match

66%

Same Tree

18%

No Match

16%

Exact

Match

71%

Same Tree

19%

No Match

11%

Exact

Match

71%

Same Tree

16%

No Match

12%

**Letters**

**News**

**Editorials**

**Journal Articles**

Exact

Match

78%

Same Tree

15%

No Match

7%

Exact

Match

70%

Same Tree

18%

No Match

12%

Exact

Match

78%

Same Tree

15%

No Match

7%

Exact

Match

77%

Same Tree

15%

No Match

8%

**Letters**

**News**

**Editorials**

**Journal Articles**

**Figure 6C. MeSH Term Matches for the Complete MEDLINE Comment Set by Publication Type**

**Figure 6D. Major Topic Matches for the Complete MEDLINE Comment Set by Publication Type**

Exact

Match

69%

Same Tree

19%

No Match

12%

Exact

Match

64%

Same Tree

19%

No Match

17%

Exact

Match

70%

Same Tree

19%

No Match

11%

Exact

Match

67%

Same Tree

18%

No Match

15%

**Letters**

**News**

**Editorials**

**Journal Articles**

Exact

Match

74%

Same Tree

17%

No Match

9%

Exact

Match

68%

Same Tree

19%

No Match

13%

Exact

Match

78%

Same Tree

15%

No Match

7%

Exact

Match

74%

Same Tree

16%

No Match

10%

**Letters**

**News**

**Editorials**

**Journal Articles**

***Comparison of Referent Article Terms to Medical Text Indexer Suggested Title Terms***

Indexing terms applied to the ~30,000 comment articles indexed in 2009 were analyzed and compared to terms assigned to their referent articles, title terms suggested by MTI, and a combination of the two sets of terms. Figure 7 shows a comparison of the recall, precision, and F1 measure for each of these potential sources of automatic indexing terms. MTI alone performed the poorest, with a recall value of only 30% (see Figure 7A). MTI had the highest precision of the methods tested (see Figure 7B) because it suggested fewer, more accurate terms from the titles of the comment articles (see Appendix N). Because the referent articles are indexed in depth, the precision is lower when comparing terms from these articles to MTI title terms. The recall measure is therefore more important in this analysis, because it indicates the percentage of MeSH terms assigned by an indexer to a comment that would be also be assigned using one of the automatic indexing methods. Terms from the referent article were better in this respect than MTI alone, with a recall value of 71% (see Figure 7A). The combined method had a slightly higher recall value (73%) than the referent article terms alone. Additionally, when the recall value for just the Major Topic terms was determined, there was an increase in the percentage of terms that the combined method found compared to the referent article terms alone. The recall value for the combined method was 73% for all terms and 78% for Major Topics, while the recall value for terms from the referent article was 71% for all terms and 75% for Major Topics (see Figure 7A). Complete MTI title term data can be found in Appendix N.

# Discussion

 Comments represent a small subset of the articles indexed for MEDLINE (~4% of MEDLINE citations were comments in 2009), but they can be a useful tool for individuals evaluating published biomedical information. Current indexing practices for comments are time consuming and costly, and several important questions must be addressed before deciding how to proceed with their indexing. The answers to these questions should drive decision making on the future of comment indexing, and the data presented in this report can be used to help guide the decision making process.

***Should comments be indexed?***

 The cost of indexing comments needs to be weighed against the value added to MEDLINE by making these articles more accessible. Search data from NCBI shows that very few users directly search for comments (see Table 4). We suspect that users are much more likely to perform a subject search in PubMed and then access comment articles through the links found on the Abstract view for articles of interest, rather than entering comment search strings directly. It was unfortunately not possible to demonstrate this because NCBI does not have a way to provide data on the number of times users click on comment links. If we assume that users access comment articles through other articles of interest, it may only be necessary to link comments and not index them. It is also possible that users access comments by relying on them to show up in the results of subject searches rather than by directly searching for them. However, if comment articles are not indexed, they will not show up in search results when searching with MeSH terms. Additionally, most comment articles are also letters or editorials (see Figure 5), and these would no longer be indexed for MEDLINE if we decide to discontinue comment indexing.

***If comments are indexed, should they first be evaluated for indexing suitability?***

 The diversity of comment formats has led to issues of whether all comments are of high enough quality to be indexed. Some consist of barely more than a summary, while others are substantive analyses of current research. Indexers have attempted to delineate the line between comments that should be in MEDLINE and those that should not by evaluating new journal content for indexing suitability. This evaluation leads to generation of an Indexing Note (INote) that is viewable in the Data Creation and Maintenance System (DCMS). Data Reviewers and Indexers then must read the INotes as they determine which comments should be indexed. It is time consuming to determine which comments should be indexed, to assess new comment formats as they are introduced, to re-evaluate journals as they change the format of their comment articles, and to keep the INotes up to date. The time needed to evaluate comments will continue to increase as more journals are accepted for indexing and the number of comments added to MEDLINE continues to increase (see Figure 1). How detrimental is it to have comments of lesser quality in MEDLINE? Does the benefit of excluding these comments outweigh the cost of time spent evaluating them? With the current indexing policy, this evaluation is necessary because it cuts down on the number of articles that require costly contract indexing. However, these comments would not carry the same cost burden if automatic indexing is implemented.

***Should comments be linked regardless of whether the referent article is in the same journal?***

 Current indexing policy allows for comment links to be made only if the comment and referent article are in the same journal. Less than 1% of indexed comments in 2009 commented on articles published in a different journal (see Table 2), and these represent exceptions made based on user feedback. The decision to only link comments if they are in the same journal was made to keep the volume of comment linking down. Is it still appropriate to link comments to referent articles only when they are in the same journal? This arbitrary distinction likely prevents users from finding comments of interest.

If the policy is revised and indexed comments are linked to referent articles regardless of whether they are in the same or different journal, the policy would then be consistent with the guidelines outlined in TM 492 for linking non-MEDLINE comments. When that policy was implemented in 2010, the number of comment articles in the non-MEDLINE subset of PubMed increased (see Figure 2), resulting in an increase in workload for Data Reviewers. A similar increase in workload would likely occur with a revised linking policy, but the cost could be mitigated by implementation of automatic indexing. It is difficult to determine exactly how much it costs to create a comment link, but doing so takes about twice as long as the current average time to review incoming article data and complete a citation. Fran Spina, head of the Quality Assurance Unit, indicated that data review can be accomplished at a rate of 22 citations per hour, or about 2.7 minutes each on average. She estimates that it takes about 5 minutes to make a comment link in the DCMS. The current contract cost for each completed citation is $2.40, and adding additional comment linking to the work load of Data Reviewers would make the average time spent per citation go up. The degree to which it would increase depends on how many additional links would need to be made, and there is no way to estimate how many comments have not been linked because they refer to an article in a different journal. While the unit cost per citation would not increase, adding more work for the same pay may lead to data creation contract issues.

***Is automatic indexing of comments a viable option?***

 We suspected at the outset of this project that there would be a high degree of overlap between the MeSH terms assigned to comments and referent articles. We have demonstrated the high degree of overlap for these terms (see Figure 3), as well as the high precision of automatically indexing comments using the Medical Text Indexer (see Figure 7). Automatically indexing using terms from the referent article, terms suggested by MTI, or a combination of both would lead to considerable savings of time and money. The current contract indexing cost for one article is $9.36, which means that automatic indexing could save ~$280,000 on the ~30,000 comments that will be published this year.

***Which terms should be automatically assigned?***

 Two potential sources of automatic indexing terms have high overlap with human indexing of comments: terms from the referent article alone or referent article terms in combination with MTI title terms. In this study we examined the overlap of all terms assigned as well as the Major Topic term subset. Major Topic terms are most appropriate for automatic indexing of comments because they have the highest degree of overlap (see Figures 3 and 6) and because comments are primarily indexed non-depth. About 70% of terms assigned to comments were also found on referent articles; however, the converse is not true. Referent articles are generally indexed in-depth, and the percentage of terms assigned to them that also appear on their commenting articles is substantially lower (see Appendices F-M). It would therefore be inadvisable to automatically assign all terms from the referent article to a comment.

In addition to automatically assigning Major Topic terms from the referent article, it will be necessary to transfer some Check Tags. Check Tags are a class of MeSH terms that describe species, sex, age group, etc. There are subjects that require specific Check Tags be applied in order to assign appropriate MeSH terms. For example, an article on the prostate requires the Check Tag “Male” in order to use the MeSH term “Prostate.” Failure to include required Check Tags will result in validation errors and will hold up indexing of the item, and, therefore, the entire journal issue.

***Should the terms assigned through automatic indexing be reviewed?***

 Taken together, the percentage of term matches between a comment/referent article pair and the percentage of terms in the same MeSH tree represent ~90% coverage of terms assigned by an indexer to a comment (see Figures 4 and 6). This is excellent coverage, but there will be occasions during automatic indexing where inappropriate terms are assigned or key terms are missed. This may be an acceptable pitfall of automatically indexing comments because they are indexed non-depth and comprehensive indexing is not required for these articles. Furthermore, adding a review step will substantially increase the cost of automatic indexing and may therefore be impossible to justify in the current budget climate.

***How will other parts of the indexing process be affected by automatically indexing comments?***

 In addition to planning implementation of automatic indexing processes in the DCMS, indexing staff will need to determine the downstream effects of automatic indexing on departmental workflows. Automatically assigning terms from the referent article to the comment article requires that the referent article first be indexed. This may lead to challenges with how the articles move through the DCMS workflow because comments are often published in the same issue as their referent article. Indexing contracts may also be affected because they were drawn up based on the amount of time it takes to index an average item. This average amount of time may increase with the removal of comments from contract indexers’ workload because these items are easy to index.

***How should comments on multiple articles be dealt with?***

 Only a small fraction of indexed comments are associated with multiple referent articles (see Table 3). These comments might represent a challenge when implementing automatic indexing because it will be more difficult to determine which terms should be assigned. One possible solution is to continue human indexing of comments that refer to more than one article. Alternatively, automatic indexing could be designed to take these articles into account. All Major Topic terms from referent articles could be used, or a subset determined by the automatic indexing program could be assigned. Investing time to adapt automatic indexing to these articles up front or as a secondary step in implementation might be desirable because it will maximize the contract indexing savings. Approximately 5.6% of comments published in 2009 had multiple referent articles (see Table 3). While this is a small fraction of the total, it represents ~$15,000 in contract indexing fees per year at the current price rate.

# Recommendations

Based on the difficulty of indexing comments using current policies and the high expense of this process compared to its value, we recommend that the policy be reviewed and updated. We have compiled a list of possible ways that comment indexing could proceed, along with the strengths and weaknesses of each solution (see Table 5). We have also included rankings based on money savings and quality of indexing, with a score of 1 being the best and 9 being the worst.

|  |
| --- |
| **Table 5. Possible Solutions for the Future of Comment Indexing** |
| **Solution** | **Arguments For** | **Arguments Against** | **Money Savings Rank\*** | **Indexing Quality Rank\*\*** |
| **A**keep current comment indexing policy | best quality indexing of comments | not all comments are currently linked | 9 | 1 |
|   | duplication of indexing effort |
|   | most expensive option |
|   | very few users search for comments |
|   | policy does not cover new comment types |
| **B**do not index comments | largest money and time savings | reduces value added to MEDLINE by indexing | 1 | 8/9 |
| very few users search for comments |
| minimal disruption to indexing workflow | comments will not show up in MeSH term search results |
|   |
|   | some Letters and Editorials will not be indexed |
|   |
| **C**do not index comments, automatically add comments to search results | large money and time savings | reduces value added to MEDLINE by indexing | 2 | 8/9 |
| comments will still show up in search results |
| some Letters and Editorials will not be indexed |
| no disruption in user experience |
| minimal disruption to indexing workflow | does not address licensees of PubMed data |
| **D**automatically index comments by applying terms from referent article – no review | money and time savings | some inappropriate terms will be assigned | 3 | 6 |
| easy to implement in DCMS | some important terms will be missed |
| add value to MEDLINE through indexing | very few users search for comments |
| could expand policy to other article types | check tags may be an issue |
|   | may not work for comments on multiple articles |
|   |
| **E**automatically index comments by applying terms from referent article – in-house review | money and time savings | requires review of terms by in-house staff | 7 | 3 |
| easy to implement in DCMS | very few users search for comments |
| add value to MEDLINE through indexing | indexing workflow issues |
| reviewer will catch inappropriate terms | check tags may be an issue |
| reviewer will add missed terms | may not work for comments on multiple articles |
| uses on-site staff instead of contractors |
| could expand policy to other article types |   |
| **F**automatically index comments by applying MTI title terms – no review | money and time savings | MTI title terms aren't as good as terms from the referent article | 4 | 7 |
| easy to implement in DCMS |
| add value to MEDLINE through indexing | some inappropriate terms will be assigned |
| could expand policy to other article types | some important terms will be missed |
|   | very few users search for comments |
| **G**automatically index comments by applying MTI title terms - in-house review | money and time savings | requires review of terms by in-house staff | 8 | 4 |
| easy to implement in DCMS | MTI title terms aren't as good as terms from the referent article |
| add value to MEDLINE through indexing |
| reviewer will catch inappropriate terms | very few users search for comments |
| reviewer will add missed terms | indexing workflow issues |
| uses on-site staff instead of contractors |   |
| could expand policy to other article types |  |
| **H**automatically index comments w/ terms from referent article and MTI title terms –no review | combines terms from both automatic indexing methods | some inappropriate terms will be assigned | 5 | 5 |
| some important terms will be missed |
| money and time savings | very few users search for comments |
| easy to implement in DCMS | may not work for comments on multiple articles |
| add value to MEDLINE through indexing |
| could expand policy to other article types | check tags may be an issue |
|   | comments are indexed non-depth |
| **I**automatically index comments w/ terms from referent article and MTI title terms-in-house review | combines terms from both automatic indexing methods | some inappropriate terms will be assigned | 6 | 2 |
| some important terms will be missed |
| money and time savings | very few users search for comments |
| easy to implement in DCMS | requires review of terms by in-house staff |
| add value to MEDLINE through indexing | indexing workflow issues |
| reviewer will catch inappropriate terms | may not work for comments on multiple articles |
| reviewer will add missed terms |
| uses on-site staff instead of contractors | check tags may be an issue |
| could expand policy to other article types | comments are indexed non-depth |

\*Money savings rank was determined by the perceived cost of implementation of each solution. Solution A is the most costly (lowest rank) because no improvements to the process are made. Solution B has the highest rank because eliminating comment indexing will save the most money. Solution C will cost more than Solution B even though comment indexing is eliminated because it will require a programmer’s time to adapt the PubMed search algorithm. Solutions D, F, and H were ranked based on how much staff time will be needed to implement the change in the DCMS. It will take the least amount of time to implement Solution D because the DCMS is already set up to suggest these terms, whereas implementation of Solution H will be the most time-consuming because it will require a programmer to set up combined automatic indexing. Solutions E, G, and I require in-house review of automatically indexed terms so they will cost more, and these solutions were ranked based on the perceived amount of time it would take to review them. Solution I has the highest quality indexing of the three, and would therefore take the least amount of time to review.

\*\*Indexing quality rank was determined by comparing the hypothetical indexing output of each solution to the gold standard of human indexing. Solution A is the gold standard with the best rank of 1. Solutions B and C have the same worst ranking because both call for no indexing terms to be assigned. Automatic indexing with a human reviewer should yield better quality indexing than no review, and we assume that the better the automatic indexing, the better the output after review. Solutions E, G, and I therefore have the ranks 3, 4, and 2 respectively. The automatic indexing solutions without review were ranked based on the indexing term comparisons described in Figures 3 and 7. Solutions D, F, and H therefore have the ranks 6, 7, and 5 respectively.

While continuing with the current indexing policy (Solution A) would lead to the highest quality of comment indexing, it is also the least cost-effective of all the options. It requires that each comment go to a contract indexer and does not address issues with changing comment formats. Discontinuing comment indexing (Solution B) would lead to the largest money and time savings, but would reduce the breadth of MEDLINE indexing and limit users’ ability to search for comment articles. To address the concern regarding limited comment searching ability, it might be possible for NCBI programmers to adjust their search algorithm to draw comments on retrieved articles into the search results page (Solution C). Users would have the exact same search experience as they have now, with comments showing up in their results and as links on the abstract view of an article of interest, but none of the comments would need to be indexed. This solution takes into account user experience; however, we do not recommend discontinuing comment indexing. About 75% of currently published comments are also Letters or Editorials (see Figure 5). Implementing Solution B or C would mean that any Letter or Editorial that is also a comment would not be indexed, while other Letters and Editorials in the same journal would be. Determination of indexing suitability should be based on content, not publication type.

Solutions D and E involve automatically indexing comments using terms from the referent article, while solutions F and G both rely on MTI to assign indexing terms to comment articles. Although MTI suggested terms with high precision, terms assigned to the referent article had a better overall score when compared to terms assigned to comments by an indexer (see Figure 7). Using terms from the referent article (Solution D or E) rather than MTI suggested terms (Solution F or G) is therefore a better option. Alternatively, a combined approach to using terms from both the referent article and MTI suggested terms (Solution H or I) could be used. This is the best option if automatic indexing is pursued because it would result in the highest indexing quality (see Figure 7); however, using MTI for indexing can introduce erroneous terms. Automatically indexing from the referent article alone gives slightly lower coverage of Major Topic terms, but would likely introduce fewer of these off-topic terms. We recommend automatically assigning only the Major Topic terms (including associated subheadings) from the referent article if one of these automatic indexing options is chosen, as comments are indexed non-depth.

Automatic indexing, either with terms from the referent article alone or using the combined method, is the best possible solution for handling comments based on the findings in this study. Automatic indexing of comments will lead to savings in contract indexing costs, while maintaining high quality indexing for these articles. If automatic indexing is chosen, the issue then becomes whether the terms automatically assigned should be reviewed. Automatically assigning terms (Solution D, F, or H) will result in high-quality indexing of comments, but there will be important terms missed and inappropriate terms assigned. By adding a human review step to the process (Solution E, G, or I), indexing for comments could reach the quality level of Solution A. However, this would add the expense of additional in-house staff time. It might be useful to review the terms for a trial period after implementing automatic indexing to assess whether review is necessary and to determine whether adding MTI title terms is desirable.

We recommend all comments be linked to their referent article, regardless of where each was published. However, estimating the number of comment/referent article pairs that are published in different journals was outside the scope of this study. Further investigation is needed to determine whether changing the policy to link all comments to referent articles regardless of where the original article is published represents a prohibitively large increase in processing costs. Requiring publishers to identify comments and provide PubMed ID numbers or Digital Object Identifiers (DOIs) when submitting XML data for their articles could help cut down on the processing time required for comment linking and make it possible to expand the policy to include comments on articles in different journals.

 Prior to implementation, indexing and programming staff will need to determine the downstream effects of automatic comment indexing and adapt DCMS and departmental workflows to address problems that will arise. A few of these issues and possible solutions are briefly discussed in this report. Problems with Check Tags can be solved by automatically assigning the required subset of these terms from the referent article. A method of dealing with comments associated with multiple referent articles can be built into the DCMS automatic indexing system, but this is not necessary for initial implementation if there is a way to differentiate these items and divert them for human indexing. The automatic indexing process will also require a method of holding comments so they do not go to contract indexers and can wait in a queue for the referent article to be indexed before applying terms. These issues can be dealt with in the design phase of automatic indexing, but problems stemming from changes in workload for contract indexers and data reviewers may not be fully apparent until later in the implementation process and could require contract negotiation.

***Conclusions & Future Directions***

 Based on the results of this study, we recommend implementing automatic indexing of comment articles using terms from the referent article or a combination of terms from the referent article and MTI title terms. Only the Major Topic terms should be assigned, as they had the highest degree of overlap and comments are indexed non-depth. We also recommend further study of the cost of changing the indexing policy to allow for linking of comments to referent articles in different journals. Implementing automatic indexing of comments will save money and increase the efficiency of the indexing process while continuing to provide high quality indexing of comment articles.

 We have focused on the NLM policy for indexing comment articles and the feasibility of automatically indexing them. However, there are a number of additional publication types that could be automatically indexed in a similar manner. Articles such as integrating resources, addenda, updates, co-published articles, synopses, author replies, and executive summaries are all associated with a previously or concurrently published item and terms could be assigned from that item to cut down on duplication of work by indexers. Once automatic indexing of comments has been implemented and resulting workflow issues are resolved, adding additional publication types will be relatively simple and would represent additional cost savings.

# References

1. Montori VM, Guyatt GH. Progress in evidence-based medicine. JAMA 2008 Oct;300(15):1814-6.

2. Evidence-Based Medicine Working Group. Evidence-based medicine. A new approach to teaching the practice of medicine. JAMA 1992
 Nov;268(17):2420-5.

# Appendices

## Appendix A. Technical Memorandum 269

TECHNICAL MEMORANDUM 269: Clarification on Handling of "Summary and Discussion" as per page C - 2 of the 1990 Orientation Packet.

**To:** Indexers and Revisers

 **From:** Assistant Head, Index Section

 **Date:** October 18, 1989

Original two pages from 1990 orientation packet

[Some Comments of Commentary

1. Commentary linkages will be provided for articles with a publication date of 1989 onwards.  Do not flag articles as commentary in journals with a publication date earlier than 1989.
2. Commentary linkages will only be provided for articles commenting upon articles published within the same journal title.

NOTE:  Several journals have section in which articles from other journals are reviewed and commented upon.  An example is Hepatology which contains a section entitled "Hepatology Elsewhere".  Articles in this section are to be indexed according to indexing policy, but not flagged as commentary.  As we identify journals where this occurs, we will add an II NOTE saying not to flag these articles as commentary.

1. The majority of comments are contained in letters.  Attachment 1 lists easy ways to identify a comment.  The keyboarding contractor has been using this handout as guide in flagging letters as potential comments.  However, the indexer is responsible for ascertaining that it is really a comment and not merely a case of the author(s) citing previous work.  When uncertain, leave the comment flag in the journal.
2. Differentiating Between a Comment and Discussion

When trying to determine if material following an article should be treated as discussion or flagged as a comment, ask the following question:

Is this material given a citable title in the Table of Contents which is of equal prominence with the other titles?

1. Title indented or bracketed in the Table of Contents should usually be treated as discussion (see Example 2A-2B).  NOTE:  There may be a discrepancy between the heading on the page within the journal and what appears in the Table of Contents.  In These cases, use the Table of Contents to make the decision.
2. Often a title will being with "Comment on:", "Commentary...", "Invited commentary ...", "Editorial comment...”
3. If this is followed by a citable title and the title is of equal prominence with the other titles in the Table of Contents, it should be treated as comment and flagged as such.  (see Example 3A).
4. However, if the title repeats almost exactly the previous title, treat it as discussion.  (see Example 3B)

Exception to the above:  When you have a pair of articles set up as a point/counterpoint (e.g., Current controversies in Rheumatology -- see Example 3C), index each article separately and flag the second (i.e., counterpoint article as a comment.

1. When you have an article which comments upon an author's previous work, followed by a response/reply by the original author(s) (and clearly marked as such) which may or may not be followed again by a rejoinder, link the author's response and rejoinder (if present) as discussion of the previous commenting article.  (See Example 4A-4B)

If the article does not contain a distinctive title, and is clearly commenting on the previous article, it should be treated as a discussion and the pagination provided via rules for discussion (Manual Section 10.8) (see Examples 5A-5D)

1. Handling of "Summary and Discussion" following a series of articles

In general, when "Summary and Discussion" or "Summary and Comments" occurs after a series of articles (ten or fewer) without any further distinctive title, treat it as a discussion of any of the previous articles mentioned within the summary.  (see Example 6) Consider whether the item should be flagged and treated as an overall.

Numerous examples were given in the Orientation Packet.  They are not reproduced here.]

Articles should only be considered for linkage via discussion (i.e., pagination for Summary and discussion section added to article pagination) if the article is explicitly mentioned in the summary and discussion section.  Don't go looking for implicit references!

For Online Journals

The Keyboarding Contracting will be doing their best when keying the journal to look at Summary and Discussion sections and determine what articles should have inclusive pagination for discussion added.  The Keyboarding Contractor  will use the new QA Flag to alert indexers, revisers, and QA staff to the Summary and Discussion Section, noting "disc" by Comment within this issue" and the pagination of those articles for which discussion pagination was added by "Article commented upon" (see attached example).  Then indexers and revisers come across these flags they should quickly scan the Summary and Discussion section to see that the linkages provided seem appropriate.

For Offline Journals

Those indexers still indexing on data forms (i.e., domestic contract indexers not yet online and foreign center indexers), should add the pages of the discussion to field 8.  It is not necessary to type it in, you may simple go back and pencil it in by hand.  Revisers should quickly scan the Summary and Discussion section to see if the linages are appropriate.  Add a QA Flag for Quality Assurance staff to check.

Handing of Symposia

There was a question raised regarding the handling of Summary and Discussion sections for Symposia.  If the issue has a SELECTION Flag checked "FLAG for over-all", or if an OVERALL Flag is already present, do not use discussion in the pagination field.

How to Flag Comments to an Article within the Same Issue

1. Place a checkmark by COMMENT within this issue.
2. Provide inclusive pagination for the commenting item.
3. Place a checkmark in the journal (in pencil) by the reference to the item being commented upon and provide inclusive pagination for this item if provided.

## Appendix B. Technical Memorandum 440

TECHNICAL MEMORANDUM 440: Citations for Substantive, Analytical Summaries, Especially in Relation to Evidence-Based Medicine, of Articles Published Elsewhere, replaced by TM 492

**To:** Indexers, Revisers, Quality Assurance and Data Creation Staff

**From:** Head, Index Section

**Date:** April 25, 2002

This replaces Online Indexing Technical Memorandum 101 and Indexing Manual Section 16.8, which should no longer be followed.

The linking capabilities inherent in PubMed, DCMS and Web-based versions of journals allow us to provide users with greater access to information, and in new and different ways.

Starting with 2002 publication dates, we will begin to create unindexed citations to analytical summaries of articles published elsewhere, especially in relation to evidence-based medicine. These sorts of summaries appear most frequently in a few MEDLINE journals in which almost the entire contents consist of items of this type. Those journals include *ACP Journal Club*, *Evidence-Based Nursing* and *Evidence-Based Mental Health*. However, this new policy will be followed whenever appropriate summaries appear in any journal.

The summary must be authored and must analyze (especially, but not necessarily, in terms of evidence-based medicine) the original article it is about. The summary should not be merely a summary--after all, there is usually an abstract in the original citation of the article. The summary should be of substantive length, probably at least a page, and should be citable as a discrete article, which means that the author name probably appears with each individual summary on the page(s) in which it is published, and is probably listed separately in the journal issue table of contents. Citations may not be routinely created for summaries which are published as a group within a single page range listed as a single item in the journal issue table of contents and for which the author(s) name appears a single time at the beginning of the page range. However, when this policy is followed for the recurring contents of a particular journal, text will appear in the “Indexing Instructions” for the journal. If no text in the Indexing Instructions indicates that Technical Memorandum 440 should be followed for the journal, then content within the journal should be flagged for the attention of Index Section management, and no citations should be created for the content.

The analytical summary and original article will be connected in MEDLINE/PubMed with a “comment” linkage. The analytical summary will NOT be indexed with MeSH terms, except for the Publication Type COMMENT. The idea is that the citation to the original article will be retrieved by users from a subject search of MEDLINE, and then the user will see a comment link to the summary. The two citations will be ‘hot linked’ in MEDLINE/PubMed, and each citation is likely to be linked to the full text of the Web-based version of the journal.

An example of a completed citation pair appears below. The first is the ‘original’ article in the journal *Pediatrics*. Notice the “Comment in:” link to the analytical summary in *ACP Journal Club*. The second is the unindexed citation to *ACP Journal Club.* Notice that both citations include a “hot link” to the full text in the Web version of the journal.

[not all of the abstract is shown]

Data creation staff are responsible for noticing appropriate analytical summaries (their regular appearance in a journal will be indicated in the Indexing Instructions) and for creating citations for them. Indexers and revisers must be aware of this policy, and when they encounter appropriate summaries, must mark them as out of scope (without indexing with MeSH terms), and must flag them as comments.

## Appendix C. Technical Memorandum 492

TECHNICAL MEMORANDUM 492: Citations for Substantive, Analytical Summaries, Especially in Relation to Evidence-Based Medicine, of Articles Published Elsewhere (replaces TM 440)

**To**: Indexers, Revisers, Quality Assurance and Data Creation Staff
**From**: Head, Unit B, Index Section
**Date**: March 30, 2010

This replaces Technical Memorandum 440 that was issued on April 25, 2002.

What is new with this technical memorandum is a broader selection criteria for citing analytical summaries of articles published elsewhere. Previously, we tended not to cite analytical summaries that did not contain an abstract or description of the original previously published article; we also did not routinely cite summaries published as a group.

Beginning immediately, substantive authored analytical summaries will be cited (not indexed), marked out-of-scope, and a comment link(s) will be made when the original previously published article is easily identified. The summary may or may not contain an abstract of the original article being discussed.

The summary must have a unique title; that is, it is not identical to the title of the original article being discussed. Titles consisting only of general, recurring section rubrics such as Research Highlights and Journal Club do not qualify as a unique title; such summaries will not be cited.

Citations for summaries which are published as a group within a single page range, authored and listed as a single item in the journal issue table of contents, will be cited as one item and will/may contain multiple comment links.

Analytical summaries of previously published articles are important because they provide users with valuable information in regards to evidence based medicine and research. The analytical summary and original article will be connected in MEDLINE/PubMed with a “comment link”.  The analytical summary will NOT be indexed with MeSH terms, except for the Publication Type COMMENT in most cases. The idea is that the citation to the original article will be retrieved by users from a subject search of MEDLINE, and then the user will see a comment link to the summary. The two citations will be ‘hot linked’ in MEDLINE/PubMed, and each citation is likely to be linked to the full text of the Web-based version of the journal.

Data creation staff is responsible for noticing appropriate analytical summaries and making them TM 492 items. If however, the items are questionable, the data creation staff should flag the items for the attention of Index Section management and an Indexing Instruction (INOTE) will be written for the journal.

For foreign language journals, the title translation will be provided by the reviser. Data creation staff will add the following note in the Data Creation Error Notes: “Eng title to be provided by the reviser”.

## Appendix D. Key for Reading MeSH Term Comparison Charts (Appendices E-N)

**Num Pairs Reviewed** – Number of comment/referent article pairs reviewed.

**Overall Num A MHs** – Total number of MeSH terms on the comment articles.

**Overall Num A Found MHs** – Number of comment article MeSH terms that matched terms assigned to the referent article.

**Overall Num A IMs** – Total number of Major Topics (IM) on the comment articles.

**Overall Num A Found IMs** – Number of comment article Major Topics (IM) that matched Major Topics (IM) assigned to the referent article.

**Num A has IM** – Number of comment articles with Major Topics (IM).

**Num A has all IM matched** – Number of comment articles that had 100% of their Major Topics (IM) match Major Topics (IM) assigned to the referent article.

**Num Pairs no MHs** – Number of comment/referent article pairs where one or both were not indexed and therefore have no assigned MeSH terms.

**Num Pairs Not Found** – Number of comment articles without a link to the referent article.

**Num No PMID Found** – Number of comment/referent article pairs where the link between the articles was broken in the database and a PMID was not returned in the query.

**Total Number of CommentOn Occurrences** – Total number of articles designated with the Comment publication type for a given time period.

**Overall Num A MHs Not Matched** – Number of comment article MeSH terms that did not match any terms assigned to the referent article.

**Found Same Depth/Tree** – Number of comment article MeSH terms that were found at the same level in the MeSH tree for a term assigned to the referent article.

**Found Up/Down 1 or 2 Levels** – Number of comment article MeSH terms that were found within 1 or 2 levels in the MeSH tree for a term assigned to the referent article.

**Found Same Tree** – Number of comment article MeSH terms that were found outside 1 or 2 levels but in the same tree as a term assigned to the referent article.

**Not Found (Out of Ballpark)** – Number of comment article MeSH terms that did not match and were not in the same tree as any terms assigned to the referent article.

**Number B has IM** – Number of referent articles with Major Topics (IM).

**Overall Num B IMs** – Total number of Major Topics (IM) assigned to referent articles.

**Overall Num B Found IMs** – Number of Major Topics (IM) assigned to referent articles that matched Major Topics (IM) assigned to their comment articles.

**Overall Num B IMs Not Matched** – Number of Major Topics (IM) assigned to referent articles that did not have matching terms assigned to their comment articles.

**Number B has all IMs Matched** – Number of referent articles where all of their Major Topics (IM) matched Major Topics (IM) assigned to their comment articles.

**Num A & B having 100% IMs Matched** – Number of comment/referent article pairs with the exact same Major Topics (IM) assigned.

**Total Number of Occurrences** – The number of comment articles that had a particular additional publication type assigned.

**MHs to Match** – The total number of MeSH terms from either the referent articles or recommended by MTI. Used for calculating precision.

**IM Recall** – The recall value for Major Topics (IM) only.

## Appendix E. MeSH Term Comparison for Comment Articles - Summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2011 Baseline | 2008 | 2009 | 2010\* |
| Num Pairs Reviewed | 463,473 |   | 29,751 |   | 29,941 |   | 20,811 |   |
|   |   |   |   |   |   |   |   |   |
| Overall Num A MHs | 3,370,993 |   | 240,950 |   | 244,943 |   | 170,693 |   |
| Overall Num A Found MHs | 2,216,865 | 65.76% | 166,702 | 69.19% | 170,829 | 69.74% | 120,610 | 70.66% |
| Overall Num A IMs | 1,373,553 |   | 98,405 |   | 98,804 |   | 69,210 |   |
| Overall Num A Found IMs | 968,277 | 70.49% | 72,161 | 73.33% | 73,329 | 74.22% | 52,276 | 75.53% |
| Number A has IM | 463,380 |   | 29,739 |   | 29,939 |   | 20,810 |   |
| Number A has all IM Matched | 215,494 | 46.50% | 14,266 | 47.97% | 14,728 | 49.19% | 10,646 | 51.16% |
|  |  |  |  |  |  |  |  |  |
| ***\* NOTE: 2010 is only a partially complete year in the Complete MEDLINE Comment Set*** |  |  |  |

## Appendix F. MeSH Term Comparison for Comment Articles – Complete MEDLINE Comment Set

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Num Pairs Reviewed | 463,473 |  |  |  |  |
| Num Pairs no MHs | 19,223 |  |  |  |  |
| Num Pairs Not Found | 270 |  |  |  |  |
| Num No PMID Found | 142 |  |  |  |  |
| Total Number of CommentOn Occurrences | 483,108 |  |  |  |  |
|  |  |  |  |  |  |
| Overall Num A MHs | 3,370,993 |  |  |  |  |
| Overall Num A Found MHs | 2,216,865 | 65.76% |  |  |  |
| Overall Num A MHs Not Matched | 1,154,128 | 34.24% |  |  |  |
| Found Same Depth/Tree | 50,838 | 4.40% |  |  |  |
| Found Up 1 or 2 Levels | 102,874 | 8.91% | 24.44% | **Near** |  |
| Found Down 1 or 2 Levels | 128,319 | 11.12% |  |  |  |
| Found Same Tree | 359,187 | 31.12% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 512,910 | 44.44% | **Not Related** |  |
|   |
| Overall Num A IMs | 1,373,553 |  |  |  |  |
| Overall Num A Found IMs | 968,277 | 70.49% |  |  |  |
| Overall Num A IMs Not Matched | 405,276 | 29.51% |  |  |  |
| Found Same Depth/Tree | 19,856 | 4.90% |  |  |  |
| Found Up 1 or 2 Levels | 47,667 | 11.76% | 31.61% | **Near** |  |
| Found Down 1 or 2 Levels | 60,598 | 14.95% |  |  |  |
| Found Same Tree | 124,596 | 30.74% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 152,559 | 37.64% | **Not Related** |  |
|   |
| Number A has IM | 463,380 |  |  |  |  |
| Number A has all IMs Matched | 215,494 | 46.50% |  |  |  |
|   |
| Number B has IM | 463,403 |  |  |  |  |
| Overall Num B IMs | 1,606,727 |  |  |  |  |
| Overall Num B Found IMs | 659,621 | 41.05% |  |  |  |
| Overall Num B IMs Not Matched | 947,106 | 58.95% |  |  |  |
| Number B has all IMs Matched | 54,976 | 11.86% |  |  |  |
|   |   |
| Number A & B having 100% IMs Matched | 36,703 | 7.92% |  |  |  |

## Appendix G. MeSH Term Comparison for Comment Articles – 2008 Subset

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Num Pairs Reviewed | 29,751 |  |  |  |  |
|  |  |  |  |  |  |
| Overall Num A MHs | 240,950 |  |  |  |  |
| Overall Num A Found MHs | 166,702 | 69.19% |  |  |  |
| Overall Num A MHs Not Matched | 74,248 | 30.81% |  |  |  |
| Found Same Depth/Tree | 3,186 | 4.29% |  |  |  |
| Found Up 1 or 2 Levels | 6,459 | 8.70% | 24.11% | **Near** |  |
| Found Down 1 or 2 Levels | 8,255 | 11.12% |  |  |  |
| Found Same Tree | 24,046 | 32.39% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 32,302 | 43.51% | **Not Related** |  |
|   |
| Overall Num A IMs | 98,405 |  |  |  |  |
| Overall Num A Found IMs | 72,161 | 73.33% |  |  |  |
| Overall Num A IMs Not Matched | 26,244 | 26.67% |  |  |  |
| Found Same Depth/Tree | 1,214 | 4.63% |  |  |  |
| Found Up 1 or 2 Levels | 2,999 | 11.43% | 31.10% | **Near** |  |
| Found Down 1 or 2 Levels | 3,948 | 15.04% |  |  |  |
| Found Same Tree | 8,168 | 31.12% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 9,915 | 37.78% | **Not Related** |  |
|   |
| Number A has IM | 29,739 |  |  |  |  |
| Number A has all IMs Matched | 14,266 | 47.97% |  |  |  |
|   |
| Number B has IM | 29,744 |  |  |  |  |
| Overall Num B IMs | 114,085 |  |  |  |  |
| Overall Num B Found IMs | 51,207 | 44.88% |  |  |  |
| Overall Num B IMs Not Matched | 62,878 | 55.12% |  |  |  |
| Number B has all IMs Matched | 3,943 | 13.26% |  |  |  |
|   |   |
| Number A & B having 100% IMs Matched | 2,896 | 9.74% |  |  |  |

## Appendix H. MeSH Term Comparison for Comment Articles – 2009 Subset

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Num Pairs Reviewed | 29,941 |  |  |  |  |
|  |  |  |  |  |  |
| Overall Num A MHs | 244,943 |  |  |  |  |
| Overall Num A Found MHs | 170,829 | 69.74% |  |  |  |
| Overall Num A MHs Not Matched | 74,114 | 30.26% |  |  |  |
| Found Same Depth/Tree | 3,279 | 4.42% |  |  |  |
| Found Up 1 or 2 Levels | 6,534 | 8.82% | 24.36% | **Near** |  |
| Found Down 1 or 2 Levels | 8,242 | 11.12% |  |  |  |
| Found Same Tree | 24,239 | 32.71% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 31,820 | 42.93% | **Not Related** |  |
|   |
| Overall Num A IMs | 98,804 |  |  |  |  |
| Overall Num A Found IMs | 73,329 | 74.22% |  |  |  |
| Overall Num A IMs Not Matched | 25,475 | 25.78% |  |  |  |
| Found Same Depth/Tree | 1,230 | 4.83% |  |  |  |
| Found Up 1 or 2 Levels | 2,886 | 11.33% | 31.34% | **Near** |  |
| Found Down 1 or 2 Levels | 3,867 | 15.18% |  |  |  |
| Found Same Tree | 7,968 | 31.28% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 9,524 | 37.39% | **Not Related** |  |
|   |
| Number A has IM | 29,939 |  |  |  |  |
| Number A has all IMs Matched | 14,728 | 49.19% |  |  |  |
|   |
| Number B has IM | 29,938 |  |  |  |  |
| Overall Num B IMs | 115,539 |  |  |  |  |
| Overall Num B Found IMs | 51,847 | 44.87% |  |  |  |
| Overall Num B IMs Not Matched | 63,692 | 55.13% |  |  |  |
| Number B has all IMs Matched | 3,855 | 12.88% |  |  |  |
|   |   |
| Number A & B having 100% IMs Matched | 2,863 | 9.56% |  |  |  |

## Appendix I. MeSH Term Comparison for Comment Articles – 2010 Subset

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Num Pairs Reviewed | 20,811 |  |  |  |  |
|  |  |  |  |  |  |
| Overall Num A MHs | 170,693 |  |  |  |  |
| Overall Num A Found MHs | 120,610 | 70.66% |  |  |  |
| Overall Num A MHs Not Matched | 50,083 | 29.34% |  |  |  |
| Found Same Depth/Tree | 2,011 | 4.02% |  |  |  |
| Found Up 1 or 2 Levels | 4,356 | 8.70% | 23.49% | **Near** |  |
| Found Down 1 or 2 Levels | 5,398 | 10.78% |  |  |  |
| Found Same Tree | 16,834 | 33.61% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 21,484 | 42.90% | **Not Related** |  |
|   |
| Overall Num A IMs | 69,210 |  |  |  |  |
| Overall Num A Found IMs | 52,276 | 75.53% |  |  |  |
| Overall Num A IMs Not Matched | 16,934 | 24.47% |  |  |  |
| Found Same Depth/Tree | 682 | 4.03% |  |  |  |
| Found Up 1 or 2 Levels | 1,980 | 11.69% | 30.51% | **Near** |  |
| Found Down 1 or 2 Levels | 2,505 | 14.79% |  |  |  |
| Found Same Tree | 5,307 | 31.34% | **Ballpark** |  |
| Not Found (Out of Ballpark) | 6,460 | 38.15% | **Not Related** |  |
|   |
| Number A has IM | 20,810 |  |  |  |  |
| Number A has all IMs Matched | 10,646 | 51.16% |  |  |  |
|   |
| Number B has IM | 20,811 |  |  |  |  |
| Overall Num B IMs | 80,517 |  |  |  |  |
| Overall Num B Found IMs | 36,251 | 45.02% |  |  |  |
| Overall Num B IMs Not Matched | 44,266 | 54.98% |  |  |  |
| Number B has all IMs Matched | 2,538 | 12.20% |  |  |  |
|   |   |
| Number A & B having 100% IMs Matched | 1,911 | 9.18% |  |  |  |

## Appendix J. MeSH Term Comparison for Comment Articles by Additional Publication Type – Complete MEDLINE Comment Set

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Overall** | **News** | **Editorial** | **Letter** | **Journal Article** |
| Num Pairs Reviewed | 463,473 |   | 463,473 |   | 463,473 |   | 463,473 |   | 463,473 |   |
| Total Number of Occurrences | 463,473 | 100.00% | 10,382 | 2.24% | 94,410 | 20.37% | 290,427 | 62.66% | 68,241 | 14.72% |
|  |   |   |   |   |   |   |   |   |   |   |
| Overall Num A MHs | 3,370,993 |   | 96,838 |   | 720,573 |   | 1,962,090 |   | 591,389 |   |
| Overall Num A Found MHs | 2,216,865 | 65.76% | 68,092 | 70.32% | 500,085 | 69.40% | 1,254,657 | 63.94% | 393,972 | 66.62% |
| Overall Num A MHs Not Matched | 1,154,128 | 34.24% | 28,746 | 29.68% | 220,488 | 30.60% | 707,433 | 36.06% | 197,417 | 33.38% |
| Found Same Depth/Tree **(Near)** | 50,838 | 4.40% | 1,511 | 5.26% | 9,409 | 4.27% | 31,293 | 4.42% | 8,624 | 4.37% |
| Found Up 1 or 2 Levels **(Near)** | 102,874 | 8.91% | 2,911 | 10.13% | 17,407 | 7.89% | 65,662 | 9.28% | 16,888 | 8.55% |
| Found Down 1 or 2 Levels **(Near)** | 128,319 | 11.12% | 3,967 | 13.80% | 30,207 | 13.70% | 71,704 | 10.14% | 22,438 | 11.37% |
| Found Same Tree **(Ballpark)** | 359,187 | 31.12% | 10,016 | 34.84% | 79,726 | 36.16% | 208,745 | 29.51% | 60,685 | 30.74% |
| Not Found **(Out of Ballpark)** | 512,910 | 44.44% | 10,341 | 35.97% | 83,739 | 37.98% | 330,029 | 46.65% | 88,782 | 44.97% |
|   |   |   |   |   |   |   |   |   |   |   |
| Overall Num A IMs | 1,373,553 |   | 35,847 |   | 284,814 |   | 825,909 |   | 226,937 |   |
| Overall Num A Found IMs | 968,277 | 70.49% | 28,031 | 78.20% | 211,725 | 74.34% | 561,495 | 67.99% | 166,996 | 73.59% |
| Overall Num A IMs Not Matched | 405,276 | 29.51% | 7,816 | 21.80% | 73,089 | 25.66% | 264,414 | 32.01% | 59,941 | 26.41% |
| Found Same Depth/Tree  **(Near)** | 19,856 | 4.90% | 424 | 5.42% | 3,469 | 4.75% | 13,031 | 4.93% | 2,932 | 4.89% |
| Found Up 1 or 2 Levels **(Near)** | 47,667 | 11.76% | 925 | 11.83% | 6,828 | 9.34% | 33,153 | 12.54% | 6,758 | 11.27% |
| Found Down 1 or 2 Levels **(Near)** | 60,598 | 14.95% | 1,619 | 20.71% | 13,992 | 19.14% | 35,157 | 13.30% | 9,829 | 16.40% |
| Found Same Tree **(Ballpark)** | 124,596 | 30.74% | 2,431 | 31.10% | 24,332 | 33.29% | 79,645 | 30.12% | 18,181 | 30.33% |
| Not Found **(Out of Ballpark)** | 152,559 | 37.64% | 2,417 | 30.92% | 24,468 | 33.48% | 103,428 | 39.12% | 22,241 | 37.10% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number A has IM | 463,380 |   | 10,382 |   | 94,405 |   | 290,357 |   | 68,223 |   |
| Number A has all IMs Matched | 215,494 | 46.50% | 5,508 | 53.05% | 49,164 | 52.08% | 127,922 | 44.06% | 32,896 | 48.22% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number B has IM | 463,403 |   | 10,382 |   | 94,406 |   | 290,374 |   | 68,228 |   |
| Overall Num B IMs | 1,606,727 |   | 43,069 |   | 354,029 |   | 945,729 |   | 263,864 |   |
| Overall Num B Found IMs | 659,621 | 41.05% | 19,205 | 44.59% | 139,786 | 39.48% | 381,085 | 40.30% | 119,534 | 45.30% |
| Overall Num B IMs Not Matched | 947,106 | 58.95% | 23,864 | 55.41% | 214,243 | 60.52% | 564,644 | 59.70% | 144,330 | 54.70% |
| Number B has all IMs Matched | 54,976 | 11.86% | 1,014 | 9.77% | 8,309 | 8.80% | 36,614 | 12.61% | 9,039 | 13.25% |
|   |   |   |   |   |   |   |   |   |   |   |
| Num A & B having 100% IMs Matched | 36,703 | 7.92% | 793 | 7.64% | 6,153 | 6.52% | 23,025 | 7.93% | 6,732 | 9.87% |

## Appendix K. MeSH Term Comparison for Comment Articles by Additional Publication Type – 2008 Subset

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Overall** | **News** | **Editorial** | **Letter** | **Journal Article** |
| Num Pairs Reviewed | 29,751 |   | 29,751 |   | 29,751 |   | 29,751 |   | 29,751 |   |
| Total Number of Occurrences | 29,751 | 100.00% | 650 | 2.18% | 7,417 | 24.93% | 15,244 | 51.24% | 6,437 | 21.64% |
|  |   |   |   |   |   |   |   |   |   |   |
| Overall Num A MHs | 240,950 |   | 5,564 |   | 61,312 |   | 117,499 |   | 56,552 |   |
| Overall Num A Found MHs | 166,702 | 69.19% | 4,072 | 73.18% | 44,603 | 72.75% | 78,679 | 66.96% | 39,333 | 69.55% |
| Overall Num A MHs Not Matched | 74,248 | 30.81% | 1,492 | 26.82% | 16,709 | 27.25% | 38,820 | 33.04% | 17,219 | 30.45% |
| Found Same Depth/Tree **(Near)** | 3,186 | 4.29% | 87 | 5.83% | 700 | 4.19% | 1,628 | 4.19% | 771 | 4.48% |
| Found Up 1 or 2 Levels **(Near)** | 6,459 | 8.70% | 139 | 9.32% | 1,352 | 8.09% | 3,446 | 8.88% | 1,521 | 8.83% |
| Found Down 1 or 2 Levels **(Near)** | 8,255 | 11.12% | 210 | 14.08% | 2,237 | 13.39% | 3,751 | 9.66% | 2,057 | 11.95% |
| Found Same Tree **(Ballpark)** | 24,046 | 32.39% | 532 | 35.66% | 6,159 | 36.86% | 11,832 | 30.48% | 5,519 | 32.05% |
| Not Found **(Out of Ballpark)** | 32,302 | 43.51% | 524 | 35.12% | 6,261 | 37.47% | 18,163 | 46.79% | 7,351 | 42.69% |
|   |   |   |   |   |   |   |   |   |   |   |
| Overall Num A IMs | 98,405 |   | 2,203 |   | 24,573 |   | 49,174 |   | 22,442 |   |
| Overall Num A Found IMs | 72,161 | 73.33% | 1,750 | 79.44% | 18,849 | 76.71% | 34,808 | 70.79% | 16,746 | 74.62% |
| Overall Num A IMs Not Matched | 26,244 | 26.67% | 453 | 20.56% | 5,724 | 23.29% | 14,366 | 29.21% | 5,696 | 25.38% |
| Found Same Depth/Tree  **(Near)** | 1,214 | 4.63% | 28 | 6.18% | 254 | 4.44% | 663 | 4.62% | 269 | 4.72% |
| Found Up 1 or 2 Levels **(Near)** | 2,999 | 11.43% | 52 | 11.48% | 563 | 9.84% | 1,704 | 11.86% | 679 | 11.92% |
| Found Down 1 or 2 Levels **(Near)** | 3,948 | 15.04% | 97 | 21.41% | 1,057 | 18.47% | 1,841 | 12.81% | 953 | 16.73% |
| Found Same Tree **(Ballpark)** | 8,168 | 31.12% | 142 | 31.35% | 1,878 | 32.81% | 4,357 | 30.33% | 1,788 | 31.39% |
| Not Found **(Out of Ballpark)** | 9,915 | 37.78% | 134 | 29.58% | 1,972 | 34.45% | 5,801 | 40.38% | 2,007 | 35.24% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number A has IM | 29,739 |   | 650 |   | 7,417 |   | 15,244 |   | 6,425 |   |
| Number A has all IMs Matched | 14,266 | 47.97% | 379 | 58.31% | 3,948 | 53.23% | 6,801 | 44.61% | 3,137 | 48.82% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number B has IM | 29,744 |   | 650 |   | 7,417 |   | 15,244 |   | 6,430 |   |
| Overall Num B IMs | 114,085 |   | 2,753 |   | 29,744 |   | 55,184 |   | 26,395 |   |
| Overall Num B Found IMs | 51,207 | 44.88% | 1,236 | 44.90% | 12,845 | 43.19% | 24,825 | 44.99% | 12,297 | 46.59% |
| Overall Num B IMs Not Matched | 62,878 | 55.12% | 1,517 | 55.10% | 16,899 | 56.81% | 30,359 | 55.01% | 14,098 | 53.41% |
| Number B has all IMs Matched | 3,943 | 13.26% | 62 | 9.54% | 756 | 10.19% | 2,251 | 14.77% | 874 | 13.59% |
|   |   |   |   |   |   |   |   |   |   |   |
| Num A & B having 100% IMs Matched | 2,896 | 9.74% | 54 | 8.31% | 605 | 8.16% | 1,562 | 10.25% | 675 | 10.51% |

## Appendix L. MeSH Term Comparison for Comment Articles by Additional Publication Type – 2009 Subset

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Overall** | **News** | **Editorial** | **Letter** | **Journal Article** |
| Num Pairs Reviewed | 29,941 |   | 29,941 |   | 29,941 |   | 29,941 |   | 29,941 |   |
| Total Number of Occurrences | 29,941 | 100.00% | 727 | 2.43% | 7,732 | 25.82% | 14,382 | 48.03% | 7,099 | 23.71% |
|  |   |   |   |   |   |   |   |   |   |   |
| Overall Num A MHs | 244,943 |   | 6,389 |   | 65,294 |   | 110,689 |   | 62,559 |   |
| Overall Num A Found MHs | 170,829 | 69.74% | 4,519 | 70.73% | 48,470 | 74.23% | 73,140 | 66.08% | 44,692 | 71.44% |
| Overall Num A MHs Not Matched | 74,114 | 30.26% | 1,870 | 29.27% | 16,824 | 25.77% | 37,549 | 33.92% | 17,867 | 28.56% |
| Found Same Depth/Tree **(Near)** | 3,279 | 4.42% | 111 | 5.94% | 761 | 4.52% | 1,594 | 4.25% | 813 | 4.55% |
| Found Up 1 or 2 Levels **(Near)** | 6,534 | 8.82% | 186 | 9.95% | 1,433 | 8.52% | 3,391 | 9.03% | 1,523 | 8.52% |
| Found Down 1 or 2 Levels **(Near)** | 8,242 | 11.12% | 278 | 14.87% | 2,111 | 12.55% | 3,729 | 9.93% | 2,124 | 11.89% |
| Found Same Tree **(Ballpark)** | 24,239 | 32.71% | 621 | 33.21% | 6,266 | 37.24% | 11,534 | 30.72% | 5,815 | 32.55% |
| Not Found **(Out of Ballpark)** | 31,820 | 42.93% | 674 | 36.04% | 6,253 | 37.17% | 17,301 | 46.08% | 7,592 | 42.49% |
|   |   |   |   |   |   |   |   |   |   |   |
| Overall Num A IMs | 98,804 |   | 2,361 |   | 25,622 |   | 45,986 |   | 24,831 |   |
| Overall Num A Found IMs | 73,329 | 74.22% | 1,850 | 78.36% | 20,057 | 78.28% | 32,225 | 70.08% | 19,193 | 77.29% |
| Overall Num A IMs Not Matched | 25,475 | 25.78% | 511 | 21.64% | 5,565 | 21.72% | 13,761 | 29.92% | 5,638 | 22.71% |
| Found Same Depth/Tree  **(Near)** | 1,230 | 4.83% | 30 | 5.87% | 281 | 5.05% | 619 | 4.50% | 300 | 5.32% |
| Found Up 1 or 2 Levels **(Near)** | 2,886 | 11.33% | 57 | 11.15% | 552 | 9.92% | 1,643 | 11.94% | 634 | 11.25% |
| Found Down 1 or 2 Levels **(Near)** | 3,867 | 15.18% | 118 | 23.09% | 990 | 17.79% | 1,784 | 12.96% | 975 | 17.29% |
| Found Same Tree **(Ballpark)** | 7,968 | 31.28% | 149 | 29.16% | 1,911 | 34.34% | 4,184 | 30.40% | 1,724 | 30.58% |
| Not Found **(Out of Ballpark)** | 9,524 | 37.39% | 157 | 30.72% | 1,831 | 32.90% | 5,531 | 40.19% | 2,005 | 35.56% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number A has IM | 29,939 |   | 727 |   | 7,732 |   | 14,380 |   | 7,099 |   |
| Number A has all IMs Matched | 14,728 | 49.19% | 393 | 54.06% | 4,330 | 56.00% | 6,278 | 43.66% | 3,726 | 52.49% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number B has IM | 29,938 |   | 727 |   | 7,732 |   | 14,379 |   | 7,099 |   |
| Overall Num B IMs | 115,539 |   | 2,967 |   | 31,051 |   | 52,191 |   | 29,326 |   |
| Overall Num B Found IMs | 51,847 | 44.87% | 1,271 | 42.84% | 13,892 | 44.74% | 22,786 | 43.66% | 13,897 | 47.39% |
| Overall Num B IMs Not Matched | 63,692 | 55.13% | 1,696 | 57.16% | 17,159 | 55.26% | 29,405 | 56.34% | 15,429 | 52.61% |
| Number B has all IMs Matched | 3,855 | 12.88% | 74 | 10.18% | 835 | 10.80% | 1,980 | 13.77% | 966 | 13.61% |
|   |   |   |   |   |   |   |   |   |   |   |
| Num A & B having 100% IMs Matched | 2,863 | 9.56% | 63 | 8.67% | 672 | 8.69% | 1,384 | 9.62% | 744 | 10.48% |

## Appendix M. MeSH Term Comparison for Comment Articles by Additional Publication Type – 2010 Subset

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Overall** | **News** | **Editorial** | **Letter** | **Journal Article** |
| Num Pairs Reviewed | 20,811 |   | 20,811 |   | 20,811 |   | 20,811 |   | 20,811 |   |
| Total Number of Occurrences | 20,811 | 100.00% | 506 | 2.43% | 5,331 | 25.62% | 10,210 | 49.06% | 4,764 | 22.89% |
|  |   |   |   |   |   |   |   |   |   |   |
| Overall Num A MHs | 170,693 |   | 4,499 |   | 45,077 |   | 78,071 |   | 43,046 |   |
| Overall Num A Found MHs | 120,610 | 70.66% | 3,286 | 73.04% | 33,863 | 75.12% | 52,094 | 66.73% | 31,367 | 72.87% |
| Overall Num A MHs Not Matched | 50,083 | 29.34% | 1,213 | 26.96% | 11,214 | 24.88% | 25,977 | 33.27% | 11,679 | 27.13% |
| Found Same Depth/Tree **(Near)** | 2,011 | 4.02% | 52 | 4.29% | 475 | 4.24% | 997 | 3.84% | 487 | 4.17% |
| Found Up 1 or 2 Levels **(Near)** | 4,356 | 8.70% | 121 | 9.98% | 866 | 7.72% | 2,356 | 9.07% | 1,013 | 8.67% |
| Found Down 1 or 2 Levels **(Near)** | 5,398 | 10.78% | 155 | 12.78% | 1,482 | 13.22% | 2,435 | 9.37% | 1,326 | 11.35% |
| Found Same Tree **(Ballpark)** | 16,834 | 33.61% | 434 | 35.78% | 4,259 | 37.98% | 8,313 | 32.00% | 3,828 | 32.78% |
| Not Found **(Out of Ballpark)** | 21,484 | 42.90% | 451 | 37.18% | 4,132 | 36.85% | 11,876 | 45.72% | 5,025 | 43.03% |
|   |   |   |   |   |   |   |   |   |   |   |
| Overall Num A IMs | 69,210 |   | 1,665 |   | 17,834 |   | 32,372 |   | 17,339 |   |
| Overall Num A Found IMs | 52,276 | 75.53% | 1,317 | 79.10% | 14,151 | 79.35% | 23,168 | 71.57% | 13,640 | 78.67% |
| Overall Num A IMs Not Matched | 16,934 | 24.47% | 348 | 20.90% | 3,683 | 20.65% | 9,204 | 28.43% | 3,699 | 21.33% |
| Found Same Depth/Tree  **(Near)** | 682 | 4.03% | 17 | 4.89% | 159 | 4.32% | 354 | 3.85% | 152 | 4.11% |
| Found Up 1 or 2 Levels **(Near)** | 1,980 | 11.69% | 45 | 12.93% | 342 | 9.29% | 1,158 | 12.58% | 435 | 11.76% |
| Found Down 1 or 2 Levels **(Near)** | 2,505 | 14.79% | 68 | 19.54% | 699 | 18.98% | 1,128 | 12.26% | 610 | 16.49% |
| Found Same Tree **(Ballpark)** | 5,307 | 31.34% | 106 | 30.46% | 1,264 | 34.32% | 2,815 | 30.58% | 1,122 | 30.33% |
| Not Found **(Out of Ballpark)** | 6,460 | 38.15% | 112 | 32.18% | 1,219 | 33.10% | 3,749 | 40.73% | 1,380 | 37.31% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number A has IM | 20,810 |   | 506 |   | 5,331 |   | 10,209 |   | 4,764 |   |
| Number A has all IMs Matched | 10,646 | 51.16% | 287 | 56.72% | 3,077 | 57.72% | 4,743 | 46.46% | 2,539 | 53.30% |
|   |   |   |   |   |   |   |   |   |   |   |
| Number B has IM | 20,811 |   | 506 |   | 5,331 |   | 10,210 |   | 4,764 |   |
| Overall Num B IMs | 80,517 |   | 2,038 |   | 21,457 |   | 36,823 |   | 20,199 |   |
| Overall Num B Found IMs | 36,251 | 45.02% | 962 | 47.20% | 9,483 | 44.20% | 15,808 | 42.93% | 9,998 | 49.50% |
| Overall Num B IMs Not Matched | 44,266 | 54.98% | 1,076 | 52.80% | 11,974 | 55.80% | 21,015 | 57.07% | 10,201 | 50.50% |
| Number B has all IMs Matched | 2,538 | 12.20% | 60 | 11.86% | 531 | 9.96% | 1,256 | 12.30% | 691 | 14.50% |
|   |   |   |   |   |   |   |   |   |   |   |
| Num A & B having 100% IMs Matched | 1,911 | 9.18% | 44 | 8.70% | 436 | 8.18% | 863 | 8.45% | 568 | 11.92% |

## Appendix N. Comparison of Referent Article Terms, MTI Title Terms, and Combined Terms for Comments Published in 2009

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Referent Article Terms** | **MTI Title Terms** | **Combined Terms** |
| Num Pairs Reviewed | 29,941 | 27,814 | 27,831 |
| Overall Num A MHs | 244,943 | 227,088 | 227,088 |
| MHs to Match | 398,524 | 91,940 | 393,371 |
| Overall Num A Found MHs | 170,829 | 68,311 | 164,748 |
| Recall | 69.74% | 30.08% | 72.55% |
| Precision | 42.87% | 74.30% | 41.88% |
| F1 Measure | 53.10% | 42.82% | 53.11% |
| Overall Num A IMs | 98,804 | 91,607 | 91,653 |
| Overall Num A Found IMs | 73,329 | 44,830 | 71,462 |
| IM Recall | 74.22% | 48.94% | 77.97% |