2022 MeSH Highlights Webinar: Transcript

All right, it's two minutes past the top of the hour here in Maryland, that means it is about time for us to start. We have a couple more folks joining us filtering in late but that's all right I have some housekeeping stuff to take care of so we'll deal with that first and hopefully they will have joined us by the time we get to the good stuff.

So good afternoon! My name is Mike Davidson I am a librarian here at Office of Engagement and Training at National Library of Medicine. Thank you for joining us today for this 2022 MeSH highlights webinar. As you probably notice when you joined the webinar it is being recorded. If that is an issue for you this is a great time to make alternative arrangements.

After we take care of today's little housekeeping, we are dedicating a good portion of today's time to a presentation from my colleague Louise to who will take us through highlights of this year's update to Medical Subject Headings vocabulary. After Louise finishes, we'll spend the time answering your questions. So, feel free to submit your questions as you think of them throughout the session, using the zoom Q&A feature. You can find a little button that says Q&A at the bottom of your screen. We will also be using that Q&A feature to post links to key resources that Louise mentioned during the presentation so if you want to pop that open you can get access to those links there.

When we do get to the Q&A at the end of the session, I will be reading some of your questions aloud for Louise to answer, and to help us answer your questions we also have with us a great panel of experts we'll introduce as we get to them who have their own particular specialty when it comes to MeSH indexing. During the Q&A segment our experts will also answer some of your questions right in the Q&A panel itself in writing. So hopefully we can answer as many of those questions as possible in the time we have. One last thing, before we get started, MLA CE credit is available for today’s webinar. In order to access the credit, fill out the evaluation that should pop up at the end of the session when you close the zoom, that will enable you to get access to that ce credit. All right. That is it. Without further ado let me turn over to Louise and we can get started.

Thanks for the introduction, Mike. Welcome everyone to 2022 MeSH Highlights. Another year. Every year updates are made to MeSH that can control vocabulary source use for indexing articles for PubMed. This annual webinar aims to introduce those changes and provide examples how the changes may affect you as a PubMed searcher. The intended audience includes librarians, catalogers, really any PubMed searchers that are somewhat familiar with MeSH structure. If you are not familiar with MeSH structure or PubMed, we do have classes to help learn and we have drop in links to those classes in the Q&A box.

Before I move on, I just want to do a quick poll to get an idea who is joining us here in the audience. So, I will ask Brittney please throw up the poll, I want to know if you

identify as a researcher, librarian or if you are a cataloger. Maybe just a general PubMed fan. So, I will give you 20 seconds to respond. Okay. Looks like we have a majority of people who responded. I will ask Brittney to close the poll and show the results now. Looking like 85%of y'all are librarians. No surprise. Then we have a few catalogers and information professionals, researcher, and health professionals. Great. Thank you all for joining us. Thank you, Brittney you can close the poll now. Okay.

So, in addition to being familiar with PubMed this webinar includes the MeSH database which displays MeSH records and help you construct search strings for PubMed, if not familiar with it we are dropping links in the Q&A box to explore and hopefully this presentation will give you a brief introduction to a database.

So, our agenda for today begins with an overview of the number of changes that have been implemented for MeSH 2022, and we will share a bunch of links to various resources that you can reference. The bulk of the webinar is going to focus on illustrating examples of changes from different branches of MeSH. And we will discuss how these changes may apply to the searchers. Also, we will briefly note the transition NLM is making towards automated indexing and lastly like Mike was saying we'll conclude with the Q&A panel with our MeSH and indexing experts.

Before I get into the numbers, I want to point you to the NLM Technical Bulletin which provides updates on NLM various offerings. The Technical Bulletin annually publishes articles on MeSH changes, and it is a useful resource for those who want to have a comprehensive summary on hand. The link for that is also being dropped into the Q&A box. Also, if you are not getting any notifications from the Technical Bulletin and want to, we are also going to drop a link to instructions on getting those notifications.

So, MeSH 2022 we have a total of 30,194 main headings. 277 of them are brand new and supplementary complex records, SCRS, the count is at 318,110. Finally, like last year we did not remove any MeSH subheadings. This slide breaks down the new MeSH terms by branch with the most new MeSH headings falling under chemicals and drugs branch. While this presentation will focus on how the new updates to MeSH will affect PubMed searching, I will note MeSH 2022 has been adopted in NLM Catalog. If you would like more details on the use of MeSH 2022 in cataloging refer to this Technical Bulletin article published this past December, and we are dropping that link in the Q&A box.

So, let’s dive into examples of changes beginning with covid-19 related examples. This first example on vaccines illustrates addition of new terms that add more levels to the vocabulary structure. Before MeSH 2022, “vaccines comma synthetic” subbranched into these five terms on the right. For 2022 “nucleic acid-based vaccines” was added to the subbranches and “vaccine comma DNA” was moved to the next sub level beneath “nucleic acid-based vaccines.” In this new sub tree “mRNA vaccines” was promoted from a supplementary concept record to a main heading. Under each of these two branches the research names of three vaccines were also promoted from SCR two

headings including the Astra Zeneca DNA vaccine and the Moderna and Pfizer mRNA vaccines. Previously if you wanted to search PubMed for articles on vaccines that were nucleic acid based, you would have had to manually put together a search string pulling in heading for “vaccine comma DNA” and former SCR of “mRNA vaccine.” With MeSH 2022 you can utilize new heading of “nucleic acid-based vaccines” which will then pull in all articles indexed with thee subbranch terms. This inclusion of sub terms is called automatic explosion which is where searching a MeSH term will include all narrower terms in the hierarchical list.

The next example is new heading of respiratory aerosols and droplets which is defined as physiological aerosol and droplet expelled during coughing sneezing speaking and exhalation, depending on size aero dynamic distribution or concentration, they may play a role in transmission of infectious respiratory diseases. Say earlier this year you were reading this article and you wanted to learn more about respiratory droplets or aerosols. In other words, droplets or aerosol expel through coughing or sneezing. Previously you may have searched PubMed for respiratory droplets or aerosols and PubMed would have translated your query to include the MeSH term of “aerosols.” Sometimes databases know what you are talking about, sometimes they don't, we recommend that you always check how PubMed translate your search and refine as needed.

One way to check the search string is understand the scope note of MeSH terms that PubMed included. You can do so by using the MeSH database. In the case of our example “aerosols” is defined as colloids with a gaseous phase and either liquid or solid dispersed phase used in fumigation or in inhalation therapy, may contain propellant agents. Further down the page you see aerosols is a term treed under chemicals and drugs. Which does not figure query for physiologically expelled droplets or aerosols so you would have to remove it from your search string. With MeSH 2022 a search for the same thing would pull in the new MeSH term that is relevant to your query. But you will also notice that it will still pull in the MeSH term “aerosols” in reference to chemical and drug category. So, you will still need to edit search string. PubMed and MeSH try to make a search experience effective but as with a lot of things human review is still important.

The next example is regarding new Entry Terms for an existing term. For MeSH 2022 there are new Entry Terms for the heading quarantine. In addition, the two existing Entry Terms we have added three new Entry Terms including “Lockdown comma Health,” “Health Lockdown,” and “Stay at Home Orders.” Usually, Entry Terms will only automatically translate in PubMed if they are exact. Searching for variations of the Entry Terms won't always trigger PubMed to include the heading that the Entry Term belongs to. On this slide you see examples of PubMed searches for “health lockdown” versus “Lockdown.” “Health lockdown” will trigger the MeSH term of “quarantine” while “Lockdown” does not because “Lockdown” alone can refer to many things. Like for example, lockdowns during active shooter crisis. Again, this is where the MeSH database can help identify updated appropriate terms to use for your search string. When searching phrase “lockdown” it recognizes “lockdown” as part of Entry Term for

“quarantine.” Searching the MeSH database will retrieve the MeSH records of key words of interest.

Let's move on to examples beyond covid-19 that illustrate how you might have to adjust your search strings as a result of structural changes and rearrangements. A new term “urogenital diseases” defined as pathological processes of the urinary tract and the reproductive system; this term has been added in order to group several existing terms this change was made as suggestion from PubMed user outside of NLM which is an indication that to y'all that you too can provide suggestions to PubMed. The terms “female urogenital disease and pregnancy complications” and “male urogenital diseases” went from being treed directly under diseases to being two levels below. Additionally, beneath “urogenital diseases” another new heading has been added. “Genital diseases.” A few terms within these sub trees have also been rearranged.

Let’s take the example of “sexually transmitted diseases.” Before MeSH 2022 “sexually transmitted diseases” was treed under both “genital diseases, comma female,” and “genital diseases comma male.” I will note on this slide I’m only featuring the female sub tree. For a searcher if you had a search stream that included the MeSH term of “genital diseases comma female” your search would have retrieved articles index with the term “sexually transmitted diseases.” With the new structural changes “sexually transmitted diseases” is now treed directly under “genital diseases.” This means that “sexually transmitted diseases” and the subsequent terms treed underneath are no longer included in the automatic explosion of “genital diseases comma female.” Moving forward if you are using the term “genital disease comma female" in your search and you do want to include articles index with the term “sexually transmitted disease” and its subbranch terms then you should edit your search string to include something like “OR sexually transmitted diseases AND female.”

I won't get too deep into the weeds but the main take away from this example is to understand structural rearrangements in MeSH will likely change the number of results retrieved for affected terms and you would have to review and revise your search strings.

There are several changes to sub tree “population groups.” The term “continental population groups” renamed to “racial groups.” And all except one of the subbranch terms have been renamed. The one unchanged term is “American native continental ancestry group.” To harmonize with other federal agencies the renaming was initiated to align with U.S. Office of Management and Budget standards. Notice these terms are same as racial and ethnic categories used by the census. Which also abides by the same standards. While these headings have been renamed, the old terms have become Entry Terms to the new headings. Because of that you likely won't have to revise your search strings. Similarly, “ethnic groups” have been renamed to “ethnicity” and all except one of the subbranches have been moved to different parts of the “person's” tree. The one term remaining was “Hispanic Americans” which have been renamed to “Hispanic or Latino.” “Hispanic Americans” now serves as an Entry Term. This

designation was also in line with Census and standards issued by the Office of Management and Budget which specify race and ethnicity are separate distinct concepts. The standards reflect the social definition of race and ethnicity recognize in this country and they do not conform to biological anthropological or genetic criteria. If you want to have more information on OMB standards, we are dropping a link in the Q&A box for you to further explore.

A couple of terms that were moved out of ethnic groups have been placed under relevant racial group, such as “Asian Americans” under “Asians.” At the same time these terms have been placed under new heading of “health disparity minority and vulnerable populations” which is under the heading of “persons.” Due to the reorganization of “population groups” this heading was created as a place holder while the MeSH team works to improve how these terms are organized. As a place holder you won't find articles indexed or cataloged with the specific term “health disparity minority and vulnerable populations.” But automatic explosion still applies. In other words, you can use this term if you want to include child terms in your search.

Searchers aren't always going to have this background knowledge about all terms what is helpful is understand how the control vocabulary is defined and structured to get a sense of how specific you need to be or how broad you can be in your search string to help you reach your goal. So, I thought I would do a brief demonstration of how a searcher might refine their queries selecting or eliminating MeSH terms while developing a PubMed search string. Here is an example of a fairly broad query related to the terms I have been discussing. What does the literature say about populations that with health disparities as a result of environmental pollution?

Main concepts here are underlined and I would take these key words to the MeSH database to check for any relevant terms. For this demonstration I’m going to focus on the concept of health disparities. So, let's go to the MeSH database now. My key word is health disparities, I would like for my search to also pull in the different spelling variations of the words. For health I want to form words like healthcare and for disparities, I want to pull in the singular form of the word such as disparity. To do so I’m going to use truncation. Since most of you are librarians, I’m sure you are familiar with truncation but those of you who may not be as familiar truncation is a database searching technique that often utilizes the asterisk symbol to account for different word endings and spellings. Type “health” with asterisk at the end and for disparities I’m going to use the root of the word which is d-i-s-p-a-r-i-t and add an asterisk at the end. I will hit search to see what the database gives me, and it gives me a list of five results.

You see on this results list there are scope notes included with each of the terms, this is helpful for you to get an idea whether a term is relevant to your goals or not. This search the first two terms are “healthcare disparities” and “health status disparities.” Seemingly could be quite similar in definition but if you take a look at the scope notes it can help you differentiate the two. So, healthcare disparities is in reference to access to or availability of medical facilities and services. Whereas health status disparities is about

rates of disease occurrence. For my query I am more interested in “health status disparities,” so I will click on this record to get more details about it. The details will include at the bottom of the record the MeSH tree structure and it will tell you where the term is located on the structure. I want to use this term so I’m going to add it to the PubMed search builder on the right-hand side. If you click on “add to search builder” the term will appear in the box. The PubMed search builder stays updated as you are cruising through the MeSH database. So, for example if I go back to my results list, you will see the PubMed search builder retained the term I wanted to keep in my search string.

Moving on to the other terms on this list I’m going to look at the last two terms. “Meaningful use” looks like a term regarding electronic health records which for my intents and purposes I think that is a little bit too specific for me right now so I will disregard this term. For “minority health,” I want to keep my query fairly broad at the moment so don’t think I want to specify the population like that just yet. So, I will also disregard this term for now but maybe I’ll input it in the future. A third term “health disparity and vulnerable populations.” At face value it looks like this term could be useful but I want to go into the details to get a better sense of what this term involves as well as what child terms are treed beneath it. As we heard from the previous slide there are specific population groups listed under this term. For my query, the query that I’m working on I do not want to restrict it to these population groups for the time being. So, I decide I’m not going to use this term for this search string at least.

At this point I will go on to do similar searches for the other concepts like environmental pollution, see what they give us. If I like it, I go to this term and I will add that as well to the search builder. If I also want to do that for populations, I’ll do that as well. When ready I can click “search PubMed” which is located here on the right-hand side, and it will run the search and take met the results list in PubMed. This example is meant is meant to convey how the MeSH database can help you identify and disqualify terms for your search.

Speaking of the nuances of searching I’m going to take a moment now to mention the MeSH Changes and PubMed searching class that will occur this Friday January 14 from 1 to 2:30 p.m. Eastern time. It will be instructed by Kate Majewski and Rebecca Brown and take a deeper dive how MeSH changes affect you including more in-depth examples using the MeSH database. Jumped ahead a little too quickly. If you miss the registration the class will be recorded so you can view later at your own time.

As part of ongoing research and study MeSH added new headings and updated concepts related to social determinants of health with the help from the Office of Behavioral Social Sciences Research as well as other NIH institutes. Most of you are probably familiar with this term but if not U.S. Department of Health and Human Services defined social determinants of health as a condition in the places where people live, learn, work and play. That affects a wide range of health risks and outcomes. Some of the new terms include “economic stability,” “housing instability,”

“environmental justice,” “community support,” “access to healthy foods,” and so on so forth.

An interesting new term is “intersectional framework” which is defined as inter-connections of social categorization such as races, class and gender creating overlapping and interdependent systems of discrimination or disadvantage. If you search PubMed using only MeSH term of “intersectional framework” you will find few results for the time being because it is a new term. To retrieve more articles from the concept of “intersectional framework,” the searcher would use this MeSH term in combination of other search fields. For example, I included a search of the articles that have both the word “intersectional” with truncation across the titles and abstracts and are indexed with MeSH term of “sociology” which gives me about 979 results. With new terms you will likely have to supplement your search string to retrieve other relevant articles that had not been indexed with this new term.

Now I will close out with a brief update as part of the efforts of the National Library of Medicine to transform accelerate biomedical discovery and improve health and healthcare. The Library is transition to automated MeSH indexing of MEDLINE citations in PubMed. Automated indexing will provide users to timely access to MeSH index metadata and allow NLM to scale MeSH indexing or MEDLINE to the volume of published biomedical literature. Human indexers have been and will continue to be involved in the refinement of automated indexing algorithms and play a significant role in the quality assurance approaches for automated indexing. For more information about NLM transition to automated indexing please refer to this Technical Bulletin article cited on this slide. We will also drop the link to this article in the Q&A box and indexing section produced a FAQ to answer some common questions about it. That is also being dropped in the Q&A as well. Now I’m going to hand it back over to Mike to help us moderate or Q&A panel with our experts.

Thank you very much, Louise. We have a bunch of great questions, still sorting through some of them, some post answers right in the Q&A panel because they are easier to answer in written form than verbally but I will start with this.

This is one, I will go to you, Louise and we can – if you -- further explanation from one of our experts we can do that. Are MeSH updates conducted and published only once a year?

So, I think we do the annual year-end processing at the end of every year. I think whether there are updates publicly made to it I don't know if that happens, I wonder if Emily might be able to give us an answer about that since she does coordinating for year-end processing.

Sure. Year-end processing does happen once a year. Where we index the previous year for this it was the 2021 MeSH vocabulary year with the new MeSH 2022 vocab. Yes, once a year. I would add supplementary concepts can be added more frequently than

that, the main MeSH heading big changes happen once a year and the one other thing I will remember I will say, I have had -- remember firsthand experience of this happening is it will be very rare occasions where we add terms in mid-year in order to respond to an active health crisis. Like covid-19 or back in 2020 it was zika virus a few years before that, there are rare occasions for updates midstream.

All right. Now that I turned the topic, we have a couple of questions about covid related terms. And I will go back to Emily Zurlo who works in our MEDLARS Management Section and who is sort of the expert on our year-end processing procedures for migrating from the previous year MeSH to new year MeSH. We had a question, articles indexed prior to covid vaccine MeSH heading being introduced, were they reindexed with the new headings?

Thanks. Any articles that had been indexed with any of the old terms over the course of our year-end processing they are updated with the new terms. For example, the vaccine term that Louise explained earlier was previously in MeSH, it has been updated to a Supplementary Concept Record over the course of the past season.

Excellent. Thank you for that. I'm going to actually going to do another covid vaccine related question and I think this will go to Dan Cho who works on developing refining MeSH vocabulary, Dan, why wasn't the Jansen J&J term also added as a vaccine or is it in another part of the MeSH tree than what Louise was showing?

Thanks, J&J is in the new release, just happened to be in someplace else that she was showing so the distinction we make if the vaccine covid-19 vaccines FDA approved, we have made the descriptors if they are not, they stay on as SCR for now.

All right. That's a very clear answer. Let's see who else we go there. One of the questions we can go to. There is a couple of people asking questions that are PubMed related or related to specific PubMed searching questions. I did want to highlight then I saw somebody point out the search with MeSH webinar for this Friday I think is now full. The recording of that will be made available after webinar happens. Tune in to the Technical Bulletin for that.

We have a couple of questions here about retroactive indexing for completely new MeSH terms. Somebody is asking are all MEDLINE entries reindexed at some point? To remind us how retroactive indexing works or doesn't work with new MeSH terms, I want to go to David Cissel in our index section who works on live indexing stuff with those questions.

We do not reindex articles occasionally changes are made based upon year-end processing, but we are so overload with new articles we don't have time to go back to reindex old articles.

Very good point. Here is a question I think that Sarah Helson in the MEDLARS Management Section may answer this one. I'm blind siding her so hopefully she can answer it. Which other tables are used for MeSH search, apart from Entry Terms? For example Lockdown does find MeSH term, quarantine MeSH but on PubMed search, what beyond MeSH is being used in PubMed to identify that stuff?

Yes, you did blind-side me on that. That's okay. In PubMed there is some mapping going on behind the scenes, that is why that the Entry Term will be connected to the MeSH heading. But within I believe the question was within the MeSH search, not entirely sure what is going on behind the scenes on the MeSH database itself but I think what is doing searching all the different fragments of it, since Lockdown is part of the health, I think that is where it is getting it from. Hopefully that helps.

That makes sense. All right. Looks like we are running a little low on questions here so if anybody else has questions if they would like to throw into the Q&A this will be a great time.

Couple of off topic things here. Where can we find more information on specific changes or new headings? Aside from this great presentation by Louise, there are actually --there is a page of documents everything that is new with the new year of MeSH. We will get that link and put that in the Q&A to answer that question so you can see everything that's going on, Louise gave a rundown of highlights, but we don't have time to cover everything in depth. I will add if you go to the Technical Bulletin that does summarize it. But also, if you type in what is new in MeSH just as a google search will take you to the page that has more details.

Excellent. Thank you for that Louise. If you bear with us a moment, I'm going to look at more questions we have and see if we can find people to answer them. So, there is a number of questions here about automated indexing. Some of these things are things I don't know we necessarily have answers to yet. Some of these are information that might be coming. David, I don't know how much of these questions you will be able to answer but I will sort of lump them together for you about outing automated indexing to expand to non-MEDLINE records, retrospective indexing old articles with automated indexing and handling of slightly distinct topics in MeSH such as healthcare disparities such as health status. I will – I lumped a bunch of questions in there and let you go out what you can.

I don't know what the plans are for future how it is expanded to non-MEDLINE so I can't say anything but if that – the question whether the algorithm can distinguish between healthcare disparities and health status, there's no way of saying until we have seen what the algorithm does and all I can say is if you see problems you can be sure at the end of MeSH record you can write to the help desk and give a us feedback. So, the way algorithm improves is feedback by internally and also accept feedback from the external world too to try to improve algorithm.

Thank you very much for that answer, David. I had another question here tying back in, looks like I may have misinterpreted previous question and I think Louise might have a better answer than I did. For the MeSH database what field does it look at for the term you put in your search; only Entry Terms? or look for terms in description/scope note?, Jacqueline is also asking follow-up questions along those lines. Louise what do you got for us?

I can answer that part about does it look -- only at Entry Terms or does it look for the term description or scope note and I can say yes, it does look at the scope note to pull in whether it is relevant to key words you typed in or not. The question just disappeared in front of my eyes. I don't know in what order they prioritize which fields but yes, my understanding is that when you type in key words it will search across the record of the MeSH term itself.

I think that Jacqueline was asking about essentially about MeSH automatic term mapping what automatic term mapping goes on in the MeSH search. Term mapping is a PubMed specific feature so there is no --there aren't tables in the same way that the automatic term mapping in PubMed function but as Louise points out the search does go across the MeSH record.

Let's see what else we can answer in the time we have left. If we have concerns or suggestions for MeSH is there an optimum time earlier in the year rather than before changes at end of the year for information needed to support changes, examples in literature that help the MeSH team? So, Dan, I don't know if there is an answer to that. Or if you have any information, you can shed light --what is the best way – most helpful way to make suggestions, most helpful times what they --what information they can provide in order to support those changes.

The more information the better, especially if the term is newly emerging concept, we need to have a little bit more background knowledge. As far as when is the best obviously the earlier the better but how production will allow any request that was given to us by the -- toward the end of May so May 30th would be the drop deadline and we will get to it most time we do. If it is a minor concept and we decided to go with SCR, we can work on -- come to us as late as October probably.

Excellent. Thank you for that answer. This is a question that again David you might be able to answer, or you might be able to refer folks to automated indexing FAQ. What is the average time required to index new MEDLINE entry; today versus what it would be with automated indexing?

I think the average time, I read somewhere it is in the FAQ that it's 145 days for the average time to index with automatic indexing was going to be a 24-hour turnaround, that's the main reason why we are doing automated indexing is to get quick indexing so after appears in PubMed, it will be 24 hours we will have automated indexing. So that is quite a bit faster.

I have a couple of other questions here that are not specifically related to MeSH but I will take this lull in the questions to address them, someone is asking about specific date which PubMed API indirect index will align, a little off topic for this. But the actual official start date is not yet announced, I believe last I heard it was sometime in April but again stay tuned to the NLM Technical Bulletin and to the NCBI blogs to get more information about that as it develops. And hang on a moment here.

Double check one --if we notice issues with automatic indexing do, we contact NLM or publishers like you need to do for errors and citations? So that is an interesting question. I think that the best way to start that process is to use the Help link at the bottom of any PubMed page which will connect you to NLM customer support. I believe that is the best way to flag things in the short term. So that is where I would send you in the short term. If there is an actual error with the data that appears in PubMed, not the indexing but for example there is an error in the abstract, that would have to go back to publisher I believe.

We have a question here, this one Louise you can take this, repeat how many headings have been added in MeSH 2022?

Sure. So let me jump back to that slide for you. That might be easier. There we go. So new main headings is 277. The question was how many total main headings. Was that the question? How many new headings. Yeah. 277 new main headings. All right. Take a look see what else we have here.

This is a question someone had awhile back. I didn't address it; it has to do with quote around population groups. Which would -- which was one of the examples Louise used for Entry Terms and for changing, automatically didn't change I'm sorry Louise remind me what this was about 20 minutes ago, can you remind me the examples, population groups – sure. Yeah, so the continental population groups, they are referring to how they added quote around continental population groups, it is searching that specific phrase. Therefore, when you are doing that, it doesn't do the term mapping like that. It won't automatically pull in racial groups when you add the quotation marks. They are correct.

That is actually sort of one of the key things we talk about when we talk about searching PubMed which is being careful about how you use quotes. Because quotes turn off the automatic term mapping that is doing a lot of work for you. You can learn about that in our PubMed training which we have a link in the Q&A. One of the previous Q&A answers for you can grab that there and check out a lot of our stuff especially searching the how PubMed works, intro class, automatic term mapping or ATM class or MeSH class cover stuff about that. Especially the term automatic term mapping class covering quotation marks work in PubMed searching.

Let's see what else we got here. Here is a question David you want to handle this one. Just confirm once a record is automatically indexed, no further human indexing under quality control i.e., auto indexing is considered final, question mark?

Glad that question was asked, it is worth mentioning human curation we consider that an important part of process too. That is, we will be going and looking at certain key areas such as Clinical Trials to make sure it's done right; also be focusing on genes and proteins, to make sure they are indexed correctly. So human curation will be making changes and also, we will be curating random sites -- excuse me, random sets of citations daily, so that way we can provide feedback to the algorithm to further improve it.

Excellent. Donna has couple of other questions about automated indexing, I don't know that we necessarily have answers for yet. I'm going to read you question but we may have to defer some of these answers for right now. Is there any session that will discuss the algorithm for the automated indexing for instance seems to be based on abstract how much is based on frequency of terms versus context terms, major MeSH term versus MeSH in article?

All great questions and I think what I would recommend you do is stay tuned for more information about automated indexing; how it works, how it's going to work, we expect that to roll out as we move forward with this process. So, we have the FAQ the just went live, I believe it was earlier this week or late last week which it goes along with that Technical Bulletin article more information will be coming. But we don't have-- I don't know that we have a lot of those details yet.

David if there is any of those things you want to take a crack at you are welcome to but some of that we are still working on how to share with folks. I don't know the answer to the details how the algorithm works. Other than saying yes, it is just focus on title and abstract.

No problem. Like I said, this is a developing situation where we are learning and figuring stuff together. More information will be available as it becomes available, we will definitely be sharing more information once we have more of these answers, ready to share so stay tuned that is the key element I would say for automated indexing questions.

Let's see if there is anything else. There are a number of questions about written form of Q&A or slide deck, we are still figuring the best way to share this information with folks. A lot of information from the session is available in the Technical Bulletin article Louise referenced at the top. You can find a link to that in the Q&A as well. So, we will -- once the reporting goes up, we will figure the way best way to share additional information about MeSH and MeSH changes above and beyond that was available in the Technical Bulletin.

Looks like we are running a little low on questions. So, anyone else has any last questions before we wrap up. Another question might be a question we don't have a good answer for in automated indexing but I will put it to you David and again if we need to defer to later, we can. What would automated indexing do with without an abstract? sounding something like with title sounds like do we know how things progress. It is the first one that came to my mind, but such records do happen. I don't have a good answer for how that will work. Without an abstract the only thing I can say is it would be based upon title and if title is uninformative not sure what our algorithm has in mind for that.

I will say one of the things that can be helpful in this process can be helpful for the automated indexing process and helpful for human indexers as well. Is making sure if you are an author or if you work with authors, you encourage them to submit full and clear abstracts, sometimes you can also attach subject key words there are ways you can use MeSH terms as subject keywords you submit with your paper, also sometimes help things. Those are all things point you too as well.

Look at these other questions. Some major headings were changed but none were deleted. Is there a decision to no longer delete MeSH headings but always consider them change to a new preferred term?

There used to be list of deleted headings. I don't know if there is a policy answer to this question. There is really no policy, I think -- technically it is difficult to delete. Why would a concept go away that had been so prominent that made it to MeSH descriptors? But in the past – we did see the need for deleting descriptors, but we haven't seen it the last two years.

Good answer. All right. Take a last look at these questions. We are just about out of time anyway. Last chance to get your questions in.

By no further answers, thank you, Louise. Just going to get to that. I do want to first of all thank all of you for attending today for spending your afternoon or morning or evening depending where you are with us. Thank you for all the great questions as well. Thank you, huge thank you to our panelists who gave their time and their brain and knowledge to help answer some of our questions today. Other than that, I think that just about does it for today. So, thank you very much, thank you Louise for giving us a great presentation. Thanks everyone for joining us.