Transcript

SHARON: Hello everyone, so glad you could join us today. We'd like to welcome you to the Cataloging with MeSH class, and my name is Sharon Willis. I'm the senior cataloging specialist in the Cataloging and Metadata Management Section, better known as CaMMS at the National Library of Medicine. I am joined by my colleague Kate Majewski, librarian of the Office of Engagement and Training, who will assist with the exercises and monitoring the chat. Today we will be using a handout and Kate has put the link in the chat. And the handout is optional but may help you follow along and it's a good place to jot your answers to our exercises. So we're going to just go on and get started.

So here's our agenda for today. And for the first 50 minutes or so, we will cover the introduction to the Medical Subject Headings or MeSH terminology and the MeSH browser tool. We will pause briefly at the end of that segment for questions and answers. Then for the remaining 30 minutes, we will go over some principles of cataloging with MeSH. We will conclude with a question and answer period for the remaining time.

So why should we use MeSH? A question that is often raised. Why bother with controlled vocabularies when keyword searching is so widely available and so powerful? In this Google age, keyword searching is very popular and effective in certain ways, but there are limitations. Note also that keywords cannot provide effective access across languages. For example, the keyword heart would not provide access to works on the heart and other languages, for instance Spanish, corazón, and Swahili, moyo, etcetera. Keyword searching is enhanced by the assignment of the control vocabulary. So here is an example of a title in the NLM collection for which keyword searching would be problematic. The work is entitled Foo-foo dust. What is this work about? Is it about dust? Is it about allergens? No. Foo-Foo Dust is a street term for crack. Foo-Foo Dust in our collection is a video that explores the relationship between a crack-addicted prostitute and her 23 year old drug-addicted son. Another example, this slide shows a Roman God of speed and commerce, a Ford vehicle, a planet, a substance and a thermometer, and a rock singer from the 1970s. What's the common term for all of these? Use chat to take a guess.

KATE: Oh, they're fast. I've got Mercury in the chat.

SHARON: Yay. Great. Well, another example. This example shows a greenhouse and an infant's room. What do we call these?

KATE: They've got it.

SHARON: All right. Nursery, great. Controlled vocabulary is beneficial because it identifies a preferred way of expressing a concept that provides cross references or variants that lead to the preferred term. It identifies the terms relationship to broader, narrower, and related terms. And some examples of controlled vocabularies are the Library of Congress subject headings or LCSH, Sears List of Subject Headings, the Art and Architecture Thesaurus (AAT), and of course Medical Subject Headings (or, MeSH). The NLM does not use LCSH or the other two vocabularies for modern materials.

The Medical Subject Headings (MeSH) thesaurus is a controlled and hierarchically organized vocabulary produced by the National Library of Medicine. The MeSH Unit staff of the Bibliographic Services Division, BSD, is responsible for establishing and updating the MeSH vocabulary. MeSH is used for cataloging, indexing and searching of biomedical and health related information. MeSH includes the subject headings appearing in the NLM catalog MEDLINE and PubMed, and other NLM databases. MeSH data is

available in a variety of formats for both searching and downloading. The cataloger's search mesh records online via the MeSH Browser.

There are three types of MeSH records: Descriptors, or main headings, which characterize the subject matter or content; Qualifiers, or subheadings, they're used with Descriptors and afford a means of grouping together those works concerned with a particular aspect of a subject; and Supplementary Concept Records, or SCRs, are used for certain chemicals, drugs and other concepts such as rare diseases, but they are not used for cataloging at NLM.

The Descriptors are revised annually to reflect changes in the biomedical literature. Descriptor records are further divided into 3 subtypes: Topical, which indicates the subject or topic of the work, that is what the work is about; Publication Characteristics or Publication Types, these descriptors indicate what the work is, that is to say its genre rather than what it is about; and Geographicals, or place names, are descriptors indicating continents, regions, country, states, and other geographic subdivisions.

Descriptors are organized in a "tree," with 16 main branches. Each tree is assigned a letter as an identifier. Each Descriptor is located in one or more trees. The tree structure goes from more general terms to more specific terms, and each branch has many levels of subbranches, and each heading has a position in the hierarchy. For example, the Descriptor back appears once in this hierarchy. You can see that it is part of the torso, which is a body region in the anatomy tree. Back itself has two regions as "subbranches." Now some Descriptors may appear in more than one tree. For example, the Descriptor Ear appears in more than one tree. It is part of the Head as well as a Sense Organ, and it has its own subbranches in that tree. The majority of the MeSH trees encompass topical Descriptors. All of the topical Descriptors are found in trees A-N Publication Characteristics or Publication Types are exclusively in the V tree. The Graphicals are exclusively in the Z tree.

The Qualifiers, also known as Subheadings, are used in conjunction with Descriptors to convey a particular aspect of a subject. There are 78 Qualifiers, for example, Adverse Effects, Diagnosis, Therapy, and so on. MeSH has rules governing which Qualifiers can be used with a given Descriptor, as well as which Qualifiers cannot be used with a given Descriptor. Qualifiers are not part of the descriptive trees. However, they have their own logical hierarchical groupings or families. For example, as listed here, there are three narrower or more specific Qualifiers that may also be used to convey the aspect of therapeutic use. MeSH Qualifiers list by hierarchy may be found at the URL that Kate will paste in the chat box.

Supplementary Concept Records, again, SCRs, are terms in a separate thesaurus from the Medical Subject Headings and updated daily. Their purpose is to be able to add new concepts rapidly outside of the annual MeSH review process. SCRs are mainly substances such as proteins, drugs, antibodies, toxins, and chemicals. However, there are also some SCRs for treatment protocols, organisms, rare diseases, and population groups. For example, several new SCRs were created in response to the COVID-19 pandemic. They are mapped to the main Descriptor, COVID-19. Again, catalogers are not permitted to use these SCR terms and instead should use the Descriptor listed under the heading map too. Now, Kate will walk you through this exercise.

KATE: All right. That's right. We keep you alert in this class. So it's time for a pop quiz. Let's review what Sharon has presented together, and you can respond in chat if you'd like. The questions are also included in the handout, if you have that. So #1, what do we call the type of MeSH term that are primarily

substance terms, but also include some protocols, viruses and rare diseases. These terms are not part of the MeSH hierarchy.

Oh, they're so fast Sharon.

SHARON: Great, great. I love it.

KATE: I wanted to give folks a minute to think about it but they didn't need to. Supplementary Concept Records. That's right. All right, very good. Right. #2 What do we call the main terms that describe a topical concept? David says Descriptors, Tony says Heading. You're both right. Yes, excellent work. Thank you. And then #3, which terms describe a particular aspect of a concept? I think Arthur had it in, first: Qualifiers.

SHARON: Great, great, great. Now I'd like to talk about the MeSH Browser. This tool allows users to search directly for MeSH terms and conduct text word searches of various fields of the records. The top navigation bar appears at the top of every page, and I will discuss selected tabs. Click on the MeSH tree icon to go to the MeSH section homepage. Click on the Search to return to the MeSH Browser homepage. Click on Tree View to browse the MeSH trees. Click on MeSH on Demand to access a tool that can automatically identify relevant MeSH descriptors from text that is input by the user. Click on MeSH (and the year) to see the previous or upcoming MeSH vocabulary year. Click on Suggestions to access the user suggestions for MeSH Medical Subject Headings where instructions are provided for submitting requests for new or modified MeSH headings. I will provide more specific details about when to make a MeSH request later in this presentation.

The year following the label Medical Subject Headings indicates the version of MeSH vocabulary being searched. The browser offers two search methods via a drop-down box: FullWord Search and SubString search. FullWord Search looks for a complete words only, not strings that are part of a term, word or sentence. SubString Search, or partial word search, will find records that have a string of characters as a complete term or embedded in a term, word, or sentence. Each search method can be further modified to search by Exact Match, All Fragments, or Any Fragment. Exact Match finds terms that precisely match your search term. All Fragments finds terms that include all fragments of a search string in any particular order. Equivalent to the AND Boolean search operator. Any Fragment finds terms that include at least one fragment of a search string, and this is equivalent to the OR Boolean search operator.

Searching for terms may be restricted by choosing one of the radio buttons on the left side. All Terms include Main Heading, Descriptive Terms, Qualifier Terms, and Supplementary Concept Records or SCRs, that you can search collectively, or you can select each one individually. The Main Heading or Descriptor Terms includes Preferred Terms, Entry Terms, or Variants found in Descriptor Records. Qualifier Terms includes Preferred Terms, Entry Terms, and Abbreviations Found in Qualifier Records, and Supplementary Concept Records include Preferred or Entry Terms in the SCR records.

There are other fields to search for metadata. The MeSH Unique ID finds Descriptor, Qualifier, and Supplemental Concept Records by their Record Unique Identifier. Search in all Supplementary Concept Record Fields, you can search with the Heading Map To, the HM, which retrieves the Supplemental Concept Records that are mapped to a particular Descriptor heading or the Indexing Information, II field, that is used to refer to other Descriptors that are from related topics. Pharmacological Action or PA finds all chemicals in MeSH that have a PA that matches the term that you searched. Registry Number is the

term that you can search for the registry number or related registry number of all chemicals in MeSH and it will retrieve records with either a matching CAS registry number assigned by Chemical Access Services, a matching Enzyme Commission, EC number, or FDA's Substance Registry System Unique Identifier or UNII, or NCBI Taxonomy TXID Number. Users may search all free text fields collectively or individually, which include Annotation, which is free text information for indexers and catalogers concerning the use of the descriptor or qualify record, Scope Note which includes free text narrative giving the scope and meaning of a concept, and SCR Note which includes free text narrative and the Supplementary Concept Record.

I am now going to switch to my browser to demonstrate a few search options so that you can follow along. Kate will put the link up to the MeSH browser in the chat panel. I'm going to clear my search. The first one I want to demonstrate is the Exact Match search. Now each Exact Match finds terms that precisely match your search term, and it's particularly useful if it's a known one-word search. It should be used in conjunction with the FullWord Search rather than the SubString. So, for example if I search feedback and I make sure that I click on Main Heading unless I only get one record.

Now if I want to do this with All Fragments and I search feedback, making sure I have the right one selected and I'm searching All Terms, then you notice my I get a more comprehensive search. And this if you search feedback using the All Fragments you can use either FullWord or Exact Match or SubString the result is the list of all terms containing the word feedback, and the Descriptors are in blue and hyperlinked and they're outdented and the variants, or the entry terms, are indented. And they're in black and you'll see that the term I searched is bolded, feedback. So, you have biofeedback, your feedback, feedback physiological. And then the any fragment search. This one's better used with the SubString, so I can search feedback and another word, multiple words, feedback and psychological and any. Now, this one is a long list of terms with feedback or psychological. So, this is-- I see psychological here. I see feedback here, I see psychological. So this is the OR, OR-ing the terms together. All right, let me go back. So now Kate will walk you through this exercise.

KATE: All right, thanks, Sharon. Now it's your turn. We'd like you to explore some of these search options in the MeSH Browser. Specifically, go ahead to the MeSH browser, select SubString, All Fragments, and Main Heading or Descriptor terms and try to search for psychol feedback. So we're doing the stem of "psychol" with "feedback" and tell us in general what is included in your results. You can go ahead and comment and chat. All right, excellent.

While you're taking a look, I'm going to share my screen so we can look at this together. Okay. Just to verify what we're doing here, we're going to do a SubString search with All Fragments searching in the Main Heading or Descriptor terms and our search is for psychol feedback. So any word that starts with the site psychol-. And what we see in our results are really 2 results. And what we're seeing is that it's not necessary to enter in whole words for the All Fragments search or any fragment search as long as that SubString option is chosen. So you can use partial words, which means you can retrieve word variations with these strings, giving you more flexibility in your search. Back to you Sharon.

SHARON: Thank you, Kate. And as Kate just shared with you, these are some of the various answers you can get now. These are the recommended settings for catalogers. For the search method: SubString. For the search button: All Fragments. For the Sort by: Name as opposed to Relevance. For the results per page: you have two options: 20 or 1000. We tend to choose 1000 so we can see everything. For the search option radio button, the Main Heading (Descriptor). Now, these settings should be addressed as

needed of course, and when the user changes the settings, they are retained for subsequent searches and sessions.

When a Descriptor is selected from your search results, there are four tabs for viewing the record: Details, Qualifiers, MeSH Tree Structures, and Concepts. Each tab shows the Descriptor searched and the label MeSH Descriptor, Descriptor data, and the MeSH year. The Details tab is the default view when a Descriptor is retrieved. Fields or elements within the record may be linked to additional sources such as related records, MeSH terms and scope notes, tree locations, entry terms or variance, and other similar information. Note that now the NLM classification number is shown when a MeSH Main Heading (Descriptor) points to a single number. In the NLM classification, a list of specific qualifiers allowed in combination with the descriptor appears on a separate Qualifiers tab in the MeSH Descriptor record, also known as AQs or Allowable Qualifiers. They are presented as full words and two letter abbreviations. Qualifiers are hyperlinked to the specific qualifier record. Clicking on the MeSH Tree Structures tab provides a display of a section of the tree or trees to which the descriptor belongs. Browse the MeSH trees by clicking on the plus sign (+) to expand the tree at a specific node. Additional information about the concepts of the record for semantic processing can be viewed in the Concept tab. These can be viewed by expanding or collapsing specific parts, by clicking on the term names, or by using the Expand All Collapse All button. To learn more about these elements, see Concepts Structure in XML MeSH, and Kate will paste the URL in the chat box. Now, Kate, we'll walk you through this exercise.

KATE: Thanks Sharon. So, it's your turn again. Let's explore a little more of the features that Sharon has shared with us. Please use the recommended catalog or search settings in the MeSH browser and try a search of fostering. And then we have two questions for you. First of all, what is the preferred MeSH Descriptor? And second, what related concepts are listed? And you can share in chat. We'll give you just a minute or two to do that.

Excellent. I'm seeing some great answers here in chat, so while you're finishing up, I'm going to share my screen and we'll do this together. Okay. So part of this was we wanted you to use those recommended cataloger search settings. So we got SubString, All Fragments and we're going to search the Main Heading (Descriptor) terms and we're taken immediately to the preferred term of foster home care. So that was the answer to our first question, what is the preferred MeSH Descriptor? When we look at this entry term here, we can tell that if you're searching for fostering, the preferred term is foster home care. And then the next thing that we wanted you to do was explore the tabs that Sharon gave you a little tour of. If you look at the Concepts tab, you can see the related concepts. So here we have fostering, kinship care, and a narrower term of adult foster care. All right, thanks. Back to you, Sharon.

SHARON: Thanks Kate and again, those are the answers foster homecare. Now I'd like to talk about specific field in the MeSH browser record, the annotation field. The annotation or AM field of the MeSH browser record provides more guidance for consistent application of MeSH by indexers and or catalogers. Topical annotations provide guidance to both indexers and catalogers and they include coordination with other headings, use of subheadings, context of the term, similar or related terms to consider, and similar terms that may cause confusion.

Guidance is sometimes provided for coordination other Descriptor with another term. In this example, the Descriptor Unilateral Breast Neoplasms has the annotation coordinate IM with histological type of neoplasms (IM). The MeSH vocabulary distinguishes between the site of the neoplasms such as breast neoplasm, brain neoplasms, lung neoplasms, etcetera, and its histological type such as adenocarcinoma

or sarcoma etcetera. Now you may encounter acronyms IM and NIM and annotations which pertain to indexing only. IM and NIM comes from the time when terms describing major points of the article were printed in the index medicus. IM meant printed in the index medicus and NIM meant not printed in the index medicus. Currently, IM terms are the main point of the article, while NIM terms are secondary terms supporting the major points of the article. I will talk later about how cataloging indicates primary and secondary headings in a bibliographic record.

Annotations may include guidance on the use of subheadings or qualifiers. In this example, for the Descriptor Rhinosporidium, the annotation indicates to use the more specific subheading parasitology on other terms to indicate the presence of Rhinosporidium, rather than to use the broader subheading microbiology. So, for instance, a work on Rhinosporidium in nasal smears, you are probably coordinated with the descriptor nasal polyps and subheading parasitology. Annotations can put terms in context by indicating what the descriptor can or cannot be used for. For example, the annotation on this descriptor, cell survival, indicates it is not for microorganisms. The annotation may also alert the user about similar or related terms available as in this example for glycemic load, which indicates the glycemic index is sibling to this term is also available. Sometimes Descriptors may seem to be similar, but they are not. The annotation alerts the user not to confuse similar terms. For example, accommodation ocular, which is the adjustment of lens to distance, is not the same as adaptation ocular, the adjustment of eye to light. Now Kate will lead you in this exercise.

KATE: All right, I love when we get to the annotations. It’s my favorite part. OK, so your turn again. Use the MeSH browser and the topical annotations on MeSH records to answer these questions. First, according to the annotation, what other terms might you add when using the heading ablation techniques? And the second question is to describe taking leave to care for parents, which is correct, Family Leave or Parental Leave? Take a look. If you're having trouble with question 5 remember, we're looking at those topical annotations.

All right, folks are looking good. I'm going to share my screen so we can take a look together. Okay. So the first question is, according to the annotation, what other terms might you add when using the heading ablation techniques? And so, when we pull up ablation techniques in the MeSH browser and we look at the annotation, we see that this term can be coordinated with an organ or disease heading with surgery as a subheading or qualifier. So that's what we were looking for. So, you might add other organ or disease terms with surgery.

OK. And then the second question or question 6 was to describe taking leave to care for parents. Do you use family leave or do you use parental leave? So, let's look up family leave. Okay. So here is the MeSH browser record for family leave. And again, we're looking at these annotations and here we see it says to care for siblings, parents or other family members. And do not confuse this with parental leave. So, the correct answer is family leave to care for parents. Okay. All right, back to you, Sharon.

SHARON: Thanks, Kate. And again, these are the answers that Kate shared with you. We've covered topical annotations. Now I would like to talk about cataloger specific annotations, annotations applicable specifically to cataloging are prefaced by the word cataloger and all capital letters followed by a colon (CATALOGER:). They include CATALOGER: Do not use, CATALOGER: Use NAF entry, Coordinate with specific NAF, Used for historical material only, Used by collaborating partners only. And then there's another one. INDEXER: Do not use. But catalogers may use this. There are some cataloger-specific annotations that also include instructions for indexers. Many of these are generic umbrella or group

heading MeSH terms, and they'll contain the annotation used for searching INDEXER: Do not use, CATALOGER: Do not use. These type Descriptors are not used by catalogers or indexers, and they're just placeholders in the MeSH tree structure.

Descriptors with the annotation CATALOGER: Use NAF entry cannot be used by catalogers. These Descriptors are usually for proper names of corporate bodies or work titles. Catalogers should use the appropriate term from the Name Authority File, NAF, rather than the MeSH Descriptor. For example, catalogers would use the NAF entry United States. Medicare Access and CHIP Reauthorization Act of 2015 rather than this MeSH descriptor which starts with Medicare Access and CHIP Reauthorization Act of 2015. Now I will discuss later how these types of NAF subject entries are used on bibliographic records.

Sometimes the annotation indicates for the cataloger to coordinate with a specific NAF entry. For example, the cataloger could use this generic general MeSH Descriptor Blue Cross Blue Shield Insurance Plans and then coordinate it with the NAF heading Blue Cross and Blue Shield Association. NLM catalogers use descriptors with the annotation CATALOGER: Use for historical materials only for works housed in the History of Medicine Division, or HMD, only. Now this reflects NLM practice. Other libraries are not obligated to follow this annotation. Descriptors with the annotation Used by collaborating partners only are not used by NLM staff catalogers. NLM collaborating partners are generally outside institutions such as the Kennedy Institute of Ethics or KIE etcetera, who have created cataloging records for NLM. Again, this reflects NLM practice, other libraries are not obligated to follow this annotation.

Catalogers may use Descriptors annotated INDEXER: do not use. Generally these are very broad headings that indexes probably won't find useful for when they're indexing their specific articles. And now I'll turn it back over to Kate.

KATE: Thanks Sharon. So now we'll take a look at some of those cataloger specific annotations. We have two questions for you, which requires which require looking up three different headings. So question 7 is which of the following headings can you use for cataloging? Can you use age groups? Can you use animation? And then question 8, what headings do you use for Alcoholics Anonymous? And again, you can share your answer in chat if you'd like, so we know when you're just about done. Thanks.

All right, excellent. Let's just take a quick look together. I again will share my screen. So, the first question, question [7], we wanted you to look up a couple terms and see if you could use them for cataloging. So the first one was age groups. So, looking at the annotation, we see the note here the annotation for catalogers is do not use this. So that one's a no. And then the other heading was animation. Okay. So, this heading animation has an annotation CATALOGER: Use for historical material only. And if I remember correctly what Sharon said, I think you said that that's a note for NLM catalogers and others don't necessarily need to follow that rule. Do I have that right, Sharon?

SHARON: Exactly right, Kate.

KATE: Thank you. OK, so that's question [7]. And then question [8] was what heading do you use for Alcoholics Anonymous? Let me see if I can copy this so I don't stumble over my horrible typing. Yay. OK. And here looking at the annotation on this record, it says Use NAF entry. So, we're looking at the National Authority File for that one. All right, thanks. Back to you, Sharon.

SHARON: Thanks Kate. And again the answers that Kate shared. Just in case you're interested cataloger specific annotations may be searched but typing the word cataloger in the search box and choosing the annotation and the free text field search. Once the catalogers determine the significant characteristics of a work, then they must translate the subject content into terms of the controlled vocabulary to locate the main concepts. As you may recall, the recommended settings for catalogers are SubString, All Fragments, Sort by name, 1000 results per page, Main Heading as the search option radio button. Again, the settings may be adjusted as needed, so I'm going to switch to my browser to demonstrate a few search options and you can follow along in the MeSH browser. And I will clear my previous search.

Now this time, suppose you're given a work to catalog, and it's entitled Inflammation of the Stomach. And wouldn't it be nice to have a MeSH like that? Inflammation of the stomach. So you put it in. Use All Fragments search, SubString, Main Heading, Sort by name, 1000. No results. So why don't I try taking out the prepositional phrase. Using some of these prepositions and conjunctions doesn't always work with MeSH, so just put in the main concepts. I'll try that last. Alas, no such luck. Then if you can't get it with some of your main concepts, search some one by one and see what you find. So I'll just search stomach, see what happens. I do have some hits and then I'll just look at the record for stomach. And lo and behold, this long annotation somewhere in here. It tells me if I have a work on inflammation of the stomach, inflammation equals gastritis and so that gives me the clue of what I should use. So that's very helpful.

Another way that you could have searched this is searching the free text fields with the two concepts inflammation and stomach and see what comes up. It's always good to be flexible in your search and try If it doesn't work the first time try all different kinds of things. And so because I'm searching the free text field, I would also pulled up stomach and it's giving me the same answer that information equals gastritis. So be flexible in your searching and now the Kate will walk you through this exercise.

KATE: All right. So let's see if we can follow Sharon's guidance and find the MeSH for measuring cardiac impedance. Again, be flexible. Excellent. So, taking a quick look together. So, what I might think to do in searching for this is I would search in the descriptor terms for cardiac impedance. But when I do that, I don't end up with anything. So I might try to search in Free Text Fields and that's the winner takes this right to cardiography impedance which is the answer. Thanks back to Sharon.

SHARON: Thanks again, Kate. And there's the answer again. So we'll pause now briefly to see if there any questions on what we've covered so far.

KATE: All right, so we've had some questions come in, Sharon. The first question from Heather was, **is MeSH still updated by humans or has that gone AI already?**

SHARON: That's a good question. Still humans. We're still humans. And yeah, we're still working on that with humans right now. And later on I'll talk about MeSH suggestions, and we always ask for information from the public. If you have suggestions, you can help us update it. But still humans. Good question.

KATE: Thanks, Sharon. And Crystal asks, **are there plans to add RDF unique identifiers to combinations of Descriptors and Qualifiers? For example, Adolescent Health Economics.**

SHARON: Now we have a MeSH MARC, I don't know if you use MARC or not. There are plans. We do put some URIs in in our MeSH RDF. The question was about MeSH RDF? I want to verify.

KATE: Yeah, MeSH RDF.

SHARON: If I'm not mistaken, that already is included there, the URIs, because we have distinct URIs for the main Descriptor and distinct URIs for the Qualifier, and then when it's a combo we have both the D Descriptor and the UIQ for the Qualifier together.

KATE: Excellent. I did not know that. Thanks Sharon. So **Adam was asking about the Medicare access example and the specific MARC field that you would use for that. But I think you're going to cover that a little bit, right?**

SAHRON: Yes, that would be, yeah, on the bibliographic record that would be the 610s.

KATE: Okay. So hang on, Adam, we'll get, we'll get there. And then Sue asked the question **if something is NAF, how do you know the correct term to use instead?**

SHARON: You must go to the National Authority File and search it and whatever you find there is what you'll use. And that's how you know. Sometimes in the case of Red Cross or-- there's some MeSH headings that are exactly like the NAF. But the principle is to go to search the NAF and use that entry. And again, as I said in the bibliographic record is recorded in a different field other than what we record our normal MeSH topical descriptors in. So hopefully that answers your question.

KATE: Thank you. OK, Logan has a question. Maybe I can take this one because Logan was asking **how does the MeSH browser compare to the MeSH database?**

SHARON: Yes, please take that Kate.

KATE: So in brief, the MeSH database was created to assist with PubMed searching, so it's really optimized for PubMed searching. And so if you want to search PubMed with MeSH, the MeSH database is the way to go. However, if you need more detail about specific MeSH terms, about related concepts, about the tree structures, you really want to go to the MeSH Browser. The MeSH browser has more detailed information about specific headings, Qualifiers, etcetera.

Alright, sorry, more questions are coming in, let me see. Oh, Adam asked, and this is actually, I think, **a question about MeSH, which is do you ever add entry terms for searches on terms that failed? In other words, using our search logs to determine entry terms?**

SHARON: If I understand your-- I think the MeSH unit has looked at some of the search strategies in PubMed and added those as entry terms to the Descriptors. They have populated some of those. They have some projects where they will do that if I'm understanding your question correctly.

KATE: All right, thanks. So there may be more questions coming in, but let's hold those till the next question period that's towards the end and let's continue on, Sharon.

SHARON: Okay, Great. Thanks, Kate. So now I want to talk about principles of cataloging. Catalogers follow certain subject analysis principles in the application of MeSH, and here's some of the subject analysis principles observed by catalogers: Specificity, Rule of 3, Specialty headings, Special considerations for SCRs or supplementary concepts, and the Format of subject headings and bibliographical records. So catalogers use the most specific, and indexers as well, most specific headings available, and there is an order of preference. Precoordinated descriptors are contained in MeSH for frequently encountered subjects, and they are the first order of preference.

Now if no Precoordinated descriptors available, the Descriptor/Qualifier (Main Heading/subheading) combination is the next preference. If neither of these two options are available, then the catalog must coordinate 2 or more descriptors. For example, to convey the concept of surgery of the biliary tract, you would use the precoordinated descriptor biliary tract surgical procedures. Now the subheading surgery is not allowed with biliary tract. Instead, the user is directed by the entry combination to the correct Precoordinated descriptor. On the other hand, no Precoordinated descriptor is available to convey the concept of surgery of the liver. Therefore, you need to use the Descriptor liver plus the Qualifier surgery. Multiple Descriptors may be needed to convey a concept. For the concept of Research and Occupational Therapy, you would use two Descriptors, occupational therapy and research. However, for the concept of Research and Nursing, you only use the Precoordinated descriptor nursing research.

The Rule of Three principle is an exception to the principle of specificity. If more than three specific concepts treed under a more general MeSH concept to all discussed, catalogers go "up the tree" to the broader term. So reminder MeSH is organized hierarchically into 16 trees and each MeSH term is located in one or more trees and the tree structure goes from more general to more specific terms. So for example if you are cataloging a work about the following topics: anuria, enuresis, glycosuria, and hematuria, then you would assign the Descriptor urination [disorders] to the work because there are more than three headings in the same tree. So Kate, [I'll] turn it over to Kate for this exercise.

KATE: Okay for this one. You don't need to go to the MeSH browser and look anything up. This is just to take your best guess based on what Sharon just explained. So question 10 is what descriptors would you use to describe a work about levels of the D-aspartic acid, 1-carboxy glutamic acid, polyglutamic acid, and isoaspartic acid? Would it be D-aspartic acid? Would it be Amino acids, Acidic? Or would it be all four descriptors? Lots of answers coming in. OK, lots of Bs. I see some other answers though. Sharon, can you do the big reveal.

SHARON: And it is B.

KATE: The answer is B.

SHARON: Very good. Catalogers and indexers need to distinguish between the specialty and the disease procedures or processes, etcetera. The MeSH browser record would usually contain a note that, in the MeSH annotation they'll have a note with Specialty (or Spec) or Specialty only, or Used for discipline only, which designates whether the MeSH is a specialty heading. For example, the Descriptor bariatric medicine is labeled in the annotation as specialty only, but the user is directed to the corresponding Descriptor bariatrics for the procedures. The Disciplines and Occupations [H] tree contain many of these specialty headings, and many of the terms in this category are also located in other categories as well, such as Analytic, Diagnostic and Therapeutic Techniques, or the [E] tree and the Environment and Public Health or the [N06] tree. And many of the specialty headings have disease counterparts in Diseases [C] tree. We reserve the specialty headings for works about the particular field. We use the disease term for works about the diseases of course and generally do not add the specialty as a coordinate even if the authors is using the specialty term. It's up to the catalog to translate the correct into the correct MeSH term. Now Kate will walk you through this exercise.

KATE: All right. So we're on to question 11. What descriptor or descriptors would you use to describe a work titled The Status of Diagnosis in Endocrinology? Take a look in the MeSH browser and let us know in chat. All right, got some good answers coming in. Going to share my screen and let's take a look at the

MeSH browser record for endocrinology. So the question was what descriptor would you use to describe a work titled The Status of Diagnosis in Endocrinology? But if we look up endocrinology, we can see that this is one of those specialty terms that Sharon just described, and we see that it refers us to endocrine system diseases. And so this is really the topic of the diseases. And so this is the term you would use and some folks also indicated the Qualifier along with that which would be diagnosis. Thanks everybody.

SHARON: Excellent. And as Kate indicated, that's the answer. And many of you indicated. So many specialty headings in the H tree have corresponding phenomena or process counterparts in the Phenomena and Processes tree, G tree. The catalogers again need to distinguish the field of study from the phenomena terms. The MeSH will generally refer you from the specialty to the related phenomena in an annotation scope note or See Also reference.

We use specialty headings when we're discussing again the field or profession covering topics such as trends or history or education or economics. For example, a work on the future of biochemistry is a sign the specialty heading Biochemistry with the subheading Trends. There are a few headings marked as Spec, or Specialty, such as Pediatrics and Geriatrics, but they have no corresponding disease descriptors. In these cases, the spec heading is used as a synonym for general works on "pediatric diseases or geriatric diseases."

Now these SCRs are Supplementary Concept Records as mentioned earlier, cannot be used by catalogers. Each SCR points to one or more descriptor in the Heading Mapped To field, which should be used instead. SCRs are created daily and they do not undergo the rigorous review procedure that MeSH records do. The SCR is clearly labeled as MeSH Supplementary Concept Data and the Regular MeSH Record Descriptor is labeled as MeSH Descriptor data. This for example this SCR oxiconazole is mapped to descriptor imidazoles and Kate will walk through this exercise.

KATE: All right, so take a look yourself and see if you can find what descriptor you would use to describe a work about watermelon stomach disease. And go ahead and put your answer in chat. Y'all are so fast, I'm going to share my screen. Okay. So if we look up the term watermelon stomach disease in the MeSH browser-- Whoops. Hang on, what did I do? Thank you. Gotta be flexible, right, Sharon?

SHARON: Exactly.

KATE: Oops. I'm still not doing it.

SHARON: Watermelon is spelled correctly. Not Exact. And you did SubStrings? We had that earlier.

KATE: Here we go.

SHARON: OK, great.

KATE: Sorry about that.

SHARON: This is SCR, that's right.

KATE: Well, everybody else found it. So if we find this term in the MeSH browser, it says that it's a supplementary concept. This is a supplementary concept. And as Sharon described for these types of headings, you can't be using this for cataloging. So you look for the Heading Mapped To. And this is the preferred MeSH term. So it's Gastric Antral Vascular Ectasia, if I'm pronouncing that right. No idea.

SHARON: Good.

KATE: And that's your answer. Thanks.

SHARON: That was good, Kate. And Kate has already pronounced this. So that's the right answer. So now I want to talk about how catalogers format subject headings and bibliographic records. The envelope catalogers use the MARC 21, which stands for Machine Readable Cataloging Coding, and the 6XX fields are used in the bibliographic record for recording subject access entries. Would you please put in chat whether or not your library uses MARC in your bibliographic records? And Kate, would you let me know if-- I can't see the chat.

KATE: Seeing a lot of yeses.

SHARON: Oh that's great. So you already know this. All NLM MARC 6XX fields have a second indicator too, to show they come from the MeSH thesaurus. NLM records its subject terms in a deconstructed or faceted form, so topical descriptors and the topical subheadings are recorded in the mark 650 subfields A and the X fields respectively. And the topical descriptors are identified as either primary or secondary headings via the MARC coding and primary subject headings are coded with a first indicator of 1, and secondary subjects are assigned the first indicator of 2. Primary subject headings, generally one, but we may include up to three. They appear first in the bib record, and they're followed by secondary subjects.

Primary headings generally correspond with the classification number to be assigned. Optionally, libraries may choose to follow the NLM practice and identify topical subjects as either primary or secondary via the MARC coding. And please note that the indexing records in PubMed use asterisks to indicate primary headings and their subjects are listed alphabetically and they are designated as IM for indexing as I indicated earlier in the MeSH annotation.

Now geographic terms and their topical subheadings are MARC 651, A and X fields. And publication types of genres order forms are recorded in the MARC 655 fields and they do not have subheadings. For example, a work on acupuncture for chronic low back pain would have the primary subject low back pain with the qualifier therapy and secondary subjects for acupuncture therapy and chronic disease. Another example is a directory of services for aging in New York State. There is a precoordinated descriptor for health services for the agent, and this is the primary focus. So the first indicator is 1 and it discusses a specific geographic area. For 651, New York is added and it is a particular publication type, so 655 directory is added.

As mentioned earlier, catalogers use name and title headings from the National Authority File or NAF rather than from MeSH, and these names and titles are recorded in the 600 through 630 field, and personal names are used as subjects are recorded in the Mark 600 field. The corporate names used as subjects are recorded in the 610 field. And I believe Adam had the question, so this is where we would record that corporate name, in the 610 field. Conference names are used as subjects recorded in the MARC 611 field, and work titles of uniform titles used as subjects are recorded in the Mark 630 field. Now NLM does code the second indicator as 2 and they are coded as coming from MeSH, but they're actually taken again from the NAF, but they are associated with MeSH.

However, because NLM catalogers and indexers work closely with the literature, they tend to submit a high volume of MeSH requests. However, anyone can submit a MeSH request for a new term or to modify an existing term, and you can use the Suggestions tab on the MeSH Browser home page that I

showed you earlier. When you click on the Suggestions tab, you are taken to a guidelines page for user suggestions, which gives you instructions for filling out the online request form. To access the suggestion form, click on right to the help desk link.

How do catalogers really know when it is time to submit a MeSH request when you may submit a MeSH request for new terms? For example, a frequently recurring concept we in cams that encountered the concept anti-racism and they had hundreds of postings and PubMed and NLM catalog. So we proposed this new MeSH because there was no good way to convey this concept and it was added to the vocabulary with 2023 MeSH.

Or perhaps there's a more general or specific concept that's needed than what is covered and available in the current MeSH vocabulary. CaMMS requested smart materials to gather all of the related concepts such as stimuli, responsive materials, smart polymers, intelligent materials. So we requested a broader term, smart materials to gather all of those.

Or perhaps there's a time when there's a concept which requires 2 or more headings. For example, CaMMS requested adolescent mothers as a precoordinated concept. The catalogers had to post-coordinate adolescent and mothers for the concept of adolescent mothers, and many people were using the MeSH pregnancy in adolescence, which does not cover the concept of motherhood. So we were given the new MeSH adolescent mothers. And just for a bonus the MeSH unit gave us adolescent fathers as well. A concept which is likely to be handled inconsistently by different catalogers, we may request a MeSH.

So CaMMS requested the term twinning dizygotic and twinning embryonic. And they were already two existing separate headings for persons twins dizygotic and twins monozygotic. So we requested it for the embryonic development as the process as opposed to the person.

Catalogers may also submit changes to MeSH headings, to the entry terms or qualifiers. For example, the main descriptor to represent more current or common usage, CaMMS requested that nurseries be changed to nurseries infant to clarify that it is for nurseries for infant care facilities and not garden nurseries. You may request additions to or cross reference for entry terms, and CaMMS requested plant nurseries to be added as an entry term to gardens.

Or you can request additions or deletions to qualifiers as needed. CaMMS requested a new subheading diagnostic imaging years ago. As a result, the MeSH unit actually deleted the existing subordinate subheadings, ultrasonography, radio nuke light imaging, and radiography. And so now we have just have this new broader subheading that we use instead. And so we've come to the end and we're gonna pause again for any more questions.

KATE: Yes, we have some questions that have come in. I'm trying to organize them a little bit so that we can take them sort of by topic here. And sorry, I'm trying to copy paste something in this chat and it's not working. Multitasking doesn't work so well when trying to help with a class. All right. So let me start with something I forgot to ask earlier that Adam wanted to know.

In the Concepts tab for the fostering record, let me bring that up because it's something on the screen that I don't know if I can explain, but maybe you can Sharon. So if we take a look at foster home care in this example and then we look at the concepts. Okay. So we talked about these related concepts,

right. But when you actually click on this concept of fostering, which is the entry term, it gives you this concept UI and then it says Fostering Preferred Term. Do you know what this preferred term refers to?

SHARON: I think if you look at-- let's look at the details tab.

KATE: The details tab, sure.

SHARON: Yeah fostering is there. So that's the same thing. Go back to the concepts please. So actually it's sort of repeating it, fostering at the top, it says fostering related. So it's saying fostering is not exactly equivalent to foster home care. It's related to that concept. You know, it's not broader, it's not narrow, but it's sort of a related term. And then it gives you more specifics. So that word fostering appears and gives you what the relationship is and then it gives you more details about for the unique ID, even concepts have a unique ID, the M number and then it's just saying preferred term. This is what we prefer you to use when you're doing the searching and that fostering shows up when you look at the details tab. So I don't know if that answered-- So preferred is meaning this is the term that we'll actually use when you're searching.

KATE: Yeah. So it's trying to describe the relationship back from fostering to foster home care. It's just a little odd.

SHARON: Yes. It's convoluted.

KATE: Yeah. OK. Thanks so much. OK, all right.

SHARON: So I rarely use this tab. It's kind of interesting. But most of these appear on the Details tab as entry terms. But if you're curious, you can use that. The catalogers generally stick to the Details tab.

KATE: OK. All right.

SHARON: Very useful for the UMLS and things like that.

KATE: OK. All right. So, Tony asks, **does the Rule of Three apply to indexing or just cataloging?**

SHARON: Indexing uses it as well. Yes, they do. I think we use it a little bit more than they do. But yes, that's a principle we share.

KATE: Thank you. OK. And then I had a couple questions about the bib record itself. Okay Heather asked, **should punctuation be put at the end of the term in the bib record?**

SHARON: That is totally up to your system. We don't and NLM does not. We have systems that strip it and when we send it to OCLC or other databases, it'll add it as necessary, but we do not. But that's library dependent. It depends on your library and your system.

KATE: Okay. All right, thanks. Okay. This one I might have a little difficulty explaining. I'm going to try my best. But this will make it very clear that I am not a cataloger. Okay. So Arthur asks, **is there a best practice for how to enter I think it's the zero indicator in the 650 field for MeSH terms in a MARC bib record. And then Arthur gives an example of I think that's a 0 indicator with DNLM and then D020252. I guess that's the unique identifier.**

SHARON: Yes. In the bib record we don't-- NLM does not add those and I'll bib records we use the fields 6XX fields with the indicators and the subfields. I think he's talked about a subfield 0 and putting the

DNLM as coming from the MeSH, things like that. Other libraries do different kinds of things but for NLM we don't use that subfield 0 and that unique identifier in our bib record. But I have seen it in other libraries that use it.

KATE: Okay. All right and then Web asks, **is there a guideline about the minimum number of publications for a concept before it is added to MeSH?**

SHARON: I don't want to say officially. They say "literary warrant," and 100 seems to be-- They really like it when it's 100, but that is not official. They just say literary warrant. There's some concepts that are very difficult. I mean it takes 3 or 4 separate concepts to bring out and there's a case to be made that it's not a lot of citations for it, but it's really needed. So MeSH does not have an official number, they just say literary warrant. So try it anyway because it makes a good case scenario. Use citations, use illustrations from titles where it was necessary, and I think it'll go through great.

KATE: Thank you. I believe that I have asked all the questions that weren't answered in chat by one of your colleagues, but if I missed one, please put it in chat. And I think what we'll do is-- sorry, I'm still sharing my screen for no reason whatsoever. I think what we'll do is put up the closing slides and we have some links to share and then if we have any more questions, we'll try to get to those.

Oh, the one procedural question, **can you share the slides?** So we will be posting the slides from the class page and we shared them with you. You may or may not know that works by federal employees are public domain. You are absolutely welcome to have them, use them, reuse them, adapt them, that's what we do here. So yes, you may share, OK.

So, more about MeSH. If you would like to learn more about MeSH, please see the MeSH home page. I'm going to try again. I'm having a little trouble copying and pasting, but I'm going to try that again. Still having trouble. Sorry. There we go. So the MeSH home page. Now there's a link in chat. See also the NLM Technical Bulletin for any news about any NLM products. As always, please you know you can sign up to get alerts when new Technical Bulletin articles are posted, all right. And then if you want to learn more about cataloging, see that CaMMS page, the Cataloging and Metadata Management Section.