
Ambiguity in the UMLS Metathesaurus

2007 Edition

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September 24, 2007

1. Introduction

The UMLS[®] Metathesaurus[®] contains a significant amount of ambiguity. For example, the string “Cold” (or “cold” or “COLD”) occurs in six distinct concepts with six distinct meanings. The purpose of this report is to examine ambiguity in the 2007AA release of the Metathesaurus in the context of its effect on natural language processing (NLP) applications.

Until the 2004AC release of the UMLS Knowledge Sources, ambiguity was denoted explicitly by appending an ambiguity designator, a number in angle brackets, to the end of an ambiguous string. Thus the ambiguity for “cold” was denoted by ‘Cold <1>’, ‘Cold <2>’, ‘COLD <3>’, etc. Now ambiguity is computed by finding concepts with strings that differ only with respect to case.¹

Table 1 shows that the degree of Metathesaurus ambiguity has grown over the years and was particularly explosive in 2005, partly due to the direct computation of ambiguity mentioned above.

	2002	2003	2004	2005	2006	2007
Strings with an ambiguity designator	13,837	16,438 (+19%)	21,295 (+30%)	N/A	N/A	N/A
Concepts with one or more ambiguity	10,328	12,397 (+20%)	16,775 (+35%)	36,133 (+115%)	44,591 (+23%)	48,820 (+9%)
Concepts with one or more non-suppressible ambiguity	8,754	10,416 (+19%)	12,387 (+19%)	33,513 (+171%)	40,977 (+22%)	43,499 (+6%)
Cases of ambiguity	6,014	7,204 (+20%)	10,018 (+39%)	22,218 (+122%)	27,599 (+24%)	29,415 (+7%)
Cases of non-suppressible ambiguity	5,752	6,824 (+19%)	9,521 (+40%)	20,996 (+121%)	25,290 (+20%)	26,084 (+3%)

Table 1. Measures of ambiguity in the UMLS Metathesaurus

(Percentage changes are computed relative to the previous year.) Although the overall growth in 2007 is quite modest, the number of cases of ambiguity of moderate degree (3-9) has risen by about one-third. (See Table 2 and Table 3 below.)

1. Note that AMBIGSUI.RRF or AMBIG.SUI cannot be used for this purpose because they do not conflate case.

Examining the cases of ambiguity more closely, consider the *degree* of ambiguity, i.e., the number of ways a string is ambiguous or, equivalently, the number of concepts in which it (or one of its case variants) occurs.¹ For example “deprecated ^ wbc-acnc” has degree 124 in 2007 all of which is marked as suppressible; “other” has degree 93 (41 if suppressibles are ignored). Table 2 con-

Degree of ambiguity	2004 cases	2005 cases	2006 cases	2007 cases
124				1
93				1
92			1	
54	1	1(0%)		
39			1	1(0%)
36			1	1(0%)
24			1	
23	1	1(0%)		1
20			1	
19			1	1(0%)
18	2	1(-50%)	1(0%)	2(+100%)
17	58	2(-97%)		
16	2	1(-50%)	2(+100%)	1(-50%)
15			1	3(+200%)
14			1	
13			1	1(0%)
12		1	1(0%)	3(+200%)
11			3	4(+33%)
10			4	7(+75%)
9		6	13(+117%)	14(+8%)
8	3	10(+233%)	23(+130%)	24(+4%)
7	7	11(+57%)	28(+155%)	42(+50%)
6	7	24(+243%)	66(+175%)	104(+58%)
5	22	54(+145%)	158(+193%)	195(+23%)
4	76	208(+174%)	452(+117%)	562(+24%)
3	600	1,239(+107%)	1,868(+51%)	2,380(+27%)
2	7,250	20,659(+185%)	24,971(+21%)	26,067(+4%)
1	1,989			
Total	10,018	22,218(+122%)	27,599(+24%)	29,415(+7%)

Table 2. **Metathesaurus ambiguity distribution by degree**

1. The computation of the degree of an ambiguity was corrected in 2002. As a result, there are some differences from previous editions of this report in the counts reported in the tables.

tains the distribution of ambiguities in the Metathesaurus according to degree. Note that an ambiguity of degree one is not actually an ambiguity. In 2004 and before, for example, ‘Abbreviations <1>’ is not ambiguous since there were no other ‘Abbreviations <n>’ strings in the Metathesaurus.

Ignoring suppressible synonyms produces the more realistic distribution shown in Table 3. Most

Degree of ambiguity	2004 cases	2005 cases	2006 cases	2007 cases
41				1
40			1	
39			1	
36			1	1(0%)
24			1	
23	1(0%)	1(0%)		1
20			1	
19			1	1(0%)
18	1(0%)	1(0%)	1(0%)	2(+100%)
17		2		
16	1(0%)			
15			1	1(0%)
14				1
13			1	
12		1	1(0%)	3(+200%)
11			1	2(+100%)
10			4	6(+50%)
9		5	9(+80%)	12(+33%)
8	3(0%)	8(+167%)	16(+100%)	19(+19%)
7	2(-50%)	5(+150%)	16(+220%)	25(+56%)
6	1(0%)	7(+600%)	39(+457%)	87(+123%)
5	7(-36%)	31(+343%)	123(+297%)	160(+30%)
4	42(-5%)	156(+271%)	360(+131%)	481(+34%)
3	416(-12%)	1,000(+140%)	1,586(+59%)	2,076(+31%)
2	4,309(-13%)	19,779(+359%)	23,126(+17%)	23,205(+0%)
1	4,738(+251%)			
Total	9,521(+40%)	20,996(+121%)	25,290(+20%)	26,084(+3%)

Table 3. Metathesaurus ambiguity distribution after removing suppressibles

of the ambiguity of higher degree has disappeared, and all of that would disappear if appropriate strings were marked as suppressible. Suppressible synonyms are ignored for the remainder of this report.

Section 2 of this report describes general classes of ambiguity found in the Metathesaurus. Finally, Section 3 of this report, an appendix, describes only the most notable cases of ambiguity in the Metathesaurus, i.e., the cases of degree 10 or more. The bulk of the cases are now reported automatically by the Migration Assistant, a tool developed generally for annotating ambiguity and specifically for the purpose of marking appropriate cases as suppressible.

2. Classes of Metathesaurus Ambiguity

Some concepts contain strings which should be marked as suppressible. Many of these strings are already marked suppressible for a given UMLS release; this report recommends further cases some of which are universally applicable and some of which are appropriate in more limited environments such as the natural language processing done by MetaMap.

The analysis in this and previous editions of this report reveals some classes of ambiguity commonly occurring in the Metathesaurus:

- **Contextual (or hierarchical) ambiguity.** This class of false ambiguity is exemplified by the string ‘prostate’ for ‘Prostatic Diseases’. (Many of these problems have been fixed by suppressing the misleading string for the concept; but the problems continue to reappear as the Metathesaurus grows.) It normally arises from terms which require context within their vocabulary (in this case, a disease hierarchy) in order to be properly understood. Contextual ambiguities can be classified according to their participants:
 - **Body part/disease ambiguity** exemplified by ‘Prostate’ and ‘Prostatic Diseases’
 - **Body part/procedure ambiguity** exemplified by ‘Stomach’ and ‘Procedures on the stomach’
 - **Pathology/procedure ambiguity** exemplified by ‘Pathology’ and ‘Pathology procedure’
 - **Medical device/procedure ambiguity** exemplified by ‘Prosthesis’ and ‘Prosthesis Implantation’
 - **Substance/therapy ambiguity** exemplified by ‘Anthracyclines’ and ‘prior anthracycline therapy’
 - **Substance/measurement ambiguity** exemplified by ‘Thyroid stimulating immunoglobulins (TSI)’ and ‘Thyroid stimulating immunoglobulins assay’
- **Generalization ambiguity.** This is also false ambiguity caused by grouping several concepts together using a more general term. For example, 23 concepts including ‘Protocols: Activities’ and ‘Protocols: Pre- or Intra- or Post-Procedure’ are generalized to ‘Protocols’ which does seem to be a legitimate synonym of the concept ‘Protocols documentation’.
- **Meta ambiguity.** This new class of ambiguity, represented by strings such as ‘Stress fracture, NEC in ICD10_1998’, contain meta information. In this case it is the name of the vocabulary, ICD10_1998 in the example. As opposed to the first class of ambiguity above in which strings such as ‘Prostate’ meaning ‘Prostatic Diseases’ do not say enough about themselves, these strings say too much. It is true that the meaning of a string containing ‘NEC’, ‘not elsewhere classified’ or like phrase, depends upon its vocabulary, but such information is already available in the MSRO file (where it belongs). It is also true that such strings have different meanings and strictly speaking should be different concepts. But the practical result of such a representational scheme is to introduce an ambiguity that most users do not want or need to

resolve. (It is not even clear that those who might want to resolve the ambiguity can do so with the information available in the Metathesaurus.)

- **Abbreviation ambiguity.** This is another, large class of ambiguity caused by distinct concepts having the same acronyms (or abbreviations). An example from above is that ‘Mitral Valve Stenosis’, ‘Multiple Sclerosis’, ‘Morphine Sulfate’ and ‘millisecond’ all have abbreviation ‘MS’ or ‘ms’. Although this class represents true ambiguity in a strict sense, it is better to disallow it in many text processing situations, especially those in which authors define the abbreviations they use. Unlike the other classes of ambiguity defined above, we do not recommend that this case be reflected in changes to the Metathesaurus. This kind of ambiguity will be suppressed for MetaMap processing only.

3. Appendix: Higher Degree Metathesaurus Ambiguity

Ambiguous English Metathesaurus strings are described in this section in decreasing order of degree of ambiguity. Only those cases of degree 10 or more are covered. See Migration Assistant reports for cases of ambiguity of lesser degree.

In all cases, suppressible synonyms are ignored as is done in Table 3. Ambiguous forms for concepts shown in bold should be marked as suppressible. Recommendations for cases which are not clear are introduced with the word *consider*. Ambiguous forms for concepts shown in italics should be marked as suppressible in MetaMap only.

3.1 “other” (degree 41)

Except for ‘Other’, the remaining cases should be marked as suppressible because they mean something more specific than “other”. The concepts involved are

1. C0205394| Other
2. **C0220886| Other location of complaint**
3. **C1271040| Other health professional**
4. **C1521979| Other Routes of Drug Administration**
5. **C1546380| Other - Event Reason**
6. **C1546725| Other Specimen Source Code**
7. **C1546836| Other - Special Program Code**
8. **C1546840| Other - Publicity Code**
9. **C1546902| Other - Diagnosis Classification**
10. **C1546930| Other - Report Source**
11. **C1547110| Other - Modality**
12. **C1547196| Other - Organization unit type**
13. **C1547233| Other - Triage Code**
14. **C1547241| Other - Newborn Code**
15. **C1547267| Other - Risk Management Incident Code**
16. **C1547272| Other - Incident Type Code**
17. **C1547281| Other - Production Class Code**
18. **C1547292| Other - Recreational Drug Use Code**
19. **C1547304| Other - Precaution Code**
20. **C1547309| Other - Patient Condition Code**

21. C1547994| **Other - Diagnostic Service Section ID**
22. C1549063| **Other - Notify Clergy Code**
23. C1549104| **Other - Administrative Gender**
24. C1549110| **Other - Marital Status**
25. C1550146| **Other - Substance Type**
26. C1556042| **Other - Relationship**
27. C1556043| **Other - Religion**
28. C1556044| **other - No Information**
29. C1556045| **Other - What subject filter**
30. C1556046| **Other - Employment Status**
31. C1556048| **Other - Contact Role**
32. C1556049| **Other - Mail Claim Party**
33. C1556050| **Other - Living Dependency**
34. C1556051| **Other - Event Consequence**
35. C1556052| **Other - Indirect exposure mechanism**
36. C1556053| **Other - Action Taken in Response to the Event**
37. C1556054| **Other - Status of Evaluation**
38. C1556055| **Other - Causality Observations**
39. C1556056| **Other - Job Status**
40. C1556057| **Other - Immunization Registry Status**
41. C1561608| **Other - Mode of Arrival**

3.2 “unknown” (degree 36) <no change from last year>

Except for ‘Unknown’ (occurs twice), the remaining cases should be marked as suppressible because they mean something more specific than “unknown”. The concepts involved are

1. C0439673| Unknown
2. C1521803| **Unknown Route of Drug Administration**
3. C1546837| **Unknown - Special Program Code**
4. C1546841| **Unknown Publicity Code**
5. C1547283| **Unknown - Production Class Code**
6. C1547294| **Unknown - Recreational Drug Use Code**
7. C1547306| **Unknown - Precaution Code**
8. C1547312| **Unknown - Patient Condition Code**
9. C1548340| **Unknown - Allergy Severity**
10. C1548502| **Unknown - Vaccines administered**
11. C1548543| **Unknown - Living Will Code**
12. C1548550| **Unknown - Organ Donor Code**
13. C1549064| **Unknown - Notify Clergy Code**
14. C1549105| **Unknown - Administrative Gender**
15. C1549115| **Marital Status - Unknown**
16. C1549625| **Unknown - Ethnic Group**
17. C1556120| **Unknown - Religion**
18. C1556121| **Unknown - Event reason**
19. C1556122| **Unknown - Relationship**
20. C1556123| **Unknown - Employment Status**
21. C1556124| **Unknown - Living Arrangement**
22. C1556125| **Unknown - Transport Arranged**

23. C1556126| Unknown - Escort Required
24. C1556127| Unknown - Patient Outcome
25. C1556128| Unknown - Job Status
26. C1556129| Unknown - Patient_s Relationship to Insured
27. C1556130| Unknown - CWE statuses
28. C1556131| Unknown - Container status
29. C1556132| Unknown - Immunization Registry Status
30. C1556133| Unknown - Expanded yes/no indicator
31. C1556134| Unknown - Event Expected
32. C1556135| Unknown - Patient Class
33. C1556136| Unknown - Living Dependency
34. C1556137| Unknown - Contact Role
35. C1561529| Unknown
36. C1609613| unknown - NullFlavor

3.3 “protocols” (degree 23)

Except for ‘Protocols documentation’, the remaining cases should be marked as suppressible because they mean something more specific than “protocols”. The concepts involved are

1. C0442711| Protocols documentation
2. C0542547| **Protocols: Activities**
3. C0677556| **Protocols: Pre- or Intra- or Post-Procedure**
4. C0677557| **Protocols: Urinary Elimination**
5. C0677558| **Protocols: Tissue Perfusion**
6. C0677559| **Protocols: Tissue Integrity**
7. C0677560| **Protocols: Sensation, Pain and Comfort**
8. C0677561| **Protocols: Self-Concept**
9. C0677562| **Protocols: Self-Care**
10. C0677563| **Protocols: Safety**
11. C0677564| **Protocols: Role Relationship**
12. C0677565| **Protocols: Respiration**
13. C0677566| **Protocols: Physical Regulation**
14. C0677567| **Protocols: Nutrition**
15. C0677568| **Protocols: Metabolism**
16. C0677569| **Protocols: Medications and Blood Products**
17. C0677570| **Protocols: Immunology**
18. C0677571| **Protocols: Health Behavior**
19. C0677572| **Protocols: Fluid and Electrolyte**
20. C0677573| **Protocols: Coping**
21. C0677574| **Protocols: Cognition**
22. C0677575| **Protocols: Circulation**
23. C0677576| **Protocols: Bowel Elimination**

3.4 “assessment” (degree 19)

Except for ‘Assessment procedure’ and ‘Evaluation’, the remaining cases should be suppressed because they are specific kinds of “assessment”. The concepts involved in this ambiguity are

1. C0028708| **Nutrition Assessment**

2. **C0031809| Physical Examination**
3. C0220825| Evaluation
4. **C0542573| Assessment: Bowel Elimination**
5. **C0549068| Assessment: Circulation**
6. **C0549070| Assessment: Coping**
7. **C0549071| Assessment: Fluid and Electrolytes**
8. **C0549072| Assessment: Health Behavior**
9. **C0549073| Assessment: Medications and Blood Products**
10. **C0549074| Assessment: Metabolism**
11. **C0549075| Assessment: Respiration**
12. **C0549076| Assessment: Safety**
13. **C0549077| Assessment: Self-Care**
14. **C0549078| Assessment: Sensation, Pain and Comfort**
15. **C0549079| Assessment: Urinary Elimination**
16. **C0549080| Assessment: Pre- or Intra- or Post-Procedure**
17. **C0679207| Knowledge acquisition using a method of assessment**
18. **C0870300| Assessment: Cognition**
19. C1261322| Assessment procedure

3.5 “ec 2.7.1.112” (degree 18)

All Enzyme Commission (EC) numbers (strings beginning “ec <integer>.”) are suppressed by MetaMap because they represent classes of enzymes and are consequently highly ambiguous.

1. C0033681| *Protein Tyrosine Kinase*
2. C0065344| *Lymphocyte Specific Protein Tyrosine Kinase p56(lck)*
3. C0109317| *EphB2 Receptor*
4. C0117718| *fibroblast growth factor receptor 3*
5. C0138965| *protein-tyrosine kinase c-src*
6. C0169658| *Janus kinase 1*
7. C0169661| *Janus kinase 2*
8. C0290067| *Platelet-Derived Growth Factor alpha Receptor*
9. C0290068| *Platelet-Derived Growth Factor beta Receptor*
10. C0907648| *Ephrin Receptor EphB1*
11. C0915156| *Ephrin Receptor EphA8*
12. C1259418| *MERTK protein, human*
13. C1333408| *EPHA4 protein, human*
14. C1333409| *EPHB3 protein, human*
15. C1333410| *EPHA2 protein, human*
16. C1334392| *LTK protein, human*
17. C1370509| *EPHA1 protein, human*
18. C1504624| *KDR protein, human*

3.6 “patient education plans” (degree 18) <no change from last year>

All eighteen cases should be suppressed because they are specific kinds of “patient education plans”. Their concepts are

1. **C0549081| Patient Education Plans: Activities**
2. **C0549082| Patient Education Plans: Bowel Elimination**

3. **C0549083** | Patient Education Plans: Circulation
4. **C0549084** | Patient Education Plans: Coping
5. **C0549085** | Patient Education Plans: Health Behavior
6. **C0549086** | Patient Education Plans: Immunology
7. **C0549087** | Patient Education Plans: Medications and Blood Products
8. **C0549088** | Patient Education Plans: Metabolism
9. **C0549089** | Patient Education Plans: Nutrition
10. **C0549090** | Patient Education Plans: Physical Regulation
11. **C0549091** | Patient Education Plans: Respiration
12. **C0549092** | Patient Education Plans: Role Relationship
13. **C0549093** | Patient Education Plans: Safety
14. **C0549094** | Patient Education Plans: Self-Care
15. **C0549095** | Patient Education Plans: Sensation, Pain and Comfort
16. **C0549096** | Patient Education Plans: Tissue Integrity
17. **C0549097** | Patient Education Plans: Urinary Elimination
18. **C0549098** | Patient Education Plans: Pre- or Intra- or Post-Procedure

3.7 “emergency” (degree 15) <no change from last year>

Except for ‘Emergency Situation’ and ‘Bale out’, the remaining cases should be suppressed because they are specific kinds of “emergency”. The concepts involved in this ambiguity are

1. C0013956 | Emergency Situation
2. C0175673 | Bale out
3. **C1546399** | Encounter Admission Source - emergency
4. **C1546844** | Visit Priority Code - Emergency
5. **C1547144** | Specialty Type - Emergency
6. **C1552231** | Clinical Nurse Specialist - Emergency
7. **C1553500** | Act Code - emergency
8. **C1555975** | Registered Nurse - Emergency
9. **C1561583** | Patient Class - Emergency
10. **C1561584** | Certification patient type - Emergency
11. **C1561585** | Level of Care - Emergency
12. **C1561586** | Consent Bypass Reason - Emergency
13. **C1561587** | Referral category - Emergency
14. **C1561588** | Admission Type - Emergency
15. **C1561589** | Consent Non-Disclosure Reason - Emergency

3.8 “none” (degree 14)

Except for ‘None’, the remaining cases should be suppressed because they are specific kinds of “none”. The concepts involved in this ambiguity are

1. C0549184 | None
2. **C1546509** | none - TableRules
3. **C1547191** | none - ResponseLevel
4. **C1550083** | None - EntityCode
5. **C1550437** | None - Sequencing
6. **C1551387** | None - ContainerSeparator
7. **C1553523** | none - SubstanceAdminSubstitution

8. **C1556146| None - Relationship**
9. **C1556147| None - Eligibility Source**
10. **C1556148| None - Action Taken in Response to the Event**
11. **C1556150| None - Observation Value**
12. **C1556151| None - Language Proficiency**
13. **C1556152| None - Additive/Preservative**
14. **C1706277| None Device Component**

3.9 “active” (degree 12)

Except for ‘Active’ and ‘Active brand of pseudoephedrine-triprolidine’, the remaining cases should be suppressed because they are specific kinds of “active”. Suppress ‘Active brand of pseudoephedrine-triprolidine’ (MetaMap only) because it is a brand name. The concepts involved in this ambiguity are

1. C0205177| Active
2. C0718247| *Active brand of pseudoephedrine-triprolidine*
3. **C1547419| ActStatus - active**
4. **C1553875| Concept Status - Active**
5. **C1561507| EditStatus - Active**
6. **C1561508| Managed Participation Status - active**
7. **C1561509| Role Status - active**
8. **C1561510| Entity Status - active**
9. **C1561511| Document Storage - active**
10. **C1561512| Document Storage Status - Active**
11. **C1561513| Immunization Registry Status - Active**
12. **C1706449| Active Control**

3.10 “ec 2.7.1.-” (degree 12) <no change from last year>

All Enzyme Commission (EC) numbers (strings beginning “ec <integer>.”) are suppressed by MetaMap because they represent classes of enzymes and are consequently highly ambiguous.

1. C0108836| *CDC7 protein, human*
1. C0108855| *CDK2 protein, human*
1. C0217310| *GRK5 protein, human*
1. C0258733| *GRK6 protein, human*
1. C0259367| *PCTAIRE Protein Kinase 1*
1. C0659150| *CHEK1 protein, human*
1. C0673406| *GPRK7 protein, human*
1. C1333180| *Cyclin-Dependent Kinase 10*
1. C1333735| *GPRK2L protein, human*
1. C1333738| *G Protein-Coupled Receptor Kinase Family*
1. C1337052| *PAK6 protein, human*
1. C1447440| *CDK3 protein, human*

3.11 “not applicable” (degree 12)

Except for ‘not applicable’, the remaining cases should be suppressed because they are specific kinds of “not applicable”. The concepts involved in this ambiguity are

1. C1272460| not applicable
2. **C1546968| No Information - not applicable**
3. **C1547280| Production Class Code - Not Applicable**
4. **C1549103| Administrative Sex - Not applicable**
5. **C1609491| Patient Class - Not Applicable**
6. **C1610044| Derived specimen - Not Applicable**
7. **C1610595| Identity May Be Divulged - Not applicable**
8. **C1611147| CWE statuses - Not applicable**
9. **C1619691| Expanded yes/no indicator - not applicable**
10. **C1705112| Potency Not Applicable**
11. **C1705113| Dosage Form Not Applicable**
12. **C1705512| Route of Administration Not Applicable**

3.12 “ar” (degree 11)

Suppress ambiguous form(s) (MetaMap only) because they are abbreviatory. The concepts involved are

1. *C0003504| Aortic Valve Insufficiency*
2. *C0003761| Country of Argentina*
3. *C0003790| Arkansas*
4. *C0051755| Amphiregulin*
5. *C0332284| Arising in*
6. *C0559546| Adverse reactions*
7. *C1367578| AR gene*
8. *C1447749| AR protein, human*
9. *C1514768| Recombinant Amphiregulin*
10. *C1704903| AREG wt Allele*
11. *C1705240| AR wt Allele*

3.13 “patient” (degree 11)

Except for ‘Patients’, the remaining cases should be suppressed because they are specific kinds of “patient”. The concepts involved in this ambiguity are

1. C0030705| Patients
2. **C1550655| Specimen Type - Patient**
3. **C1578478| Role Class - patient**
4. **C1578479| Role Code - Patient receipt**
5. **C1578480| Role Code - Patient specimen**
6. **C1578481| Mail Claim Party - Patient**
7. **C1578483| Report source - Patient**
8. **C1578484| Relationship modifier - Patient**
9. **C1578485| Specimen Source Codes - Patient**
10. **C1578486| Disabled Person Code - Patient**
11. **C1705908| Veterinary Patient**

3.14 “ADENINE 30 MG / ANTICOAGULANT CITRATE DEXTROSE SOLUTION / CITRIC ACID 209 MG / DEXTROSE 1.78 GM / DEXTROSE 2.42 GM / MANNITOL

825 MG / RED CELL PRESERVATION SOLUTION / SODIUM CHLORIDE 990 MG / SODIUM CITRATE 1.84 GM / SODIUM HYDROXIDE / SODIUM PHOSPHATE, MONOBASIC, MONOHYDRATE 155 MG / WATER FOR INJECTION, STERILE QS SOLUTION [ANTICOAGULANT]” (degree 10)

All cases should be suppressed because should be suppressed because they are specific kinds of “ADENINE 30 MG...”. The concepts involved in this ambiguity are

1. **C1737879| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3335**
2. **C1738147| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3445**
3. **C1738688| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3475**
4. **C1738689| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3330**
5. **C1740111| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3463**
6. **C1741532| ADENINE 30 MG / ANTICOAGULANT CITRATE DEXTROSE SOLUTION / CITRIC ACID 209 MG / DEXTROSE 1.78 GM / DEXTROSE 2.42 GM / MANNITOL 825 MG / RED CELL PRESERVATION SOLUTION / SODIUM CHLORIDE 990 MG / SODIUM CITRATE 1.84 GM / SODIUM HYDROXIDE / SODIUM PHOSPHATE, MONOBASIC, MONOHYDRATE 155 MG / WATER FOR INJECTION, STERILE QS SOLUTION [ANTICOAGULANT]**
7. **C1742071| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3464**
8. **C1742339| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3467**
9. **C1743294| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R3468**
10. **C1743295| ANTICOAGULANT CITRATE PHOSPHATE DEXTROSE SOLUTION WITH ADSOL 4R1488**

3.15 “kit” (degree 10)

Except for ‘Kit Component of Device’, ‘Drug Kit’ and ‘Kit device’, the remaining cases should be suppressed (MetaMap only) because they are abbreviatory. The concepts involved in this ambiguity are

1. *C0072470| Proto-Oncogene Protein c-kit*
2. *C0812225| Kit device*
3. *C0920288| C-KIT Gene*
4. *C1416655| KIT gene*
5. *C1553450| Kit Code*
6. *C1690540| Kit Dosing Unit*
7. *C1704742| Kit Dosage Form*
8. *C1704888| KIT wt Allele*
9. *C1705212| Kit Component of Device*
10. *C1705213| Drug Kit*

3.16 “no” (degree 10)

Except for ‘no’ and No - yes/no indicator’, the remaining cases should be suppressed because they are specific kinds of “no”. Suppress ‘Norway’ (MetaMap only) because it is abbreviatory. The concepts involved in this ambiguity are

1. C0028423| *Norway*
2. C1298908| no
3. **C1546943| No - Event Seriousness**
4. **C1546946| No - Event Expected**
5. **C1546967| No - Identity May Be Divulged**
6. **C1548170| No - Release Information**
7. **C1549056| No - Expanded yes/no indicator**
8. **C1549062| No - Notify Clergy Code**
9. **C1549442| No - Assignment of Benefits**
10. C1549444| No - yes/no indicator

3.17 “radiology” (degree 10) <no change from last year>

Except for ‘Radiology Speciality’, ‘Diagnostic radiologic examination’ and ‘Radiology studies’, the remaining cases should be suppressed because they are specific kinds of “radiology”. The concepts involved in this ambiguity are

1. C0034599| Radiology Specialty
2. C0043299| Diagnostic radiologic examination
3. C0807679| Radiology studies
4. **C1405978| Encounter due to radiological examination**
5. **C1548000| Radiology Section ID**
6. **C1548429| radiology referral type**
7. **C1552284| Radiology Podiatrist**
8. **C1555923| Radiology Chiropractor (sic)**
9. **C1608525| Radiology - NUCCProvider Codes**
10. **C1610162| Radiology - Clinic/Center - NUCCProviderCodes**

3.18 “sports medicine” (degree 10) <no change from last year>

Except for ‘sports medicine specialty’, the remaining cases should be suppressed because they are specific kinds of “sports medicine specialty”. The concepts involved in this ambiguity are

1. C0038040| sports medicine specialty
2. **C1552285| Podiatrist - Sports Medicine**
3. **C1555741| Emergency Medicine - Sports Medicine**
4. **C1555748| Family Practice - Sports Medicine**
5. **C1555771| Internal Medicine - Sports Medicine**
6. **C1555800| Orthopedic Surgery - Sports Medicine**
7. **C1555844| Pediatrics - Sports Medicine**
8. **C1555849| Physical Medicine & Rehabilitation - Sports Medicine**
9. **C1555858| Preventive Medicine - Sports Medicine**
10. **C1555872| Psychiatry & Neurology - Sports Medicine**

3.19 “yes” (degree 10)

Except for ‘Yes (indicator)’ and ‘Yes - Yes/no indicator’, the remaining cases should be suppressed because they are specific kinds of “Yes”. The concepts involved in this ambiguity are

1. **C1298907| Yes - Presence findings**
2. **C1546945| Yes - Event Seriousness**
3. **C1546947| Yes - Event Expected**
4. **C1546969| Yes - Identity May Be Divulged**
5. **C1548171| Yes - Release Information**
6. **C1549060| Yes - Expanded yes/no indicator**
7. **C1549065| Yes - Notify Clergy Code**
8. **C1549443| Yes - Assignment of Benefits**
9. C1549445| Yes - Yes/no indicator
10. C1705108| Yes (indicator)