SNODOG GLOSSARY
PART 1: INTRODUCTION

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SNODOG GLOSSARY
PART 1
INTRODUCTION

The SNODOG Glossary is used by the DOE-supported life-span beagle studies to describe medical observations in a standardized format. It is an adaptation of the human medical glossary, SNOMED, which lists 107,165 terms. Each of the five laboratories, Argonne National Laboratory, the Inhalation Toxicology Research Institute, the Pacific Northwest Laboratory, the University of California at Davis, and the University of Utah, has selected an appropriate subset from the published SNOMED glossary and added beagle and research-specific terms. The National Radiobiology Archives is the coordinator of these enhancements, and periodically distributes SNODOG to the respective laboratories. Information donated by Colorado State University and Oak Ridge National Laboratory has been translated to SNODOG and is available in a standardized format.

This document describes the origins and structure of the SNODOG codes, explains code usage at each participating institution, and presesents a usage frequency tabulation of the terms for neoplasia. A diskette or magnetic tape containing 15,641 SNODOG codes and translations is available on request.

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Scope and Purpose

This document is designed for the database manager and the scientist who will be managing or coding medical observations. It is also designed for the scientist analyzing coded information. The document includes: an overview of the NRA and the SNODOG glossary, a discussion of hardware requirements, a review of the SNODOG code structure, and printed lists of the 4,770 terms which have been used at least once. Instructions for obtaining electronic copies of the glossary and for nominating additional terms are provided.

Software Not Provided

It is beyond the purview of this document to provide data entry software for using the SNODOG glossary. The active users have developed their own, hardware and software dependent, data entry procedures. It is assumed that future users of SNODOG will simply integrate the glossary into their database management system as a validation and translation table.

People who made it possible

This document represents the work of many individuals. Within the NRA, Sean Smith has provided software engineering, Earleen Ligotke provided editorial assistance, and Jonathan Prather provided up-to-date tables and illustrations. The key people associated with donations of coded information to the NRA are the database management specialists in the various laboratories: Victor Pieterzak and Clifton Burton at the University of California at Davis, Walt Angus at the University of Utah, Joe Diel and Kathy Garcia at the Inhalation Toxicology Research Institute, and most importantly, Don Doyle at Argonne National Laboratory, who collaborated in the design of the NRA information structure.

How to Acknowledge the Archives

Please include the following in all publications containing information from the National Radiobiology Archives.

Publication Technique

This document was assembled electronically using WordPerfect software on a personal computer. The body text is printed in proportional spaced, scalable, GC Times fonts, and appendices and illustrations of computer output are shown in non-proportional spaced Letter Gothic or Courier fonts. The camera-ready copy was printed on a LaserJet III.

This document describes the history and current status of the SNODOG glossary and presents printed reports of terms in active use and magnetic versions of the entire glossary. The SNODOG glossary is used in the DOE-supported life-span beagle studies to describe medical observations in a standardized format. It is an adaptation of the human medical glossary, SNOMED. Each of the five laboratories using this coding system has added beagle and research-specific terms to the published SNOMED glossary. The National Radiobiology Archives (NRA) is the coordinator of these enhancements and periodically distributes SNODOG to the respective laboratories.

What is the SNODOG Glossary?

The SNODOG glossary is a standardize hierarchical list of biomedical codes and translations. Each 7 character code is accompanied by a 60 character translation. There are 15,641 codes in SNODOG; 4,770, which have been used at least once in the beagle studies, are presented in a limited distribution companion document, "SNODOG Glossary: Usage of Terms". A subset of that document, describing termonology related to neoplasia, is included in this report. The code structure and usage at each of the laboratories are described in detail in subsequent chapters.

What is the NRA?

The NRA is a comprehensive effort to gather, organize, and catalog original data, representative specimens, and supporting materials related to significant radiobiology studies. The NRA can provide researchers with information for analyses which compare or combine results of the DOE-supported research and other studies and with materials for analysis by advanced molecular biology techniques. The NRA concentrated initially on studies of beagle dogs exposed to ionizing radiation at Argonne National Laboratory (ANL), the Inhalation Toxicology Research Institute (ITRI), the Pacific Northwest Laboratory (PNL), the University of California at Davis (DAVIS), and the University of Utah (UTAH). Rodent studies, primarily those conducted at Oak Ridge National Laboratory (ORNL) and at ANL are being added. The NRA will also be receiving a donation of information from the life-span study of beagle dogs conducted at Colorado State University (CSU).

The NRA uses a three-task approach to the challenge of organizing material from diverse sources: Information Systems, Document Archives, and Specimen Archives. The microcomputer-based NRA **Information Systems** include: experimental design documentation, animal does-effect summaries, laboratory-specific detailed databases, bibliographic citations, and an inventory of the documents and specimens. The NRA works closely with database managers at the participating laboratories to ensure that electronic information is accurately translated into the NRA format. The initial donation to the NRA **Document Archives** is a collection of reprints and other materials supporting the book *Radioactivity and Health, A History* by J. Newell Stannard. This collection has

now been expanded to include the supporting scientific documentation from the DAVIS life-span study. The NRA **Specimen Archives** has tissue specimens and histopathology blocks from more than 1000 dogs donated by DAVIS. The specimens are organized and housed in a protected environment. These databases and archives are maintained through bar-code- readable labels.

Computer database technology is essential to integrating such a broad and diverse collection of information. The NRA Information Systems has developed several interrelated databases, each of which follows the relational model. There are three major databases: the Dose-effects Summary, the Collection Inventory, and the Bibliography. These are commonly referred to as the SUMMARY, INVENTORY, and BIBLIOGRAPHY databases and are illustrated in the NRA Distributed Access package. In addition, the Information Systems contains many detailed database tables. These are copies of laboratory-specific files translated from various computers and information management systems to the microcomputer environment and a common database management system.

The Life-Span Studies

The development of the Atomic Bomb and the discovery of radioactive fission products prompted numerous studies of the health effects of these new nuclides. It was soon realized that rodents were acceptable for short term studies of acute effects but did not live long enough to manifest slow growing tumors expected to develop in the bones and lungs of people contaminated with radioactive materials. Therefore, the US Atomic Energy Commission made a far-reaching commitment to the support of life-span radiation-effects studies in a relatively long-lived animal, the beagle dog. Roy Thompson, in *Life-Span Effects of Ionizing Radiation in the Beagle Dog*, tabulated 48 studies which were initiated between 1952 and 1983 as part of a comprehensive plan to investigate the long term effects of relatively low doses of radionuclides. These studies involved over 5000 dogs in 5 laboratories. The unprecedented scope of these studies necessitated thorough planning of the data collection and storage process since the animals tended to live longer than the tenure of the investigators.

A Typical Study Lasted 15 to 20 Years

Each laboratory maintained a closed colony of pure-bred beagles. At the start of a typical study, juveniles would be randomly selected and assigned to dose groups. Each animal would be thoroughly characterized by physical examination, hematological and radiographic analysis. The animals would be exposed to the radionuclide, typically by injection or inhalation, and pre and post exposure dosimetry measurements would be recorded. The animals were then subject to frequent clinical observation, including weighing and palpation, often monthly, routine physical examinations by a veterinarian, usually semi-annually, and prompt, state-of-the-art medical treatment for unusual conditions. This period of observation and clinical care often lasted 10 to 15 years. At death, the animal was comprehensively examined. Tissues were sampled for radioactive analysis, and for histopathological examination.

Observations and measurements were typically recorded on pre printed 8.5 by 11 inch forms and filed in clinical folders. A typical folder of a 12 year old dog

is over an inch thick. Computational techniques for storage and analysis of this information were developed independently at each laboratory. Computer

hardware and software environments differed as did the project management commitment to the level of detail to be stored electronically.

Status of the Life-Span Studies

The studies are now almost complete, ITRI is the only laboratory with living animals. The studies are being summarized, compared, and statistically analyzed. The SNODOG glossary, described in this document, facilitates comparison of clinical and pathological observations at the 5 institutions. It provides both a standardized nomenclature and a hierarchical classification scheme.

NRA Use of SNODOG

A major task of the NRA is to provide information donated by several institutions in a common format. Some of the major laboratories had selected the SNOMED coding format and used it extensively to describe pathologists' findings and clinical observations. As beagle-specific terms were added, it became apparent that an additional code character was needed; thus the SNODOG glossary was developed. The NRA also selected this coding format, and routinely translates information coded in other systems to SNODOG.

The NRA DOSE-EFFECTS database contains summarized information. The codes for the effects categories are stored as special NRA codes in SNODOG.

Hardware

The SNODOG glossary may be implemented directly on any IBM® PS/2, AT or fully compatible computer configured with either a 5-1/4 inch or 3-1/2 inch high density floppy disk drive. A minimum of 1.4 megabytes of available on-line disk storage is necessary to install it as a Paradox® table. A minimum of 700 kilobytes of disk storage is necessary for the ASCII, comma delimited, version.

The SNODOG glossary is also maintained as a VMS file on a DEC VAX cluster, and could easily be made available on 9-track or 8mm computer tape for other VAX users.

The NRA will provide assistance to users who operate on other computing environments.

Operating System Independent

The glossary may be installed under any modern computer operating system. The user may import it into any database management system or word processing software. It is assumed that most users will import it as a table in a relational database management system. The table will have two fields, code and translation. It may be used to validate or translate codes stored in other tables.

ASCII Punched Card Images

One form of ASCII file which the NRA can supply is punched card images, fixed format records with no delimiters. Typical records are shown below.

```
M720000Hyperplasia
M720010Hyperplasia, focal
M720020Hyperplasia, multifocal
M720030Hyperplasia, diffuse
M720040Hyperplasia, disseminated
M720050Hyperplasia, atypical
M720070Hyperplasia, partial
M720090Hyperplasia, precancerous
```

ASCII Comma Delimited

The NRA can also supply the Glossary as an ASCII comma delimited file as shown below.

```
"M720000","Hyperplasia"
"M720010","Hyperplasia, focal"
"M720020","Hyperplasia, multifocal"
"M720030","Hyperplasia, diffuse"
"M720040","Hyperplasia, disseminated"
"M720050","Hyperplasia, atypical"
"M720070","Hyperplasia, partial"
"M720090","Hyperplasia, precancerous"
```

Paradox® Database Table

The NRA Information Systems were developed in Paradox®, a relational database management product of Borland International. The NRA SNODOG glossary may be installed directly as a Paradox® table by licensed owners.

Please use a photo copy of this form to request an electronic copy of the SNODOG glossary.

NATIONAL RADIOBIOLOGY ARCHIVES

SNODOG GLOSSARY REQUEST

Requestor:

Media: _____ DOS 3.5 inch diskette
_____ DOS 5.25 inch diskette
_____ VMS 9 track tape
_____ VMS 8mm tape
_____ Other:

Format: _____ Paradox® Table
_____ ASCII Card Images
_____ ASCII Comma Delimited

Mail or FAX to: Dr. Charles R. Watson P7-82
National Radiobiology Archives
Pacific Northwest Laboratory
Richland, Washington 99352

Phone: 509 376 3483 FAX: 509 376 4533

Physical Maintenance

The master copy of the SNODOG glossary is maintained on an IBM® PS/2 at PNL. A backup copy is stored on off-line optical diskette. A parallel copy is stored on a VAX computer, which uses 8mm tape backup.

Logical Maintenance

The SNODOG glossary is dynamic; terms are added periodically in response to requests or to accommodate translation of donated data sets. Proposed additions are reviewed by the Archives staff and consulting pathologists or veterinarians. The goals of the review are:

. to insure consistent terminology,

. to insert terms at appropriate places in the SNOMED hierarchy,

. and to avoid definition of synonymous terms with different codes.

Proposing New Terms

Use the form on the following page to nominate terms for addition to the SNODOG glossary.

Please use a photo copy of this form to request changes or additions to SNODOG.

NATIONAL RADIOBIOLOGY ARCHIVES	
SNODOG GLOSSARY UPDATE REQUEST	
Proposed Code	*Medical Terminology*

Mail or FAX completed request to:

Dr. Charles R. Watson, P7-82
Director, National Radiobiology Archives
Pacific Northwest Laboratory
Richland, Washington 99352

Telephone: 509-376-3483   FAX: 509-376-4533

Lumpers *vs* **Splitters**

The recording of clinical and pathological observations presents a classic dilemma to the investigator. Should one operate with a restricted vocabulary and lump observations into a finite number of categories, or should one encourage very precise splitting of observations into sub-categories. For example, should one record "Lung Tumor" or "Metastatic Adenocarcinoma of the Left Diaphragmatic Lung Lobe"? This "lumping" vs "splitting" question was approached differently at each laboratory. It will be shown that SNODOG provides a common framework for both approaches.

Natural Language Systems

Medical research involves detailed observation of the patient(s) and subsequent analysis of health effects. The classic approach was to collect voluminous notes in the course of the study, then draw conclusions based on review of them. The notes were intended for use by the researcher, who would draw most of the conclusions from his/her memory. Such a natural language approach to record keeping was instrumental in advances in knowledge such as the development of the small pox vaccine, or defining proper temperatures for pasteurization of various food-stuffs, or confirming that mosquitos spread yellow fever. These scientific advances were primarily the product of a single investigator (Jenner, Pastur, Gorgas).

In the modern era of scientific teamwork, natural language record keeping is of limited value. The meaning of a observation made by one person may not be clear to another. The spelling of words may differ. The terminology may evolve over the course of the study.

Nevertheless, attempts have been made to computerize natural language medical record keeping. PNL adopted such an approach in the 1960's. All data collection forms had extensive space for comments which were keypunched and stored on the computer. The clinical observations were entirely natural language comments. In the 1970's there was sufficient record volume to warrant development and analysis of retrieval techniques. The results were disappointing, not because of limitations in computing hardware as might be suspected, but because of spelling differences and variations in how similar conditions were reported. For example, a search of the database for pneumonia produced fewer "hits" than expected. It was found that many animals with pneumonia were reported as having a fever. The clinical records were converted to coded records in the late 1970's.

Detailed clinical observations or pathology reports are useful in obtaining a clear picture of the health profile of an individual patient or experimental animal, but it is difficult to compare individuals without summarizing the observations. The reduction of observations to standardized terminology and/or codes is necessary

if comparisons are to be made by various investigators. One can understand the health record of an individual experimental animal, but how should the results be classified?

Classification Systems

The earliest modern medical classification scheme was used for the London Bills of Mortality (1700) which tabulated childhood mortality in 14 categories. In the nineteenth century, hierarchical systems were in use; the Second International Statistical Congress adopted a scheme with 139 groupings under 5 general headings. These were revised about every 10 years culminating in the Bertillon system of the early twentieth century which had 161 titles and was adopted by the American Public Health Association. The Bertillon system has been expanded by the World Health Organization into the International Classification of Diseases (ICD) and its American amplification, the ICDA. The ICD and ICDA use numeric codes (3 digits plus decimals) and define 671 categories of disease, 182 categories of external causes of injury, and 187 categories for classification of injures according to the nature of the lesion.

The goal of such classification systems is statistical analysis, thus the aim is to define a sufficiently limited number of categories to permit meaningful analysis while allowing enough categories to distinguish meaningful differences.

Standardized Nomenclatures

A standard nomenclature is essential for communication of observational information between individuals. For example, will investigator A understand that when investigator B says "Lower respiratory tract" that means the same thing as investigator C, who says: "Larynx, trachea, bronchi and lungs"? Will a statistician comparing two studies realize that a cyst may be described as a: retention cyst, simple cyst, bartholin gland cyst, nabothian cyst, parovarian cyst, fimbrial cyst, simple bone cyst, unicameral bone cyst, spermatocele of the epididymis, spermatocele of the rate testis, or hydatid of Morgagni, depending on the anatomical location of the cyst and medical training of the observer?

The SNODOG glossary provides the standardized nomenclature for recording the observations. The synonyms published in the SNOMED glossaries provide guidance to those doing the coding.

Single *vs.* Multi-Axis Coding Systems

The ICD approach is called a single axis coding scheme, one code describes the disease or injury. This simplified method of obtaining incidence statistics is not sufficient for describing the course of clinical treatment or involvement of various parts of the body in the disease process. Furthermore, the code categories tend to be favor lump rs rather than splitters.

These classification systems accept diagnoses in both narrow and broad groupings. Coding is easy, but retrieval is imprecise. A record room ICDA-8 code retrieval study is likely to include many cases in which the investigator is not interested, but which were coded properly and retrieved under the same number. It was long recognized that a multi-axial system would allow more precise coding and retrieval. The earliest such systems were bi-axial, having codes for the anatomical location and the observation.

This chapter presents a brief review of the modern medical coding systems.

SNDO

SNODOG traces its structure to the Standard Nomenclature of Diseases and Operations (SNDO) published under the leadership of the New York Academy of Medicine in 1932. SNDO was the result of four years of committee meetings under the leadership of Dr. George Baehr. The initial edition established the convention of coding observations based on topography and etiology classification codes. SNDO allowed 3 digits for topography and 3 for etiology. The glossary went through several editions and printings; the American Medical Association assumed sponsorship in 1942 with publication of the third edition. The fifth edition, in 1961, included a coding scheme for diseases.

SNVDO

The American Veterinary Medical Association (AVMA) adapted SNDO to the specific needs of veterinary practice through the establishment of a committee on Nomenclature of Diseases and Vital Statistics of Domestic Animals in 1938. A Preliminary report, "Topographic Classification and Etiologic Categories" was published in 1955. The intent was to provide a classification basis for a definitive standard nomenclature. In practice, the classification was accepted as a nomenclature system. This lead to the development of many specialized clinical nomenclature systems which were incompatible.

The Epizoology Section of the National Cancer Institute and the College of Veterinary Medicine at Michigan State University produced the first edition of SNVDO, the Standard Nomenclature of Veterinary Diseases and Operations in 1964. This was done in conjunction with the fifth edition of SNDO published by the AMA. William Priester was responsible for the promotion, field testing, and revision of SNOVDO. He published several coding supplements and a revised edition in the 1970's. Typical SNVDO codes are shown below.

TYPICAL SNVDO USES	
CODE	TRANSLATION
1361-1000.2	Skin of Neck - Abscess
1361-8104.F	Skin of Neck - Squamous Cell Carcinoma
136-16	Skin of Neck and Shoulder - Biopsy
272-31	Muscles of neck - Injection
2721-3410.0	Lateral neck muscles - Local anesthetic

SNOP

The Systematized Nomenclature of Pathology (SNOP), first published in 1965 by the American College of Pathologists, expanded on the coding concepts of SNDO by including additional characters and axes: The SNOP coding system has four axes, Topography, Morphology, Etiology, and Function. The codes are 5 characters, a letter and 4 numbers. SNOP was perhaps the first successful adaptation of digital computing to the field of medicine. An important feature of SNOP is the insistence that all codes use the same number (5) of characters. SNOP codes are usually used in pairs. That is, topography is typically associated with a morphology, etiology or function code.

TYPICAL SNOP USES	
CODE	*TRANSLATION*
T0224	Skin of Neck
M4174	Abscess
M8073	Squamous cell carcinoma, nos

SNOMED

In order to be useful to specialists in fields other than pathology, the SNOP concept was expanded into SNOMED, a systematized multi-axial nomenclature of medically useful terms published in 1979. SNOMED terms are hierarchically organized where possible and are derived from the basic categories of SNOP. Three axes were added so that clinical medicine could be included: Disease, Procedure, and Occupation. As with SNOP, the axis is identified by the prefix letter T,M,E,F,D,P, or O. Within an axis, 5 character numeric codes are assigned in a hierarchical manner. The codes contain a legacy from punch card computer input, X and Y are valid as well as the digits 0 through 9.

TYPICAL SNOMED USES	
CODE	*TRANSLATION*
T02300	Skin of Neck
T02301	Skin of laryngeal prominence
M41740	Abscess, NOS
M80703	Squamous cell carcinoma

SNOVET SNOVET is a micro-glossary, or subset, of SNOMED terms applicable to veterinary medicine published by the American Veterinary Medical Association in 1985. The authors of SNOVET selected appropriate terms and added many animal-specific terms, inserting them into the SNOMED numeric hierarchy in the gaps left purposefully for such use. For example, humans do not have tails or get distemper.

TYPICAL SNOVET USES	
CODE	TRANSLATION
T02300	Skin of Neck
M41740	Abscess
M80703	Squamous cell carcinoma
TY0215	Muzzle (SNOVET specific, not found in SNOMED)

SNODOG

In the late 1980s, the SNODOG glossary was developed by the author while on assignment to DOE headquarters. It integrates these diverse approaches. Since DAVIS and PNL had expanded the SNOMED/SNOVET codes to a total of seven characters, SNODOG is likewise based on a seven characters, an axis defining letter and six character code. A master tape was made, containing selected terms from SNOMED and every term from SNOVET (with a zero appended) and the beagle-specific terms with a sequence number (1, 2, 3, ...) appended. This tape was distributed to the laboratories, in 1988, and is the standard for information exchange between them and the National Radiobiology Archives. The SNODOG glossary is maintained and coordinated by the National Radiobiology Archives; it is revised and distributed periodically as new terms are added.

SNODOG has fewer terms than SNOMED

SNODOG contains only 15,000 terms compared with over 100,000 in SNOMED because many SNOMED terms simply do not apply to animal research. Only about one third of the SNODOG terms have been used to describe research findings, the others are included in the glossary because they are closely related to those which have already been used and they may be useful in the future.

SNOMED	*SNODOG*	*in use*
107,308	15,641	4,770

Each laboratory has an electronic copy of the SNOMED glossary for reference. The SNODOG glossary is normally maintained as an on-line look-up table for software specific to each laboratory.

Standardized Translations

SNODOG terms are not strictly identical to corresponding SNOMED terms. Qualifiers such as "NOS" and "(T28...)" have been removed. The terminology for neoplasms has been standardized so that all primary tumors have the word "malignant" in their translation and all metastatic sites have the word "metastasis." The SNOVET convention of showing veterinary-specific terms in all capitals is ignored. All SNODOG translations appear in mixed upper and lower case.

Typical SNODOG Codes and Translations

The SNODOG glossary is simply a list of codes and translations that may be used in combination to describe medical observations. For example:

T021400	Skin of nose
T021401	Skin of muzzle
M580000	Atrophy
M580001	Atrophy, slight
M580003	Atrophy, marked
M807030	Squamous cell carcinoma {malignant} (epidermoid carcinoma)

Seven-Character Code

The SNODOG code is 7 characters, while the SNOMED codes are 6 characters. The seventh character was added for two reasons: first, it allows rapid identification of unique terms added by the NRA, and, second, it allows insertion of terms into logical places in the existing SNOMED hierarchy. SNODOG codes which are identical to those in SNOMED are given a value of "0" in the seventh character; codes unique to SNODOG have a number between 1 and 9 as the seventh character.

Character	Valid codes
1	T,M,E,F,D,P
2	0,1,2,3,4,5,6,7,8,9,X,Y
3	0,1,2,3,4,5,6,7,8,9,X,Y
4	0,1,2,3,4,5,6,7,8,9
5	0,1,2,3,4,5,6,7,8,9
6	0,1,2,3,4,5,6,7,8,9
7	0 indicates standard SNOMED code
7	1,2,3,4,5,6,7,8,9 indicates code unique to SNODOG

Comparison of SNOP, SNOMED, SNOVET, and SNODOG

Term	SNOP	SNOMED	SNOVET	SNODOG
Rib (NOS)	T1133	T10350	T10350	T103500
First rib	n/a	T10351	T10351	T103510
Thirteenth rib	n/a	n/a	n/a	T103631
Adrenal gland (NOS)	T9300	T93000	T93000	T930000
Adrenal capsule	T9303	T93030	T93030	T930300
Extracapsular area of adrenal	n/a	n/a	n/a	T930311
X-zone of adrenal gland	n/a	n/a	T93165	T931650
Malacia (Encephalomalacia)	M5440	M54400	M54400	M544000
Encephalomalacia, sclerotic	n/a	n/a	M54430	M544300
Inflammation	M4000	M40000	M40000	M400000
Inflammation, granulomatous	M4400	M44000	M44000	M440000
Lick granuloma	n/a	n/a	n/a	M440001

SNOMED and SNODOG Phrases

The axes of SNOMED may be combined to form coded thoughts or phrases. For example the coded phrase:

Topography	Etiology	Function	Morphology	Procedure
T810100			M800010	P110690

describes the removal of a lesion suspected of being malignant. These codes translate as:

```
T810100    topography:     Vaginal mucous membrane
M800010    morphography:   Neoplasm, uncertain whether benign or malignant
P110690    procedure:      Excision, complete, larger than 4cm/1 to 5 lesions
```

Information Qualifiers

SNOMED provides a 2 character code called the information qualifiers (IQ) which are used to modify a coded phrase. A few information qualifiers which have application to animal studies are:

IQ	Translation
AP	pathology diagnosis
BP	biopsy
CD	clinical diagnosis
CP	clinical problem
CX	cytology diagnosis
DO	daily observation
FD	final diagnosis
LD	laboratory diagnosis
MP	Master problem
ND	necropsy diagnosis
NP	no procedure
PD	physical diagnosis
RP	received procedure
SD	suspected diagnosis
SR	status resolved
TO	technicians observation
XD	x-ray diagnosis

Syntactic Links

SNOMED provides a 2 character code called the syntactic link (Link) which is used to link one or more phrases into coded paragraphs. A few syntactic links which have application to animal studies are:

Link	Translation
AΓ	and
AW	associated with
BT	between
CW	consistent with
DT	due to
FO	following
FW	for which
IN	in or of
PL	plus
NL	NO LINK or end of paragraph

Complete SNOMED Sentences

Combining the information qualifier (IQ) and syntactic link (Link) with the SNOMED multi axis codes allows one to code complete sentences.

IQ	Topography	Etiology	Function	Morphology	Procedure	Link
RP	T810100			M800010	P110690	NL

Translation:

```
             qualifier:  Received procedure, therapy or drug
T810100      topography:     Vaginal mucous membrane
M800010   morphography:     Neoplasm, uncertain whether benign or malignant
P110690      procedure:     EXCISION, COMPLETE, LARGER THAN 4CM/1 TO 5 LESIONS
                  link:  NO LINK
```

SNOMED and SNODOG Paragraphs

The SNOMED sentences may be combined to make a paragraph.

IQ	Topography	Etiology	Function	Morphology	Procedure	Link
TO	TY17000			M025700		FW
RP					P023000	PL
RP	T810100			M800010	P110690	PL
RP					P160000	PL
RP		E726000			P120000	AD
RP		E726600			P120000	PL
MP	T810100		F100501	M800010		NL

Translation:

```
               qualifier:  Technician's Observation
TY17000        topography:   Perineum, NOS
M0257u0        morphography:  Swelling, NOS
               link:  for which was done
               qualifier:  Received procedure, therapy or drug
P023000        procedure:   Physical examination, NOS
               link:  plus
               qualifier:  Received procedure, therapy or drug
T810100        topography:   Vaginal mucous membrane
M800010        morphography:  Neoplasm, uncertain whether benign or malignant
P110690        procedure:   Excision, complete, larger than 4cm/1 to 5 lesions
               link:  plus
               qualifier:  Received procedure, therapy or drug
P160000        procedure:   Closure by suture, NOS (-RHAPHY)
               link:  plus
               qualifier:  Received procedure, therapy or drug
E726000        etiology:   Penicillin, NOS
P120000        procedure:   Injection, NOS
               link:  and
               qualifier:  Received procedure, therapy or drug
E726600        etiology:   Benzyl penicillin NOS
P120000        procedure:   Injection, NOS
               link:  plus
               qualifier:  MASTER Problem
T810100        topography:   Vaginal mucous membrane
M800010        morphography:  Neoplasm, uncertain whether benign or malignant
F010501        function:    STATUS, RESOLVED
               link:  no link
```

Pathologists Observations

Pathologists observations are usually coded as simply Topography and Diagnosis, with the majority of the diagnosis codes being Morphology, and occasional use of the other axes. Pathologists do not typically code their observations in the complete sentence or paragraph style used by clinicians. The majority of coded records donated to the Archives are in this paired code form.

SNODOG coded pathologists observations

Topography Code	Diagnosis Code	Observation
T280000	M800130	Lung tumor
T771000	M401020	Inflamed prostate gland
T771000	M730610	Cystic hyperplasia of the prostate
T287801	M343010	Emphysema of the left cardiac lung lobe
T287801	M480510	Fibrosis of the left cardiac lung lobe
T710000	M531000	Nephrosis
T710200	M814030	Adenocarcinoma, left kidney
T280000	M116200	Radiation pneumonitis

Common need, different approaches

The SNOMED/SNOVET glossaries were adopted by the DOE laboratories performing long-term studies of beagle dogs at various stages of glossary completion and at various points in time. Each laboratory independently developed computational procedures for handling the codes, and each expanded the glossary to fit research-specific circumstances. For example, neither SNOMED nor SNOVET provided codes for more than two mammary glands, and since mammary tumors are rather common in the beagle, and since beagles have eight mammary glands, each laboratory developed a unique coding system to identify them.

SNOMED Fields are called Axes

The SNOMED glossary is divided into logical groups of terms, called axis. Each axes is identified by a single letter which is the first character in the SNOMED code. Medical observations are expressed as a multi-axis combination of codes.

In computer terminology, these axes would be called fields. Some computer realizations of SNOMED omit storage of the axis letter since it is implied by the position of the field in the record. The NRA policy is to expand implied axis codes and store them explicitly.

Axis Definitions

First Character	Axis Name	Description
T	TOPOGRAPHY	Detailed and structured nomenclature for parts of the body.
M	MORPHOLOGY	Hierarchical list of technical terms that describe or name pathological changes or processes occurring in cells, tissues, or organs.
E	ETIOLOGY	List of causes or causal agents of observed pathology.
F	FUNCTION	Normal and abnormal functions, functional states and physiologic units of the major organ systems
D	DISEASE	An organized list of classes of disease, complex disease entities and syndromes.
P	PROCEDURE	List of administrative, diagnostic, therapeutic and preventative procedures.
J	OCCUPATION (JOB)	"International Standard Classification of Occupations" NOT USED IN SNODOG

Topography Axis The TOPOGRAPHY axis is identified by a "T" as the first character of the code. The SNODOG glossary defines 4,736 topography terms, 2,254 of these occur in the records donated to the NRA. The second character (first number) of the code identifies the anatomical subdivision of the body as shown below.

SNODOG Code	Terms in SNOMED	Terms in SNODOG	Terms in Use	Description
T0xxxxx	1,056	1,068	509	General body topography; integumentary, hematopoietic and lymphatic systems
T1xxxxx	2,062	1,321	398	Musculoskeletal system and soft tissue
T2xxxxx	448	221	127	Respiratory system
T3xxxxx	192	93	61	Cardiovascular system
T4xxxxx	937	198	119	Cardiovascular system (continued)
T5xxxxx	443	313	204	Digestive system
T6xxxxx	380	231	153	Digestive system (continued)
T7xxxxx	357	192	106	Genitourinary systems and fetal structures
T8xxxxx	395	130	71	Genitourinary systems and fetal structures (continued)
T9xxxxx	100	80	55	Endocrine system
TXxxxxx	1,859	460	232	Nervous system and special sense organs
TYxxxxx	493	429	219	Topographic regions and cellular structures
Txxxxxx	8,722	4,736	2,254	Total topography terms

Morphology Axis   The MORPHOLOGY axis is identified by an "M" as the first character of the code. The SNODOG glossary defines 4,286 topography terms, 1,620 of these occur in the records donated to the NRA. The second character (first number) of the code identifies the type of abnormality as shown below.

SNODOG Code	Terms in SNOMED	Terms in SNODOG	Terms in Use	Description
M0xxxxx	383	227	86	General nonspecific morphology
M1xxxxx	1,264	280	53	Traumatic abnormality
M2xxxxx	803	72	30	Developmental malformation and abnormal product of conception
M3xxxxx	2,661	915	234	Mechanical abnormality
M4xxxxx	2,522	660	260	Inflammation and fibrosis
M5xxxxx	1,596	461	215	Degeneration, necrosis, deposition, dystrophy and atrophy
M6xxxxx	423	45	35	Chromosomal and cytologic alterations
M7xxxxx	1,450	437	208	Growth and maturation alteration
M8xxxxx	2,446	760	341	Neoplasms
M9xxxxx	2,167	429	158	Neoplasms (continued)
MXxxxxx	0	0	0	Not used
MYxxxxx	13	0	0	Not used
Mxxxxxx	15,728	4,286	1,620	Total morphology terms

**Special Meaning
of Character 6 of
the Morphology
Axis**

The sixth character of the MORPHOLOGY axis is used to identify the behavior of neoplasms. (Since the first character of the code is always the axis code letter, the SNOMED authors refer to the sixth character as the fifth digit.) Thus, one may inspect the sixth character of codes of the form "M8xxxxx" or "M9xxxxx" according to the following table.

Sixth Character	Uses	Description
0	170	Benign
1	123	Uncertain whether benign or malignant
2	105	Carcinoma, in-situ
3	237	Malignant, primary site
4	174	Malignant, with evidence of metastasis
5	0	Malignant, microinvasive
6	199	Malignant, metastatic site
7	10	Malignant, recurrent
8	0	Malignant, remission
9	165	Malignant, uncertain whether primary or metastatic site

Example Use of Character 6 of the Morphology Axis

In practice, sixth character codes 2, 4, 5, 7, and 8 are rarely used. Consider the following codes:

Code	Translation	Uses
M801100	Epithelioma, benign	16
M801101	Pilomatrixoma, benign	2
M801102	Epithelioma, basosquamous, benign	26
M801110	Epithelioma, benign,uncertain whether benign or malignant	0
M801120	Epithelioma, noninfiltrating	0
M801130	Epithelioma, malignant	1
M801140	Epithelioma, malignant w/evidence of metastasis	0
M801160	Epithelioma, malignant, metastatic site/secondary	0
M801190	Epithelioma, primary or metastasis?	0

Etiology Axis The ETIOLOGY axis is identified by an "E" as the first character of the code. The SNODOG glossary defines 2,074 etiology terms, 171 of these occur in the records donated to the NRA. The second character (first number) of the code identifies the class of etiologic causes or agents as shown below.

SNODOG Code	Terms in SNO-MED	Terms in SNO-DOG	Terms in Use	Description
E0xxxxx	48	9	4	General etiology
E1xxxxx	5,610	362	12	Bacterial and rickettsiae
E2xxxxx	2,948	189	11	Bacterial and rickettsiae (continued)
E3xxxxx	3,938	135	3	Viruses
E4xxxxx	6,930	458	27	Fungi, parasites, insects and animals
E5xxxxx	4,088	106	8	Chemicals - chemical elements - chemical products
E6xxxxx	2,646	31	3	Chemicals - chemical elements - chemical products (continued)
E7xxxxx	5,663	415	58	Drugs and biologicals
E8xxxxx	5,404	341	37	Drugs and biologicals (continued)
E9xxxxx	326	25	7	Physical agents
EXxxxxx	105	3	1	Diets, alcoholic beverages, smoking products and clothing materials
EYxxxxx	0	0	0	Not used
Exxxxxx	37,706	2,074	171	Total etiology terms

Function Axis

The FUNCTION axis is identified by an"F" as the first character of the code. The SNODOG glossary defines 3,309 function terms, 405 of these occur in the records donated to the NRA. The second character (first number) of the code identifies the type of function as shown below.

SNODOG Code	Terms in SNO-MED	Terms in SNODOG	Terms in Use	Description
F0xxxxx	411	90	46	General body function and dysfunction
F1xxxxx	7,573	397	40	Function and functional units of metabolism and the endocrine system
F2xxxxx	4,790	252	38	Function and functional units of metabolism and the endocrine system (continued)
F3xxxxx	1,200	105	19	Function and abnormal function associated with reproduction
F4xxxxx	3,464	171	7	Function and functional units of the immune system
F5xxxxx	1,832	121	11	Function and abnormal function of the hematopoietic system
F6xxxxx	2,160	518	53	Function and abnormal function of the digestive and urinary tracts
F7xxxxx	4,145	856	73	Function and abnormal function of the cardiovascular and respiratory systems
F8xxxxx	4,098	666	74	Function and abnormal function of the nervous and musculoskeletal systems
F9xxxxx	612	22	11	Function and abnormal function of the psyche and the sexual state
FXxxxxx	576	57	10	Function and abnormal function of the eye, ear, and throat
FYxxxxx	273	54	23	Environmental and forensic circumstances surrounding injury or death
Fxxxxxx	31,134	3,309	405	Total function terms

Disease Axis

The DISEASE axis is identified by a "D" as the first character of the code. The SNODOG glossary defines 311 disease terms, 159 of these occur in the records donated to the NRA. The second character (first number) of the code identifies the type of disease as shown below.

SNODOG Code	Terms in SNOMED	Terms in SNODOG	Terms in Use	Description
D0xxxxx	664	61	26	Infectious and communicable diseases
D1xxxxx	279	15	6	Metabolic and nutritional diseases and syndromes
D2xxxxx	253	19	14	Diseases and syndromes of the endocrine and reproductive systems
D3xxxxx	271	25	19	Complex diseases and syndromes of the skeletal system, skin and connective tissues
D4xxxxx	321	38	19	Complex disorders, syndromes and diseases of the hematopoietic and immune systems
D5xxxxx	246	1	0	Multiple system malformation syndromes and chromosomal diseases
D6xxxxx	244	40	23	Diseases and syndromes of the digestive and urinary tracts
D7xxxxx	260	37	23	Diseases and syndromes of the cardiovascular and respiratory systems
D8xxxxx	707	54	14	Diseases and syndromes of the nervous and muscular systems
D9xxxxx	1,672	0	0	Emotional, mental and sexual diseases and syndromes
DXxxxxx	217	9	8	Complex diseases and syndromes of the eye, ear, nose and throat
DYxxxxx	40	12	7	General category of clinical diseases and syndromes
Dxxxxxx	5,174	311	159	Total disease terms

Procedure Axis
The PROCEDURE axis is identified by a "P" as the first character of the code. The SNODOG glossary defines 924 procedure terms, 161 of these occur in the records donated to the NRA. The second character (first number) of the code identifies the type of procedure as shown below.

SNODOG Code	Terms in SNOMED	Terms in SNODOG	Terms in Use	Description
P0xxxxx	667	40	12	General medical and administrative procedures
P1xxxxx	617	179	64	Operations and anesthesia procedures
P2xxxxx	559	233	22	Laboratory procedures
P3xxxxx	334	72	14	Laboratory procedures
P4xxxxx	709	169	10	Laboratory procedures
P5xxxxx	296	28	1	Hematopoietic, oncologic, immunologic and dermatologic procedures
P6xxxxx	219	25	6	Digestive and urinary tract procedures
P7xxxxx	337	23	7	Cardiovascular and respiratory system procedures
P8xxxxx	1,025	8	1	Neuromusculoskeletal system and special sense organ procedures
P9xxxxx	909	0	0	Procedures related to the psyche, sex and reproduction
PXxxxxx	553	61	17	Radiography, radiation therapy, nuclear medicine and ultrasonic procedures
PYxxxxx	969	86	7	Nursing, home care and disability evaluation procedures
Pxxxxxx	7,194	924	161	Total procedure terms

**LEHRMED
developed at
DAVIS**

The first DOE supported laboratory to adopt SNOMED was the University of California at DAVIS at the Laboratory of Energy Related Health Research (LEHR). A commitment to full implementation of the SNOMED "paragraph" approach was made in the mid 1970's. A computer, specifically dedicated to the life-span beagle studies was acquired, and a computer tape copy of the basic SNOMED glossary was obtained.

Beagle specific terms were inserted in the SNOMED glossary by a team of medical terminology specialists. The DAVIS SNOMED implementation team elected to add a sixth character to the code to accommodate the insertions while preserving the hierarchical structure. The resulting glossary was called LEHRMED.

**Example
LEHRMED
Records**

LEHRMED records as stored:

```
66F11B  9222  3928  P  CEC  BO  T040001  2  4  0  MB14000     NL       00           +M  2  00  0   0  0
66F11B  9555  4261  P  WLS  BO  T549100              M400000     PO  01  00           +M  0  11  0   0  0
66F11B  9555  4261  P  WLS  BO                       H768500     NL  01  01
66F11B  9865  4571  P  CEC  NO                       MB67100     NL       00
6NG068  10601 4559  P  WLS  BO  TY87201  2  0  0  K334100     NL       00
68H03X  10642 4565  P  WLS  BO  T028401  2  0  4  MB41000     NL       00
68H03X  10642 4565  P  WLS  BO  T012000              NL  01  00
68H03X  10642 4565  P  WLS  BO  TY70000  1  0  0              NL  01  01
68H03X  10994 4917  P  MRC  BO  T081800  2  0  0  MB07030     NL       00           +M  0  00  8  0  0
68107X  10916 4798  P  WLS  BO  T505000              MB14030     NL       00           +M  0  47  0   0  0
69G05Z  10437 4027  P  WLS  BO  T025070              MB14000     NL       00                                    ICL  7
69G05Z  10437 4027  P  WLS  BO  T024100  1  0  0  NB10000     NL       01
69G05Z  10437 4027  P  WLS  BO  TY11001  1  0  0  K334100     NL       02           +M  0  23  0   0  0
69G05Z  10636 4226  P  WLS  BO  TXX8100              M400000     NL       00           +M  0  00  1  1  3
69G05Z  10636 4226  P  WLS  BO  TXX8100              M727100     NL       01           +M  0  00  1  2  0
59G05Z  10636 4226  P  WLS  BO  T028401  1  0  0  M400000     NL       02           +M  0  24  0  3  3
69105Y  10054 3590  P  WLS  BO  T025070              MB14000     NL       00                                    ICL  2
70C08Z  11020 4355  P  MRC  BO  T025070              MB14000     NL       00                                    ICL  6
70005C  10727 4036  P  WLS  BO  T040001  1  5  0  MB14000     NL       00           +M  2  00  0   0  0
70H05A  10257 3449  P  CEC  BO  T040001  2  2  0  MB14000     NL       00           +M  2  00
```

LEHRMED records tabulated with column headings:

ID ANUM	PROJECT DATE ANMOD1	AGE	REC TYPE	INIT	IQ	TOPO	TMOD1	TMOD2	TMOD3	MORPH	ETIO	FUNC	DISEASE	PROCED	LINK	SETNUM	SEQNUM	TL	TLS	DRUG	ROUTE	TD	LOC	APLUS	APMOD1	APMOD2	APMOD3	APMOD4	APMOD5
66F11B	9222	3928	P	CEC	BO	T040001	2	4	0	MB14000					NL		00				+M	2				00	0	0	0	0
66F11B	9555	4261	P	WLS	BO	T549100				M400000					PO	01	00				+M	0				11	0	0	0	0
66F11B	9555	4261	P	WLS	BO					H768500					NL	01	01													
66F11B	9865	4571	P	CEC	NO					MB67100					NL		00													
68G068	10601	4559	P	WLS	BO	TY87201	2	0	0	K334100					NL		00													
68H03X	10642	4565	P	WLS	BO	T028401	2	0	4	MB41000					NL		00													
68H03X	10642	4565	P	WLS	BO	T012000									IN	01	00													
68H03X	10642	4565	P	WLS	BO	TY70000	1	0	0						NL	01	01													
58H03X	10994	4917	P	MRC	BO	T081800	2	0	0	MB07030					NL		00				+M	0				00	8	0	0	0
68107X	10916	4798	P	WLS	BO	T505000				MB14030					NL		00				+M	0				47	0	0	0	0

LEHRMED records formatted one field per line:

```
ID            : 66F11B
PROJECT_DATE :   9222
AGE           :  3928
REC_TYPE      : P
INIT          : CEC
IQ            : BD
TOPO          : T040001
TMOD1         : 2
TMOD2         : 4
TMOD3         : 0
MORPH         : M814000
ETIO          :
FUNC          :
DISEASE       :
PROCED        :
LINK          : NL
SETNUM        :
SEQNUM        : 00
TL            :
TLS           :
DRUG          :
ROUTE         :
TD            :
LOC           :
APLUS         : +M
APMOD1        : 2
APMOD2        : 00
APMOD3        : 0
APMOD4        : 0
APMOD5        : 0
ANUM          :
ANMOD1        :

ID            : 66F11B
PROJECT_DATE :   9555
AGE           :  4261
REC_TYPE      : P
INIT          : WLS
IQ            : BD
TOPO          : T549100
TMOD1         :
TMOD2         :
TMOD3         :
MORPH         : M400000
ETIO          :
FUNC          :
DISEASE       :
PROCED        :
LINK          : PO
SETNUM        : 01
SEQNUM        : 00
TL            :
TLS           :
DRUG          :
ROUTE         :
TD            :
LOC           :
APLUS         : +M
APMOD1        : 0
APMOD2        : 11
APMOD3        : 0
APMOD4        : 0
APMOD5        : 0
ANUM          :
ANMOD1        :
```

**POMR, a
subsequent
development at
DAVIS**

The SNOMED files at LEHR were developed on a computer system using a network database model. The data base management software was strong on data entry and validation and routine reporting, but lacked modern tools for *ad hoc* queries. Consequently, at the conclusion of the data entry phase, when it was time to analyze the studies, the situation was frustrating. Furthermore, it was not easy to distinguish between a clinician's evaluation and a technician's observation.

Therefore, the clinical file and SNOMED records were reviewed by a clinical veterinarian, Russ White, and summary records were created. These Problem Oriented Medical Records (POMR) define each significant clinical episode in the dog's life. The POMR summary uses codes which could be translated to combinations of SNODOG codes. Two related tables, COMP and DIAG contain SNODOG coded descriptions of the complaint and its diagnosis.

**Example POMR
Summary Records**

The following is an example of POMR summary records as fields in a database table.

```
       ID: DD05F12
   EVNTNO: 09
    CMPCD: 750225
   CMPSRC: F
      CMP: MAMM.NODULE L2 GLAND
     DXCD: 750228
   DXCODE: A
       DX: L2=BENIGN MIXED MAMM. TUMOR
   STATCD: 750310
 STATCODE: A
     DISP: A
    DXSRC: B
   TOPMAJ: M
   TOPMIN:      1
      MOR:     29
```

The POMR summary records are highly coded. One representation of the decoded records is:

```
DOG ID   EVENT
------   ----------------------------------------------------------------
DD05F12  09   Complaint: 750225 Physical Exam (annual) -> MAMM.NODULE L2 GLAND
              Diagnosis: 750228 Definitive -> L2=BENIGN MIXED MAMM. TUMOR
                 Status: 750310 RESOLVED -> Discharged to outside pens
                Summary: TOPOGRAPHY CATEGORY: MAMMARY
                         MORPHOLOGY CATEGORY: TUMOR (BENIGN)

DD05F12  10   Complaint: 751011 Clincial Pathology (diagnostic) -> ELEVATED BUNS FOR
                                                                    A FEW MONTHS
              Diagnosis: 770327 Definitive -> NEPHROSCLEROSIS,DIFFUSE,SEVERE,BILATERAL
                 Status: 770327 UNRESOLVED -> Retained in the hospital
```

```
                    Summary: TOPOGRAPHY CATEGORY: KIDNEY
                             MORPHOLOGY CATEGORY: SCLEROSIS

    DD05F12  11   Complaint: 760415 Observed Abnormality -> CONVULSION
                  Diagnosis: 760415 Definitive -> EPILEPSY,IDIOPATHIC
                     Status: 760415 RESOLVED -> Retained in the hospital
                    Summary: TOPOGRAPHY CATEGORY: BRAIN (NOS)
                             MORPHOLOGY CATEGORY: HYPERACTIVITY

    DD05F12  12   Complaint: 770324 Physical Exam (diagnostic) -> MAMM.NODULE POST.
                                                                  L4 GLAND
                  Diagnosis: 770324 Definitive -> L4=ADENOCARCINOMA
                     Status: 770327 UNRESOLVED -> Retained in the hospital
                    Summary: TOPOGRAPHY CATEGORY: MAMMARY
                             MORPHOLOGY CATEGORY: TUMOR (MALIGNANT)
```

Example POMR COMP and DIAG Records

The associated COMPlaint and DIAGnosis records provide details in a format suitable for query on the SNODOG codes:

POMR Complaint

ID	EVENT SEQ	TOP	TOPMOD	AXIS	SL	AUX1	AUX2	AUX3
DD05F12	09-1	T040001	220	M030100	NULL	NULL	NULL	NULL
DD05F12	10-1	T0X5000	NULL	F104631	NULL	NULL	NULL	NULL
DD05F12	11-1	NULL	NULL	F871000	NULL	NULL	NULL	NULL
DD05F12	12-1	T040001	240	M030100	NULL	NULL	NULL	NULL

Translations of TOP and AXIS SNODOG codes of these 4 COMPlaint records:

    Mammary gland, left, first; Nodule
    Serum; Blood Urea Nitrogen (BUN), increased level
    Status epilepticus
    Mammary gland, left, first; Nodule

POMR DIAG

ID	EVENT SEQ	TOP	TOPMOD	AXIS	SL	AUX1	AUX2	AUX3
DD05F12	09-01	T040001	220	M894000	NULL	NULL	NULL	NULL
DD05F12	10-01	T710000	300	M490201	NULL	000230	NULL	NULL
DD05F12	11-01	NULL	NULL	D857100	NULL	NULL	NULL	NULL
DD05F12	12-01	T040001	240	M814030	NULL	NULL	NULL	NULL

Translations of TOP and AXIS SNODOG codes of these 4 DIAGnosis records:

    Mammary gland, left, first; Mixed tumor (Pleomorphic adenoma), benign
    Kidney; Fibrosclerosis
    Tonic-clonic seizure syndrome
    Mammary gland, left, first; Adenocarcinoma, malignant

SNOMED Coding the ANL Beagle studies

The research community at Argonne favored a restricted vocabulary. Terms from the SNOMED publications were entered in the electronic glossary manually. A committee reviewed each addition. The philosophy of the committee was that researchers should be "lumpers" rather than "splitters". The ANL SNOMED coded vocabulary has 654 Topographies and 471 Morphologies. Coded records use the two field philosophy - a topography and a morphology code, with some qualification codes such as left vs right, define each observation.

The record management team at ANL applied this restricted SNOMED glossary to many areas. In addition to pathology, SNOMED was used in the breeding, cbc, chromosome measurement, clinical, clinical chemistry, cytopathology, animal history, necropsy, photography, surgical, and body weight database tables.

Example ANL SNOMED Records

The following gross necropsy records illustrate typical ANL usage of SNOMED. The topography code is stored without the leading "T", and the Right-Left code qualifies the topography. The three columns on the right were added by the NRA staff and serve to translate the dog identification number and SNOMED codes to archives standard formats.

```
2/02/93                          ANL Nec 03                                Page   1

ANL   SEQ                                                    NRA       NRA      NRA
DOGNO  NO TOP    MOR   RL COMMENTS              IDATE   RFA   DOG_ID    TOPO     MORP
-----  -- -----  ----- -- --------              -----   ---   -------   -------  -------
  10  1  02300 M80000 R  EPIDERMOID CYST         2/04/86       A000010 T023000 M800000
  10  2  35000 M46700 X  ENDOCARDIUM    AORT     2/04/86       A000010 T350000 M467000
  10  3  35000 M46700 X  ENDOCARDIUM.   AV       2/04/86       A000010 T350000 M467000
  11  1  02410 M38000 L                          2/04/86       A000011 T024100 M380000
  11  2  02540 M37000 X                          2/04/86       A000011 T025400 M370000
  11  3  02620 M38000 L                          2/04/86       A000011 T026200 M380000
  11  4  02800 M37000 X                          2/04/86       A000011 T028000 M370000
  11  5  07000 M55430 X                          2/04/86       A000011 T070000 M554300
  11  6  10740 M91800 X  OSTEOGENIC SARCOMAS.TWO 2/04/86       A000011 T107400 M918000
  11  7  28000 M40000 X                          2/04/86       A000011 T280000 M400000
  11  8  32000 M36100 X                          2/04/86       A000011 T320000 M361000
  11  9  32400 M43000 L                          2/04/86       A000011 T324000 M430000
  11 10  56000 M43000 X  CIRRHOSIS               2/04/86       A000011 T560000 M430000
  11 11  56000 M50080 X  NODULAR DEGEN. AND HYPL 2/04/86       A000011 T560000 M500800
  11 12  59000 M36100 X                          2/04/86       A000011 T590000 M361000
  11 13  59000 M37000 X                          2/04/86       A000011 T590000 M370000
  11 14  63000 M32700 X                          2/04/86       A000011 T630000 M327000
  11 15  63010 M38000 X                          2/04/86       A000011 T630100 M380000
  11 16  64020 M37000 X  PETE TO LARGE           2/04/86       A000011 T640200 M370000
  11 17  67010 M40000 X                          2/04/86       A000011 T670100 M400000
  11 18  71000 M36100 X                          2/04/86       A000011 T710000 M361000
  11 19  75010 M37000 X                          2/04/86       A000011 T750100 M370000
  11 20  77100 M37000 X                          2/04/86       A000011 T771000 M370000
  11 21  91000 M33400 X                          2/04/86       A000011 T910000 M334000
  11 22  93100 M71000 X                          2/04/86       A000011 T931000 M710000
  11 23  96000 M36100 X                          2/04/86       A000011 T960000 M361000
  11 24  X7800 M37000 X  1 TO 5                  2/04/86       A000011 TX78000 M370000
  11 25  X7800 M50080 X  1 TO 5                  2/04/86       A000011 TX78000 M500800
  12  1  01000 M38000 X  DECUBITAL               2/04/86       A000012 T010000 M380000
  12  2  03000 F01790 X                          2/04/86       A000012 T030000 F017900
  12  3  10600 M91800 X  OSTEOGENIC SARCOMA      2/04/86       A000012 T106000 M918000
  12  4  10600 M91800 X  OSTEOGENIC SARCOMA      2/04/86       A000012 T106000 M918000
  12  5  14700 M58000 X                          2/04/86       A000012 T147000 M580000
  12  6  X7700 M01380 X                          2/04/86       A000012 TX77000 M013800
  12  7  X7700 M01380 X         .                2/04/86       A000012 TX77000 M013800
  12  8  X7700 M58000 X                          2/04/86       A000012 TX77000 M580000
  12  9  X7700 M58000 X                          2/04/86       A000012 TX77000 M580000
```

ANL Rodent Coding system   Rodent pathology at ANL was coded using a restricted vocabulary and ANL specific mnemonic codes. When these records are donated to the NRA, a code translation table will be constructed, similar to that for ORNL.

Example ANL Rodent Records   Examples of ANL rodent pathology records will be included in future editions of this document.

Translation of ANL Rodent Codes to SNOMED   When the ANL rodent records are donated to the NRA, a translation table will be developed so that ANL mnemonic codes may be expressed as SNODOG codes. That table will be described in future editions of this document.

SNOMED Coded Beagle Pathology at UTAH	Researchers at the University of Utah developed an electronic SNOMED glossary by keyboard entry of terms from the published glossary. The focus of the Utah effort was strictly on pathology, no other records were coded. Beagle specific terms were added, following Armed Forces Institutes of Pathology suggestions whenever possible.

The UTAH SNOMED codes contain an explicit "/" between the last two characters of the morphology codes for neoplastic conditions. These were removed by the NRA data archivists. A few UTAH SNOMED codes contain blanks which were changed to zero at the NRA when they were converted to 7 position SNODOG codes.

Difference between UTAH and NRA Neoplasm Codes		
Utah SNOMED	NRA SNODOG	*Translation*
P3085	P308500	Surgical pathology consultation on slides, comprehensive
M9120/0	M912000	Hemangioma, benign
T03000	T030000	Subcutaneous tissue

Example SNOMED Coded Pathology at UTAH	The initial data structure at the University of Utah attempted to follow the SNOMED philosophy of using multiple records to tell a story. However, retrieval difficulties and hardware/software changes prompted a change to a single record per observation with multiple fields for multiple topographies and diagnoses as illustrated below.

The Utah SNOMED records allow several topography and diagnosis codes per record. The IQ and Link fields are not used. In the following example, only the first 2 of 7 topography fields and the first 3 of 7 morphology fields are shown because the others were not used for this animal.

SNOMED records for UTAH dog M001P00:

TOPO 1	TOPO 2	MORPH 1	MORPH 2	MORPH 3
P3085				
T03000		M9120/0		
T06200	T11710	M75300		
T07000		M9061/6	M72030	M37006
T08160		M9061/6		
T08200		M9061/6	M57001	M9062/6
T08250		M9062/6	M9061/6	M57511
T08330		M9061/6	M57001	
T08480		M9061/6	M50000	M37006
T08490		M9061/6		
T28000		M9061/6		
T28975		M9061/6		
T38000		M49131	M50100	
T54910		M47161		
T56000		M9062/6	M9061/6	
T56260		M72001		
T61100		M8071/3		
T71040		M55500		
T77100		M72000	M47161	
T78000		M9061/3		
T78000	T78110	M8640/1		
T89500	T98000	M26500		
T97800		M72000		
T98000		M70800		

One format of translation of these records is shown below

Translated SNOMED records for UTAH dog M001P00

P3085   Pathology examination and report complete.

T03000   Subcutaneous Tissue,NOS
M9120/0   Hemangioma,Benign

T06200   Myelopoietic Tissue,NOS
T11710   Femur,NOS
M75300   Hypoplasia,NOS

T07000   Spleen
M9061/6   Seminoma,Metastatic Site
M72030   Hyperplasia,Nodular,NOS
M37006   Hemorrhage,Localized
M57511   Hemosiderosis,Endogenous

T08160   Submandibular Lymph Node
M9061/6   Seminoma,Metastatic Site

T08200   Posterior Cervical Lymph Node
M9061/6   Seminoma,Metastatic Site
M57001   Pigmentation,Focal
M9062/6   Seminoma,Anaplastic type,Metastatic Site

T08250   Retropharyngeal Lymph Node
M9062/6   Seminoma,Anaplastic type,Metastatic Site
M9061/6   Seminoma,Metastatic Site
M57511   Hemosiderosis,Endogenous

T08330   Bronchial Lymph Nodes

M9061/6	Seminoma,Metastatic Site
M57001	Pigmentation,Focal
T08480	Aortic Lymph Node
M9061/6	Seminoma,Metastatic Site
M50000	Degeneration,NOS
M37006	Hemorrhage,Localized
T08490	Lumbar Lymphnode
M9061/6	Seminoma,Metastatic Site
T28000	Lung,NOS
M9061/6	Seminoma,Metastatic Site
T28975	Rt Diaphragmatic Lobe of Lung,NOS
M9061/6	Seminoma,Metastatic Site
T38000	Mitral Valve,NOS
M49131	Fibrous Thickening,Focal
M50100	Degeneration,Mucoid
T54910	Gingiva, NOS
M47161	Inflammatory Cell Infiltration, Chronic, Focal
T56000	Liver, NOS
M9062/6	Seminoma,Anaplastic type,Metastatic Site
M9061/6	Seminoma,Metastatic Site
T56260	Hepatocyte
M72001	Hyperplasia,Focal
T61100	Tonsil,NOS
M8071/3	Epidermoid Carcinoma,Keratizing Type,Primary Site
T71040	Interstitial tissue of Kidney
M55500	Calcinosis,NOS
T77100	Prostate, NOS
M72000	Hyperplasia,NOS
M47161	Inflammatory Cell Infiltration, Chronic, Focal
T78000	Testis, NOS
M9061/3	Seminoma,Primary Site
T78000	Testis, NOS
T78110	Sertoli Cell
M8640/1	Sertola Cell Carcinoma,uncertain P.S.or M.S.
T89500	Branchial Cleft,NOS
T98000	Thymus,NOS
M26500	Cyst Embryonic
T97800	All Parathyroid Glands
M72000	Hyperplasia,NOS
T98000	Thymus,NOS
M70800	Involution,NOS

**Example
Narrative
Pathology
Report**

In addition to the coded records, narrative reports are available for the Utah dogs. The pathology report for the dog described above is shown below.

SUMMARY

M1PO was found dead at 4446 days age and 4003 days post-injection. The immediate cause of death was bleeding from a ruptured splenic hyperplastic nodule. Major clinical factors were: unilateral orchiectomy because of a malignant seminoma; chronic gingivitis, periodontal disease, and premature tooth loss; and a severe systolic bruit. The hematology was characterized by a gradually increasing Sed. rate beginning 78 months post-injection, but was otherwise unremarkable. This dog was also used in a study to evaluate diurnal variation in the cellular elements of the peripheral blood which indicated a significant late evening rise in the PMN's. The relatively limited blood chemistry studies did not indicate appreciable changes. Significant findings at autopsy were: massive hemorrhage into the peritoneal cavity; a widely metastatic malignant seminoma; a minimal prostatitis; hemorrhage and nodular hyperplasia of the spleen; a Sertoli cell tumor in the remaining testicle; chronic gingivitis; and an epidermoid carcinoma of the tonsil.

GNT

**SNOP Coded
Beagle Pathology
at PNL**

Pathologist's observations at PNL were coded using the SNOP glossary, based on keyboard entry of published terms. This effort started before the adoption of SNOMED or SNODOG for these studies; clinical observations, described below, were coded using SNODOG. The glossary of SNOP terms used at PNL is shown in Appendix I.

**Example PNL
SNOP Records**

Typical PNL SNOP records, for dog 755, are shown below.

```
                                          G T
                               T        T R U
            ANI  S             Y TOPO Y DIAG A M L
   TRT      MAL  E DAYS    OBS P CODE P CODE D O A    HIST  SEQ
   CODE     NO   X POST DATE INT E KEY E KEY E R B YR NO    NO

   OCON 00755 M 4343 841221 GED M 2849 M 0001 0 0 1 82 01000  72
   OCON 00755 M 4343 841221 GED M 2875 M 3432 2 0 1 82 01000  73
   OCON 00755 M 4343 841221 GED M 2876 M 4815 1 0 1 82 01000  75
   OCON 00755 M 4343 841221 GED M 2877 M 0001 0 0 1 82 01000  76
   OCON 00755 M 4343 841221 GED M 2136 M 4310 1 0 1 82 01000  77
   OCON 00755 M 4343 841221 GED M 1133 M 7211 3 0 1 82 01000  78
   OCON 00755 M 4343 841221 GED M 5100 M 4003 4 0 1 82 01000  79
   OCON 00755 M 4343 920619 GED M X200 F 7801 4 0 1 82 01000  80
   OCON 00755 M 4343 920619 GED M 7100 F 1075 6 0 1 82 01000  82
```

One style of translating these records is:

```
Dog number: 00755  Sex: M   Days post exposure: 4343   Histo: 18201000071
Type of Observation: Microscopic

T2848 LUNG, RIGHT CARDIAC          M4100 INFLAMMATION, ACUTE, NOS        10
T2849 LUNG, RIGHT DIAPHRAGMATIC    M0001 NORMAL MORPHOLOGIC STRUCTURE    00
T2875 LUNG, LEFT APICAL            M3432 EMPHYSEMA, VESICULAR            20
T2876 LUNG, LEFT CARDIAC           M4815 FIBROSIS, DIFFUSE              10
T2877 LUNG, LEFT DIAPHRAGMATIC     M0001 NORMAL MORPHOLOGIC STRUCTURE    00
T2136 NASAL TURBINATES             M4310 INFLAMMATION, CHRONIC, FOCAL    10
T1133 RIB                          M7211 EXOSTOSIS, NOS                  30
T5100 MOUTH, NOS                   M4003 ULCER, NOS                      40
TX200 BRAIN, NOS                   F7801 EPILEPSY                        40
T7100 KIDNEY, NOS                  F1075 UREMIA                          60
```

**SNOVET Coded
Clinical
Observations**

Coding of the PNL clinical observations was initiated in the early 1980's, and was patterned after the LEHRMED system. Prior to that time, clinical observations were keypunched as natural language comments appended to fixed field identifiers of dog number, observation date, etc. An electronic copy of the LEHR glossary was obtained, and a data entry system established.

The SNOMED paragraph approach was used, and the concept of a "Master

Problem" was used to summarize the backlog of natural language comments. SNOMED paragraphs were allowed to cover as little as one observation or could extend to several observations spread over a year or more. The paragraph ended when the master problem was resolved.

Example PNL Clinical Records

Typical PNL clinical observations are shown below. The records are logically linked to form sentences and paragraphs as described in the SNODOG structure chapter.

PNL Clinical Records as stored:

```
00001690113001F0032   EXPO378C335B      TO XX8320144000                      FW01
00001690113002F0032   EXPO378C335B      RP                             023000CW01
00001690113003F0032   EXPO378C335B      MP XX8320144000010501                NL01
00001730517001F0032   EXPO536H493G      LD                  202630           FW01
00001730517002F0032   EXPO536H493G      RP                             023000PL01
00001730517003F0032   EXPO536H493G      RP                             281400PL01
00001730517004F0032   EXPO536H493G      RP                             415100PL01
00001730517005F0032   EXPO536H493G      RP                             407800PL01
00001730517006F0032   EXPO536H493G      RP                             682011PL01
00001730517007F0032   EXPO536H493G      RP 0X0000       118200          402000PL01
```

PNL Clinical Records as reported:

ANIMAL NO	DATE	SEQ NO	SEX	EXPT NO	EXPT GRP	TRT GRP	AGE IN DAYS	AGE IN YEARS	DAYS POST	YEARS POST	HISTO NO	IQ	TOPO	MORPH	FUNC	ETIO	DISEASE	PROCED	LINK	LINK SEQ
1	690113	1	F	32		EXPO	3783	10.4	3352	9.2		TO	XX8320	144000					FW	1
1	690113	2	F	32		EXPO	3783	10.4	3352	9.2		RP						023000	CW	1
1	690113	3	F	32		EXPO	3783	10.4	3352	9.2		MP	XX8320	144000	010501				NL	1
1	730517	1	F	32		EXPO	5368	14.7	4937	13.5		LD			202630				FW	1
1	730517	2	F	32		EXPO	5368	14.7	4937	13.5		RP						023000	PL	1
1	730517	3	F	32		EXPO	5368	14.7	4937	13.5		RP						281400	PL	1
1	730517	4	F	32		EXPO	5368	14.7	4937	13.5		RP						415100	PL	1
1	730517	5	F	32		EXPO	5368	14.7	4937	13.5		RP						407800	PL	1
1	730517	6	F	32		EXPO	5368	14.7	4937	13.5		RP						682011	PL	1
1	730517	7	F	32		EXPO	5368	14.7	4937	13.5		RP	0X0000		118200			402000	PL	1

PNL Clinical Records as Interpreted:

```
 1 690113   1 F   32     EXPO  3783 (10.4 )  3352 (  9.2)        TECH OBS
           T XX8320 Left lower eyelid
           M 144000 Wound, lacerated. NOS
FOR WHICH  (1)
           P 023000 Physical examination. NOS
CONSIST W/ (1)
           T XX8320 Left lower eyelid
           M 144000 Wound. lacerated. NOS
           F 010501 STATUS. RESOLVED
NO LINK    (1)


 1 730517   1 F   32     EXPO  5368 (14.7 )  4937 ( 13.5)        LAB DIAG
           F 202630 Alkaline phosphatase. increased level
FOR WHICH  (1)
           P 023000 Physical examination. NOS
PLUS       (1)
           P 281400 Blood cell profile with differential WBC count NOS
PLUS       (1)
           P 415100 Urinalysis. routine and microscopic NOS
PLUS       (1)
           P 407800 Bromsulphalein measurement (E-8111) NOS
PLUS       (1)
           P 682011 URINE COLLECTION TEST (24 HOUR)
PLUS       (1)
           T 0X0000 Blood. NOS
           F 118200 Glucose. NOS
           P 402000 Chemical measurement. quantitative. NOS
PLUS       (1)
```

Pathology Coding at ITRI

ITRI adopted the SNOMED coding approach to pathology in the late 1980's, and was able to build on the experience of the other laboratories.

A system was established as a hierarchal database using FOCUS software on a VAX computer. Five studies have been coded to date, around 500 dogs are complete. The SNODOG coding system was used in conjunction with narrative phrases. Thus, observations at ITRI are lumped into relatively few SNODOG code while the narrative phrases allow splitting within these categories. The following table shows both the SNODOG code and translation and the ITRI phrase used to describe the cause of death of several dogs.

SNODOG CODE	SNODOG TRANSLATION	ITRI NARRATIVE PHRASE
Dog 1:		
D750700	Clinical pneumonia	PNEUMONIA
M410000	Inflammation, acute	BRONCHOPNEUMONIA, ACUTE, SEPTIC
T279000	Terminal bronchiole and lung	LUNG, TERMINAL BRONCHIOLES
F790200	Aspiration, gastric contents	ASPIRATION PNEUMONIA
Dog 2:		
D633100	Disease of liver	LIVER DISEASE
M500000	Degeneration	DEGENERATION, MARKED
T560000	Liver	LIVER
M540010	Necrosis, focal	NECROSIS, FOCAL, MILD
DY03100	Neoplastic disease, benign	NEOPLASIA
M816100	Bile duct cystadenoma, benign	CYSTADENOMA, BILIARY, MULTIPLE
T561100	Intrahepatic bile duct	LIVER, BILE DUCT

The following example ITRI Medical History Review data entry form illustrates the use of narrative phrases in conjunction with SNODOG codes.

```
MEDICAL HISTORY REVIEW FOR LONGEVITY DOG STUDIES
                  Study: 38PUDRESPONS

Tattoo-    XXXX          Sex(F or M):  F        Birth Date:  72/123
First Exposure Date: 73/123                     Death Date:  77/123
Days after First Exposure:   1432               Age at Death:   1863
Mode of Death ( S,  D,  or E ):  E
Pathology Series Number: DA-007           Control(Y or N): N
Radionuclide: 238PU                        Particle Size: 3.00
Chemical Form: OXIDE


PRIMARY CAUSE OF DEATH
Diagnosis:   NEOPLASIA                            DCODE:  DY03300
Morphology:  OSTEOSARCOMA,  FIBROBLASTIC          MCODE:  M918230
Topography:  BONE,  VERTEBRA,  C4                 TCODE:  T105500
Function.                                         FCODE:
Metastasis(Y or N):  N
Site(s):

Date Detected:   77/123      Date of Last Normal  Exam.:  77/123
How Determined:  P           Radiation Related(Y, N or U):

CLINICAL SIGNS
Parameter:
Findings:   PAIN, CERVICAL

Date First Detected:      77/123       Days After Exposure:   1427
Resolved Date:                         Days Before Death:      5
Date of Last Normal  Exam.:  77/123
Comments:


MAJOR CONTRIBUTING DISEASE

Diagnosis:   NEOPLASIA                            DCODE:  DY03300
Morphology:  CARCINOMA, BRONCHIOLOALVEOLAR        MCODE:  M825030
Topography:  LUNG                                 TCODE:  T280000
Function:                                         FCODE:
Metastasis(Y or N): N
Site(s)=

Date Detected:   77/123      Date of Last Normal Exam.:
How Determined:  H           Radiation Related(Y, N or U):
Comments:
   1 ) THE BRONCHIOLOALVEOLAR CARCINOMA IS MICROSCOPIC.
   2 )
```

ORNL *ad hoc* Rodent Diagnosis Codes

Many radiobiology studies were conducted at Oak Ridge National Laboratory (ORNL) using rodents, usually mice, as the experimental animal. It was typical practice at ORNL that mnemonic codes be assigned *ad hoc* within each study as research interests dictated. One investigator might use "MAM" to indicate a mammary tumor, while another might prefer "TBST" to indicate tumor, breast.

Example ORNL Mice Records

Typical ORNL rodent records are comma delimited with the following fields:

number — animal

death (D= found dead, A= euthanized) — type of

codes for head and body — Completion

looked at — X = not

necropsy — G = gross

histopath complete — H =

(Peto code number 1 or 4, tumor code) — tumor 1

(Peto code number 1 or 4, tumor code) — tumor 2

... — tumor n

(Peto code number 1 or 4, tumor code) — status J

code — status P

code

There is one record per animal.

Example:

```
7001,A,687,GH,1TBST,4TOV,4THEP,J,P,
7002,D,758,GH,1TSAR,J,P,
7003,D,554,GH,1TSAR,4TOV,J,P,
7004,D,668,GH,4TOV,1THEP,J,P,
7005,A,596,GH,4LRCS,4THEP,1TSAR,4TOV,J,P,
7006,D,612,GH,4TTHYR,4TOV,1TSAR,4TPAN,J,P,
```

```
7007,D,770,GH,1TSAR,4TOV,J,P,
7008,D,506,GH,1TSAR,J,P,
7011,D,664,GH,1TOV,J,P,
7012,D,632,GH,1TBST,4THEP,4TOV,J,P,
7013,A,737,GH,1TOV,1TADRC,4THEP,J,P,
7014,A,815,GH,1TOV,4THEP,J,P,
7015,D,591,GH,4TLUNA,1THEP,4TOV,J,P,
7016,A,717,GH,1TSAR,4TOV,J,P,
7017,A,737,GH,1TSAR,1TOV,4THEP,J,P,
```

The tumor codes are variable in length (4 to 6 characters). The first character
is always a number (1 or 4) which is the Peto code for fatal (1) or incidental
(4). The alpha portion of the codes have a letter (L or T) to indicate leukemia
or tumor, then a code for location.

**ORNL mouse
codes translated
to SNODOG**

A team of researchers at Oak Ridge National Laboratory (ORNL) donated
records pertaining to 9,765 mice to the NRA. The NRA accessioning team
assigned a pair of SNODOG codes to each of the 70 ORNL mnemonic codes
used in this study. For example, TBST becomes T040000, M800030,
"Breast, Neoplasm, malignant". This attempt by the Archives effort to
standardize storage and retrieval of such observations is shown in Appendix
II.

**Standardized
Mnemonic
Codes**

Researchers at Colorado State University (CSU) developed a standardized
coding system independent of the DOE SNOMED approach. Angleton (1980)
described mnemonic codes and database management software used
extensively in the early years of the CSU studies. A mini-computer was
acquired, and an extensive suite of FORTRAN code was developed. The
focus of the database management activities was on statistical analysis.

Recently, the database was transferred to a micro computer using RBASE
database management software. The NRA is working with the CSU staff to
document the translation process for converting the CSU records to NRA
formats.

The NRA analysis of the frequency of usage of SNODOG terms in the information donated by the various laboratories is published in Part 2 of this series, "Usage of Terms". Due to its large page count, it is available only by request. It is primarily intended for the pathologist at each laboratory. For the general reader, the most interesting portion of that analysis is the neoplasia codes.

The report has 9 columns, defined below, and is divided into sections based on the axis.

column	heading	description
1	SNODOG CODE	The axis letter and 6 position code.
2	TRANSLATION	The 60-character translation of the code.
3	TIMES USED ANL	The frequency of use in the files donated to the NRA by Argonne National Laboratory.
4	TIMES USED CSU	The frequency of use in the files associated with 360 life-span control dogs donated to the NRA in 1992.
5	TIMES USED DAVIS	The frequency of use in the files donated to the NRA by the University of California at Davis.
6	TIMES USED ITRI	The frequency of use in the files at the Inhalation Toxicology Research Institute.
7	TIMES USED PNL	The frequency of use in the files donated to the NRA by the Pacific Northwest Laboratory.
8	TIMES USED UTAH	The frequency of use in the files donated to the NRA by the University of Utah.
9	TIMES USED TOTAL	The frequency of use in all the files donated to the NRA.

SNODOG CODE	TRANSLATION	<---------------TIMES USED-------------->					
		ANL	DAVIS	ITRI	PNL	UTAH	TOTAL
M800000	Neoplasm, benign	625	18				643
M800001	Atypical histiocytoma, benign		1				1
M800010	Neoplasm, uncertain whether benign or malignant	4.093	65	2	1.530	6	5.696
M800030	Neoplasm, malignant	5	8	1	232	3	249
M800060	Neoplasm, metastatic	6	982	2	8	43	1.041
M800062	Metastatic tumor, malignant, multiple				1		1
M800068	Embolus, tumor				3		3
M800069	Thrombus, tumor				34		34
M800071	Invasion		1				1
M800090	Neoplasm, primary or metastasis?				7	14	21
M800100	Tumor cells, benign				2		88
M800110	Tumor cells, uncertain whether benign or malignant				3		3
M800130	Tumor cells, malignant				91		91
M800133	Tumor cells, malignant, primary site				1		1
M800136	Tumor cells, malignant, metastatic site				1		1
M800236	Tumor cells, malignant, multiple metastatic sites				6		6
M801000	Epithelial tumor, benign				11		11
M801020	Carcinoma in-situ		6	1	1	4	12
M801030	Carcinoma, malignant	290	778	1	26	20	1.128
M801031	Ultimobrachial tumor, malignant		4				4
M801032	Carcinoma, complex, malignant			2			2
M801040	Carcinoma, w/evidence of metastasis			1			2
M801060	Carcinoma, metastatic		71	1	37	69	178
M801061	Carcinoma, metastatic, unknown origin		1				1
M801090	Carcinomatosis, primary or metastasis?		1			1	2
M801100	Epithelioma, benign		6	1	6		16
M801101	Pilomatricoma, benign		2				2
M801102	Epithelioma, basosquamous, benign		26				26
M801130	Epithelioma, malignant		1				1
M802030	Carcinoma, undifferentiated type, malignant	39	11		1	1	53
M802060	Carcinoma, undifferentiated type, malignant, metastatic site					5	5
M802130	Carcinoma, anaplastic type, malignant					1	1
M802140	Carcinoma, anaplastic type, w/evidence of metastasis						1
M803230	Spindle cell carcinoma, malignant		5				5
M804030	Tumorlet malignant, primary site				3		3
M804060	Tumorlet malignant, metastatic site					1	1
M805000	Papilloma, benign	382	64	1	92	32	577
M805001	Fibropapilloma, benign		38	10			48
M805002	Fibroplasia, benign		1				1
M805030	Papillary carcinoma, malignant	32	4		1	1	38
M805100	Verrucous papilloma, benign			1		1	2
M805200	Squamous cell papilloma, benign	14		2		16	118
M807020	Squamous cell carcinoma in-situ (epidermoid carcinoma in-sit		5		1	1	7
M807030	Squamous cell carcinoma, malignant (epidermoid carcinoma)	34	113	18	11	66	294
M807040	Squamous cell carcinoma, w/evidence of metastasis			1			3
M807060	Squamous cell carcinoma, metastatic (malignant epidermoid ca		5		26	26	57
M807090	Squamous cell carcinoma, primary or metastasis?					3	3
M807130	Squamous cell carcinoma, keratinizing type, malignant					6	6
M807160	Squamous cell carcinoma, keratinizing type, metastatic site					3	3
M807330	Squamous cell carcinoma, small cell, non-keratinizing, malig					3	3
M807360	Squamous cell carcinoma, small cell, non-keratinizing, metas					10	10
M807620	Squamous cell carcinoma in-situ w/ questionable stromal inva					1	1
M808120	Bowen's disease, non-infiltrating					57	57
M808260	Lymphoepithelial carcinoma malignant, metastatic site					16	16
M809000	Basal cell tumor, benign					1	10
M809010	Basal cell tumor, uncertain whether benign or malignant	3	21	1	5	1	31
M809030	Basal cell carcinoma, malignant	12	14	1	22	28	81
M809031	Basal cell epithelioma		14				14
M809400	Basosquamous adenoma, benign			1	2		3
M809430	Basosquamous carcinoma, malignant			1	1	2	4
M810000	Trichoepithelioma, benign	4	10	2	13	16	47
M810100	Trichofolliculoma, benign		2			4	6
M811000	Pilomatrixoma, benign (Calcifying epithelioma)			2	1	1	4
M812000	Transitional cell papilloma, benign	11				10	22
M812010	Urothelial papilloma, uncertain whether benign or malignant			1		1	2
M812020	Transitional cell carcinoma in-situ		9				9
M812030	Transitional cell carcinoma, malignant	27	62	1	18	48	163
M812040	Transitional cell carcinoma, w/evidence of metastasis			1			2
M812060	Transitional cell carcinoma, malignant, metastatic site/seco		4		55	132	191
M812090	Transitional cell carcinoma, primary or metastasis?				1		1
M812230	Transitional cell carcinoma, spindle cell type, malignant					1	1
M812260	Transitional cell ca, spindle cell type, metastatic site					1	1
M814000	Adenoma, benign	365	985	1	95	193	1.747
M814001	Basosquamous adenoma, benign		108		1		109
M814002	Adenoma, complex, benign			2	13		15
M814003	Adenoma, simple (AFIP 80812), benign						135
M814004	Adenoma, complex (AFIP 80813), benign						167
M814010	Bronchial adenoma, uncertain whether benign or malignant					17	17
M814012	APUD adenoma, uncertain if benign or malignant		2				2

SNODOG CODE	TRANSLATION	ANL	DAVIS	ITRI	PNL	UTAH	TOTAL
M814020	Adenocarcinoma, non-infiltrating		2				2
M814030	Adenocarcinoma, malignant	337	532	1	39	87	1,012
M814031	Adenocarcinoma, tubular, complex, malignant				1		1
M814032	Adenocarcinoma, complex, malignant			1	1		100
M814039	Adenocarcinoma, simple, malignant						91
M81403B	Bronchial adenoma, malignant						3
M814040	Adenocarcinoma, w/evidence of metastasis			1			4
M814042	Adenocarcinoma, complex, w/evidence of metastasis			6			7
M814049	Adenocarcinoma, simple, malignant, w/evidence of metastasis						7
M814060	Adenocarcinoma, metastatic site		51		41	185	278
M81406B	Bronchial adenoma, malignant, metastatic site						1
M814072	Adenocarcinoma, complex, malignant, w/recur post excision						1
M814090	Adenocarcinoma, primary or metastasis?					7	7
M814130	Scirrhous carcinoma (Scirrhous adenocarcinoma), malignant		4	1		2	7
M814140	Scirrhous carcinoma, w/evidence of metastasis			1			1
M814190	Scirrhous adenocarcinoma, primary or metastasis?					1	1
M814430	Adenocarcinoma, malignant, intestinal type		2			2	4
M814460	Adenocarcinoma, intestinal type, malignant, metastatic site					9	9
M814530	Carcinoma, malignant, diffuse type					2	2
M814560	Carcinoma, diffuse type, malignant, metastatic site					11	11
M814700	Basal cell adenoma, benign		4	1		1	7
M815000	Islet cell adenoma, benign	2	5	2	6	4	19
M815030	Islet cell carcinoma, malignant		8		1	9	19
M815060	Islet cell carcinoma, malignant, metastatic site					6	6
M815130	Insulinoma, malignant		1	1			2
M816000	Bile duct adenoma, benign	6		5	8	144	170
M816010	Bile duct adenoma, uncertain whether benign or malignant					18	18
M816030	Cholangiocarcinoma (Bile duct carcinoma), malignant	12	5	3	10	58	90
M816040	Cholangiocarcinoma, w/evidence of metastasis			3			4
M816060	Cholangiocarcinoma, malignant, metastatic site				24	85	109
M816100	Bile duct cystadenoma, benign			1		42	43
M816130	Bile duct cystadenocarcinoma, malignant					1	1
M817000	Liver cell adenoma, benign	1	124	1		2	129
M817010	Liver cell adenoma, uncertain whether benign or malignant					1	1
M817030	Hepatocellular carcinoma, malignant		28	1	6	9	47
M817060	Hepatocellular carcinoma, malignant, metastatiic site					26	26
M819000	Trabecular adenoma, benign					1	1
M821000	Adenomatous polyp, benign		1		3	3	7
M821100	Tubular adenoma, benign		11	4		1	17
M821102	Tubular adenoma, complex, benign			1			1
M821130	Tubular adenocarcinoma, malignant		31	1	4	1	37
M821132	Tubular adenocarcinoma, complex, malignant			1			1
M821140	Tubular adenocarcinoma, w/evidence of metastasis			1			1
M821142	Tubular adenocarcinoma, complex, w/evidence of metastasis			1			1
M821160	Tubular adenocarcinoma, malignant, metastatic site		1	1		4	6
M823030	Solid carcinoma, malignant		19	3	2		24
M823032	Solid carcinoma, complex (AFIP 80827), malignant			1			1
M823040	Solid carcinoma, w/evidence of metastasis			1			1
M824010	Carcinoid tumor, uncertain whether benign or malignant	1	10		2		13
M824030	Carcinoid tumor, malignant			1			1
M824040	Carcinoid tumor, malignant, w/evidence of metastasis			1			1
M825000	Pulmonary adenomatosis, benign					3	3
M825010	Pulmonary adenomatosis, uncertain whether benign or malignan					2	2
M825030	Bronchiolo-alveolar adenocarcinoma, malignant	14	1	1	87	50	160
M825040	Bronchiolo-alveolar adenocarcinoma, w/evidence of metastasis			1			2
M825060	Bronchiolo-alveolar adenocarcinoma, malignant, metastatic si				254	37	291
M825090	Bronchiolo-alveolar adenocarcinoma, primary or metastasis?					2	2
M825100	Alveolar adenoma, benign			4	9	5	18
M826000	Papillary adenoma, benign	37	52	7	3	15	121
M826002	Papillary adenoma, complex, benign			1			1
M826020	Papillary adenoma, non-infiltrating					1	1
M826030	Papillary adenocarcinoma, malignant	1	18	1	40	8	70
M826040	Papillary adenocarcinoma, w/evidence of metastasis			10			10
M826060	Papillary adenocarcinoma, malignant, metastatic site			1	119	2	122
M826110	Villous adenoma, uncertain whether benign or malignant					1	1
M826230	Villous adenocarcinoma, malignant					1	1
M826300	Tubulovillous adenoma, benign			1			1
M826302	Tubulovillous adenoma, complex, benign			3			3
M826330	Tubulovillous adenoma malignant, primary site			4			4
M826340	Tubulovillous adenoma malignant, contiguous spread			2			2
M827000	Chromophobe adenoma, benign		1	1	6	10	78
M827001	Chromophil adenoma, benign						42
M827010	Chromophobe adenoma, uncertain whether benign or malignant					1	1
M827030	Chromophobe carcinoma, malignant					3	4
M827060	Chromophobe carcinoma, malignant, metastatic site					1	1
M828000	Acidophil adenoma, benign						1
M829000	Oxyphilic adenoma, benign					2	2
M830000	Basophil adenoma, benign		10			1	15
M831230	Renal cell carcinoma, malignant		1				2

SNODOG codes which have been used in the Beagle life-span studies
MORPHOLOGY Axis sorted by SNODOG CODE

SNODOG CODE	TRANSLATION	ANL	DAVIS	ITRI	PNL	UTAH	TOTAL
M832030	Granular cell carcinoma, malignant					1	1
M832100	Chief cell adenoma, benign					1	1
M832300	Mixed cell adenoma, benign					2	2
M833000	Follicular adenoma, benign		71	1	12	44	179
M833010	Follicular adenoma, uncertain whether benign or malignant					1	1
M833030	Follicular adenocarcinoma, malignant		5	1	20	26	83
M833040	Follicular adenocarcinoma, w/evidence of metastasis			1			4
M833060	Follicular adenocarcinoma, malignant, metastatic site				18	22	40
M833130	Follicular adenocarcinoma, well differentiated type, maligna					1	1
M833230	Follicular adenocarcinoma, trabecular type, malignant					7	7
M833260	Follicular adenocarcinoma, trabecular type, metastatic site					13	13
M833300	Microfollicular adenoma (T-96...) benign			2			2
M833400	Macrofollicular adenoma, benign					1	1
M834010	Papillary and follicular adenoma, uncertain if benign or mal					1	1
M834030	Papillary and follicular adenocarcinoma, malignant						1
M835000	Nonencapsulated sclerosing carcinoma, benign					1	1
M837000	Adrenal cortical adenoma, benign		53	1	13	26	177
M837030	Adrenal cortical carcinoma, malignant		10	4	13	9	40
M837040	Adrenal cortical carcinoma, w/evidence of metastasis			4			5
M837060	Adrenal cortical carcinoma, malignant, metastatic site				48	16	64
M837100	Adrenal cortical adenoma, compact cell type, benign					2	2
M838000	Endometrial adenoma, benign						1
M838200	Perinal gland adenoma, benign				3		3
M838230	Perinal gland carcinoma, malignant, primary site				1		1
M839000	Skin appendage adenoma, benign	1		1	3	1	6
M840000	Sweat gland adenoma, benign				5	9	18
M840030	Sweat gland adenocarcinoma, malignant					4	6
M840060	Sweat gland adenocarcinoma, malignant, metastatic site				1		1
M840100	Apocrine adenoma, benign					3	4
M840130	Apocrine adenocarcinoma, malignant					3	3
M840160	Apocrine adenocarcinoma, malignant, metastatic site					1	1
M840801	Hair matrix tumor, benign						26
M841000	Sebaceous adenoma, benign	29	230	1	196	92	548
M841001	Sebaceous adenoma, benign, well differentiated			1	19	1	21
M841030	Sebaceous adenocarcinoma, malignant	1		5	4	13	25
M841031	Perianal gland adenocarcinoma, malignant				6		6
M841060	Sebaceous adenocarcinoma, malignant, metastatic site				1	1	2
M841061	Perianal gland adenocarcinoma, malignant, metastatic site			1			1
M842030	Ceruminous adenocarcinoma, malignant				1		1
M844000	Cystadenoma, benign	2	23	1	10	73	111
M844010	Cystadenoma, uncertain whether benign or malignant					2	2
M844030	Cystadenocarcinoma, malignant		6		1	2	9
M844060	Cystadenocarcinoma, malignant, metastatic site					1	1
M844140	Serous adenocarcinoma, malignant, w/evidence of metastasis						1
M845000	Papillary cystadenoma, benign	8	6	5	2	144	165
M845010	Papillary cystadenoma, borderline malignancy, uncertain whet					2	2
M845030	Papillary cystadenocarcinoma, malignant			1		15	16
M845060	Papillary cystadenocarcinoma, malignant, metastatic site					16	16
M848000	Mucinous adenoma, benign						1
M848030	Mucinous adenocarcinoma, malignant	7	5			2	14
M848040	Mucinous adenocarcinoma, w/evidence of metastasis			1			1
M848130	Mucin-producing adenocarcinoma, malignant					1	1
M850000	Intraductal adenoma, benign	15					16
M850020	Intraductal carcinoma, non-infiltrating	20					20
M850030	Infiltrating duct carcinoma, malignant		2			1	42
M850040	Infiltrating duct carcinoma, w/evidence of metastasis						24
M850120	Comedocarcinoma, non-infiltrating		2				2
M850300	Intraductal papilloma, benign	48	4	2		5	81
M850301	Duct papilloma, simple (AFIP 80810), benign		1				1
M851000	Medullary adenoma (C-cell adenoma), benign				5		6
M851001	Medullary adenoma, benign		3				3
M851010	Medullary carcinoma, uncertain whether benign or malignant					1	1
M851030	Medullary carcinoma (C-cell carcinoma), malignant	1	14		5	1	22
M852020	Lobular, non-infiltrating (Lobular adenoma)				1		1
M852030	Lobular carcinoma (Lobular adenocarcinoma), malignant		5		6		11
M852060	Lobular carcinoma, malignant, metastatic site				2		2
M854030	Paget's disease, mammary, malignant					1	1
M855000	Acinar cell adenoma, benign		6	3		4	18
M855010	Acinar cell tumor, uncertain whether benign or malignant	1					1
M855030	Acinar cell carcinoma, malignant		4			2	7
M856030	Adenosquamous carcinoma, malignant			1	24		26
M856040	Adenosquamous carcinoma, w/evidence of metastasis			3			3
M856060	Adenosquamous carcinoma, malignant, metastatic site				134		134
M858000	Thymoma, benign		3	1	5	5	14
M858010	Thymoma, benign, uncertain whether benign or malignant					1	1
M858030	Thymoma, malignant				2	2	4
M858060	Thymoma, malignant, malignant, metastatic site					1	1
M858090	Thymoma, primary or metastasis?					1	1
M858100	Epithelial thymoma, benign			1			1

SNODOG CODE	TRANSLATION	ANL	DAVIS	ITRI	PNL	UTAH	TOTAL
M858101	Epithelial thymoma, benign		6				6
M859000	Sex cord stromal tumor, benign		2				2
M859010	Sex cord stromal tumor, uncertain whether benign or malignan					1	1
M860000	Thecoma, benign	1	1			4	6
M860030	Theca cell carcinoma, malignant					1	1
M861000	Luteoma, benign	3				1	4
M861090	Luteoma, primary or metastasis?					41	41
M862000	Granulosa cell tumor, benign		31			3	54
M862010	Granulosa cell tumor, uncertain whether benign or malignant	11		1	5	7	24
M862030	Granulosa cell tumor, malignant	2	3	1	2	6	17
M862040	Granulosa cell tumor, malignant, w/evidence of metastasis						1
M862060	Granulosa cell tumor, malignant, metastastatic site					8	8
M863030	Androblastoma, malignant					1	1
M863100	Sertoli-Leydig cell tumor, benign					1	1
M864000	Tubular androblastoma (Sertoli Cell Tumor), benign	46	34	1	15	37	146
M864010	Tubular androblastoma, uncertain whether benign or malignant					10	10
M864030	Sertoli cell carcinoma, malignant		2			17	20
M864060	Sertoli cell carcinoma, malignant, metastatic site					7	7
M865000	Leydig cell tumor, benign	148	1		27	201	377
M865010	Leydig cell tumor, uncertain whether benign or malignant		141	1		4	146
M865060	Leydig cell tumor, malignant, malignant, metastatic					3	3
M869110	Aortic body tumor, uncertain whether benign or malignant		4			11	15
M869130	Aortic body tumor, malignant, primary site					10	10
M869160	Aortic body tumor, malignant, metastatic site/secon					10	10
M869210	Carotid body tumor, uncertain whether benign or malignant					1	1
M869301	Chemodectoma, benign						4
M869310	Extra-adrenal (nonchromaffin) paraganglioma, benign or malig	21	11	5	4	1	42
M869311	Chemodectoma, malignant		1				1
M869330	Extra-adrenal (nonchromaffin) paraganglioma, malignant				2		2
M869340	Extra-adrenal paraganglioma, malignant, w/evidence of metast			1			2
M869360	Extra-adrenal paraganglioma, malignant, metastatic site				1		1
M870000	Pheochromocytoma, benign	6	7	4	8	5	26
M870030	Pheochromocytoma, malignant				3	3	6
M870040	Pheochromocytoma, malignant, w/evidence of metastasis						3
M870060	Pheochromocytoma, malignant, metastatic		4		9	9	22
M871100	Glomus tumor, benign		3			1	4
M872000	Pigmented nevus, benign	26	38	1	6	30	132
M872001	Melanocytoma		20				20
M872010	Pigmented nevus, uncertain whether benign or malignant					10	10
M872030	Melanoma, malignant	28	127	5	9	120	301
M872040	Melanoma, malignant, w/evidence of metastasis			5			7
M872060	Melanoma, malignant, metastatic site/secondary sit		5	2	57	241	305
M872070	Melanoma, malignant, w/recurrence post excision						1
M872090	Melanoma, primary or metastasis?					2	2
M873030	Amelanotic melanoma, malignant			2		8	11
M873040	Amelanotic melanoma, malignant, w/evidence of metastasis			4			4
M873060	Amelanotic melanoma, malignant, metastatic site/secondary					38	38
M873090	Amelanotic melanoma, primary or metastasis?					6	6
M874030	Melanoma in junctional nevus, malignant					4	4
M874060	Melanoma in junctional nevus, malignant, metastatic site/sec					7	7
M874090	Melanoma in junctional nevus, primary or metastasis?					1	1
M875000	Intradermal (or dermal) nevus, benign					1	1
M876000	Compound nevus, benign					1	1
M877000	Epithelioid and spindle cell nevus, benign					1	1
M877230	Spindle cell melanoma,				1		1
M878000	Blue nevus, benign					3	3
M880000	Soft tissue tumor, benign	1				1	2
M880030	Sarcoma, malignant	74	36		3	14	127
M880031	Sarcoma, undifferentiated, malignant				3		3
M880040	Sarcoma, w/evidence of metastasis			1			1
M880060	Sarcomatosis, malignant, metastatic site/secondary site				8	44	52
M880090	Sarcomatosis, malignant, primary or metastasis?					5	5
M880330	Small cell sarcoma, malignant				2		2
M881000	Fibroma, benign	87	57	1	9	222	425
M881001	Fibroma, well differentiated, benign					6	6
M881030	Fibrosarcoma, malignant	34	100	7	7	88	244
M881040	Fibrosarcoma, w/evidence of metastasis			6			7
M881060	Fibrosarcoma, malignant, metastatic site/secondary site				12	134	146
M881090	Fibrosarcoma, primary or metastasis?					2	2
M881130	Fibromyxosarcoma, malignant				1	2	3
M881300	Fascial fibroma, benign					1	1
M883000	Fibrous histiocytoma, benign	3			2		5
M883200	Dermatofibroma, benign	1	2	1	22	4	30
M883500	Interstitial Cell Tumor, benign				54	46	177
M884000	Myxoma, benign	1			1	6	9
M884010	Myxoma, uncertain whether benign or malignant					2	2
M884030	Myxosarcoma, malignant					6	6
M884040	Myxosarcoma, w/evidence of metastasis			1			1
M884060	Myxosarcoma malignant, metastatic site/secondary site					2	2

SNODOG CODE	TRANSLATION	ANL	DAVIS	ITRI	PNL	UTAH	TOTAL
M885000	Lipoma, benign	86	170	19	62	23	465
M885030	Liposarcoma, malignant	1	9			2	12
M885100	Fibrolipoma, benign		2				2
M885430	Pleomorphic liposarcoma, malignant					1	1
M885460	Pleomorphic liposarcoma malignant, metastatic site/secondary					2	2
M885600	Intramuscular lipoma, benign					5	5
M887000	Myelolipoma, benign				1		1
M889000	Leiomyoma, benign	134	292	8	73	178	763
M889010	Intravascular leiomyomatosis, uncertain whether benign or ma					1	1
M889030	Leiomyosarcoma, malignant	2	11		5	22	44
M889040	Leiomyosarcoma, w/evidence of metastasis						2
M889060	Leiomyosarcoma, malignant, metastatic site/secondary site				1	7	8
M890030	Rhabdomyosarcoma, malignant	6			1	6	13
M890060	Rhabdomyosarcoma, malignant, metastatic site/secondary site					6	6
M890130	Pleomorphic rhabdomyosarcoma, malignant					1	1
M890160	Pleomorphic rhabdomyosarcoma malignant, metastatic site/seco					12	12
M894000	Mixed tumor (Pleomorphic adenoma), benign	11	1,161	1	32	1	1,206
M894010	Mixed tumor, uncertain whether benign or malignant	165					165
M894030	Mixed tumor, malignant	111	67	1	4	1	184
M894060	Mixed tumor, malignant, metastatic site/secondary site				13		13
M898030	Carcinosarcoma, malignant		2	1			3
M898040	Carcinosarcoma, w/evidence of metastasis			1			1
M898060	Carcinosarcoma, malignant, metastatic site/secondary site		1				1
M898200	Myoepithelioma, benign		9				9
M898230	Myoepithelioma, malignant, primary site		6				6
M901000	Fibroadenoma, benign	8	2	1	3	3	17
M904000	Synovioma, benign	2					2
M904030	Synovial sarcoma, malignant		6			2	8
M904040	Synovial sarcoma, w/evidence of metastasis						1
M904060	Synovial sarcoma, malignant, metastatic site/secondary site					5	5
M905030	Mesothelioma, malignant				2	11	13
M905040	Mesothelioma, malignant, w/evidence of metastasis			1			.
M905060	Mesothelioma, malignant, metastatic site/secondary				20	17	37
M905090	Mesothelioma, primary or metastasis?					5	5
M905230	Epithelioid mesothelioma, malignant					1	1
M905260	Epithelioid mesothelioma, malignant, metastatic site/seconda					3	3
M906030	Dysgerminoma, malignant	2	2			3	7
M906100	Seminoma, benign			2		25	43
M906101	Seminoma, benign		81				81
M906110	Seminoma, uncertain whether benign or malignant					7	7
M906120	Seminoma, non-infiltrating, carcinoma in-situ				3	3	6
M906130	Seminoma, malignant	29	6	1	27	57	134
M906160	Seminoma, malignant, metastic site/secondary					26	26
M906230	Seminoma, malignant, anaplastic type					2	2
M906260	Seminoma, anaplastic type, malignant, metastatic site					3	3
M908000	Teratoma, benign			1			3
M908010	Teratoma, uncertain whether benign or malignant					4	4
M908400	Dermoid cyst, benign		10				10
M909030	Struma ovarii, malignant					1	1
M912000	Hemangioma, benign	24	135	3	143	92	451
M912030	Hemangiosarcoma (Angiosarcoma), malignant	50	132	10	19	43	285
M912040	Hemangiosarcoma (Angiosarcoma), w/evidence of metastasis			25			37
M912060	Hemangiosarcoma malignant, metastatic site/secondary site		20		79	168	267
M912070	Hemangiosarcoma malignant, w/recurrence post excision						6
M912090	Hemangiosarcoma, primary or metastasis?					42	42
M912100	Cavernous hemangioma benign		4	3		7	14
M913000	Hemangioendothelioma, benign	59					59
M913030	Hemangioendothelioma, malignant					2	2
M913060	Hemangioendothelioma, malignant malignant, metastatic site/s					4	4
M913100	Capillary hemangioma, benign		1	1			2
M915000	Hemangiopericytoma, benign						1
M915010	Hemangiopericytoma, uncertain whether benign or malignant	9	6	1	3	4	23
M915030	Hemangiopericytoma, malignant			1	1	1	3
M915070	Hemangiopericytoma, malignant, w/recurrence post excision						1
M916000	Angiofibroma, benign					1	1
M916010	Angiofibroma, uncertain whether benign or malignant					1	1
M916060	Angiofibroma, malignant, metastatic site/secondary site					1	1
M917030	Lymphangiosarcoma, malignant / lymphangioendothelial sarcoma		2				2
M918000	Osteoma, benign	1		1	1	10	13
M918010	Osteoma, uncertain whether benign or malignant					2	2
M918030	Osteosarcoma, malignant	21	521	1	74	533	1,150
M918031	Osteosarcoma, malignant, Primary Site dx by Radiograph					3	3
M918040	Osteosarcoma, w/evidence of metastasis			4			4
M918060	Osteosarcoma, malignant, metastatic site/secon				115	274	389
M918090	Osteosarcoma, primary or metastasis?					4	4
M918130	Chondroblastic osteosarcoma, malignant			1		1	2
M918140	Chondroblastic osteosarcoma, malignant, w/evidence of metast			5			5
M918160	Chondroblastic osteosarcoma, malignant, metastatic					3	3
M918230	Fibroblastic osteosarcoma, malignant		1	11		3	15

SNODOG CODE	TRANSLATION	ANL	DAVIS	ITRI	PNL	UTAH	TOTAL
M918330	Telangiectatic osteosarcoma, malignant			10			10
M918530	Combined osteosarcoma, malignant			7			7
M918540	Combined osteosarcoma, malignant, w/evidence of metastasis			6			6
M918640	Giant cell osteosarcoma, malignant, w/evidence of metastasis			2			2
M918730	Osteoblastic osteosarcoma, malignant			41			41
M918740	Osteoblastic osteosarcoma, malignant, w/evidence of metastas			5			5
M920010	Osteoblastoma, uncertain whether benign or malignan					1	1
M921000	Osteochondroma, benign		2	1			3
M922000	Chondroma, benign	2	3		1	3	10
M922030	Chondrosarcoma, malignant	3	14	1	1	16	35
M922060	Chondrosarcoma, malignant, metastatic site/secondary site		1			21	22
M925010	Giant cell tumor of bone, uncertain whether benign or malign		1				1
M925011	Giant cell sarcoma		1				1
M925030	Giant cell tumor of bone, malignant				1	2	3
M926200	Ossifying fibroma, benign		3				3
M927001	Acanthomatous epulis, benign				1		1
M928000	Odontoma, benign		2		1		3
M931000	Ameloblastoma, benign		5			1	6
M931030	Ameloblastoma, malignant					4	4
M937000	Chordoma, benign				1		1
M937030	Chordoma, malignant				1		1
M937500	Renal interstitial cell tumor, benign					7	7
M938030	Glioma, malignant	6					6
M939000	Choroid plexus papilloma, benign	1					1
M939130	Ependymoma, malignant	1		1			2
M940030	Astrocytoma, malignant	2	4	1		2	9
M945030	Oligodendroglioma, malignant	2					2
M950030	Neuroblastoma, malignant	1			1	1	3
M950060	Neuroblastoma, malignant, metastatic site/secondary site					1	1
M950130	Medulloepithelioma, malignant					1	1
M950930	Lymphosarcoma, malignant, poorly differentiated	5					5
M952230	Esthesioneuroblastoma			2			2
M953000	Meningioma, benign		15		1	1	18
M953010	Meningiomatosis, uncertain whether benign or malignant					1	1
M953030	Meningioma, malignant	1				1	3
M954000	Neurofibroma, benign	3	8	3	1	4	20
M954010	Neurofibromatosis, uncertain whether benign or malignant					2	2
M954030	Neurofibrosarcoma, malignant	6	11	3	4	1	32
M954040	Neurofibrosarcoma, w/evidence of metastasis			1			1
M954070	Neurofibrosarcoma, malignant, w/recurrence post excision						1
M956000	Neurilemmoma (Schwannoma), benign	1	6	2		1	10
M956030	Neurilemmona (Schwannoma), malignant	41			1		42
M958000	Granular cell tumor (Granular cell myoblastoma), benign				1		1
M959000	Lymphomatous tumor, benign				7		7
M959030	Lymphoma, malignant	18			44	8	82
M959040	Lymphoma, malignant, w/evidence of metastasis						7
M959060	Lymphoma, malignant, metastatic site/secondary sit				344	17	361
M959070	Lymphoma, malignant, w/recurrence post excision						1
M959090	Lymphoma, primary or metastasis?					6	6
M961030	Lymphosarcoma, malignant	21	331	3		30	385
M961033	Lymphosarcoma, malignant, diffuse				5		5
M961040	Lymphosarcoma, w/evidence of metastasis			2			2
M961060	Lymphosarcoma, malignant, metastatic site/secondary site					12	12
M961090	Lymphosarcoma, primary or metastasis?					276	276
M962030	Lymphoma, lymphocytic, malignant, well differentiated	53					53
M962060	Lymphoma, lymphocytic, malignant, well differentiated, metas					2	2
M962090	Lymphoma, lymphocytic, well differentiated, primary or metas					2	2
M963030	Lymphoma, lymphocytic, malignant, poorly differentiated	12				28	40
M964030	Reticulosarcoma (Histocytic Lymphosarcoma), malignant	26		2	3	3	34
M964040	Reticulosarcoma, (Histocytic Lymphosarcoma), w/evidence of m			2			2
M964060	Reticulosarcoma, malignant, metastatic site/secondary site			1	12		13
M964130	Reticulosarcoma, malignant, pleomorphic cell type					1	1
M969030	Lymphoma, malignant, nodular					1	1
M970030	Mycosis fungoides, malignant					1	1
M971001	Histiocytoma		8				8
M972030	Histiocytosis (Reticulendothelial sarcoma), malignant				1		1
M972060	Histiocytosis, malignant, metastatic site/secondary					1	1
M973030	Plasma cell myeloma, malignant	4			2	2	8
M973060	Plasma cell myeloma malignant, metastatic site/secondary sit				7	14	21
M973090	Plasma cell myeloma, primary or metastasis?					8	9
M973100	Plasma cell tumor, benign			2	3		3
M973110	Plasmacytoma, uncertain whether benign or malignant	3					3
M973130	Plasma cell tumor, malignant					1	1
M973160	Plasma cell tumor, malignant malignant, metastatic site/seco					1	1
M973190	Plasma cell tumor, primary or metastasis?					6	6
M974000	Mastocytoma, benign			3			3
M974010	Mastocytoma, uncertain whether benign or malignant	59	41		10	10	120
M974030	Mast cell sarcoma, malignant	12	9	6	9	47	83
M974040	Mast cell sarcoma, w/evidence of metastasis			5			8

SNODOG CODE	TRANSLATION	ANL	DAVIS	!TRI	PNL	UTAH	TOTAL
M974060	Mast cell sarcoma malignant, metastatic site/secondary site					48	48
M974090	Mast cell sarcoma, primary or metastasis?					8	8
M980030	Leukemia, malignant	16	1			2	19
M980090	Leukemia, primary or metastasis?					1	1
M980130	Acute leukemia, malignant	1					1
M981030	Compound leukemia, malignant	4					4
M982030	Lymphoid leukemia, malignant	10				1	11
M982060	Lymphoid leukemia, malignant, metastatic site					1	1
M982090	Lymphoid leukemia, primary or metastasis?					5	5
M982130	Acute lymphoid leukemia, malignant					2	2
M984030	Erythroleukemia, malignant	8					8
M984130	Acute erythremia, malignant	7					7
M986030	Myeloid leukemia, malignant	40		1		2	43
M986040	Myeloid leukemia, w/evidence of metastasis			1			1
M986090	Myeloid leukemia, primary or metastasis?					2	2
M989030	Monocytic leukemia, malignant	3					3
M990030	Mast cell leukemia, malignant			1			1
M992030	Megakaryocytic myelosis, malignant	3				4	7
M993000	Myeloid sarcoma, benign		1				1
M993030	Myeloid sarcoma, malignant					8	8
M993090	Myeloid sarcoma, primary or metastasis?					25	25
M995230	Translation not available	2					2
M996010	Chronic myeloproliferative disease, uncertain whether benign					12	12
M996040	Myeloproliferative disease, acute, w/evidence of metastasis			1			1
M997010	Chronic lymphoproliferative disease, uncertain whether benig	3					3

The primary function of this document is to distribute printed copies of the SNODOG glossary to those who have electronic copies in use. A secondary function is to illustrate the degree of nomenclature standardization among the laboratories which have been using SNODOG. In order to conserve paper, the appendices list only those terms which have been used. The full SNOMED glossary runs to about 300 printed pages, and is available in limited quantities. The primary means of distribution of SNODOG is electronic. Diskettes or tapes in various formats may be requested from the Archives.

Two computer generated tabulations are appended here.

APPENDIX I
SNOP
to SNODOG

The pathologist at PNL started coding his observations using SNOP in the early 1970's. Computer software for data entry and retrieval had been developed. When SNODOG was adopted as the DOE standard coding system, he elected to continue using SNOP until the conclusion of the PNL life-span studies. In 1991, when provisional copies of his 50 thousand or more records were donated to the NRA, a translation table was constructed to convert the 1090 SNOP codes terms which he had used at least once to SNODOG codes. It is presented in Appendix I in numeric order by SNOP code.

Extensive efforts have been made to insure that the translations convey the true sense of the original SNOP coded observations.

APPENDIX II
ORNL Rodent
Codes to
SNODOG

A team of researchers at Oak Ridge National Laboratory (ORNL) donated records pertaining to 9,765 mice to the NRA. The NRA accessioning team assigned a pair of SNODOG codes to each of the 70 ORNL mnemonic codes used in this study. For example, TBST becomes T040000, M800030, "Breast, Neoplasm, malignant".

This attempt by the Archives effort to standardize storage and retrieval of such observations is shown in Appendix II as an example of how such *ad hoc* coding schemes are easily translated to SNODOG.

Angleton, GM, KL Olson, and W deAlva. Natural text data files for clinical and pathology records. *Soc Computer Med*, 1980.

Chang, I-Yiin. *Medical Review Database, Users Manual*, Lovelace ITRI undated, internal document.

Côté, RA. The SNOP-SNOMED concept: Evolution towards a common medical nomenclature and classification. *Pathologist* 31:383-89, 1977.

McKelvie, DH and FT Shultz. Methods of observing and recording data in long-term studies on Beagles. *Lab Anim Care* 14:118-124, 1964

SNOMED, Systematized Nomenclature of Medicine, Coding Manual, GE Gantner, RA Côté, and RS Beckett, eds. College of American Pathologists, 7400 North Skokie Blvd, Skokie, IL 60077. 1979

SNOMED, Systematized Nomenclature of Medicine, 2nd ed., 1979; updated through 1982, vol. 1, numeric index; vol 2, alphabetic index, R A Côté, ed. College of American Pathologists, 7400 North Skokie Blvd., Skokie, IL 60077. 1982

SNOP, Systematized Nomenclature of Pathology. College of American Pathologists, 7400 North Skokie Blvd, Skokie, IL 60077. 1965

SNOVET, Systematized Nomenclature of Veterinary Medicine, Microglossary for Veterinary Medicine, JL Palotay and DJ Rothwell, eds. American Veterinary Medical Association, 930 North Meacham Road, Schaumburg, IL 60195. 1984.

SNOVDO, Standard Nomenclature of Veterinary Diseases and Operations, 1st ed., rev., Public Health Service Publication NO 1466, WA Priester, EH Adelstein, and JA Peters, eds. U.S. Public Health Service, Washington, DC. 1966.

SNVDO, Coding Supplement to Standard Nomenclature of Veterinary Diseases and Operations, WA Priester, ed. U.S. GPO: 1971 O - 410-203. U.S. Department of Health, Education, and Welfare, Public Health Service, National Cancer Institute, Bethesda, MD 20014. 1971.

SNVDO, Standard Nomenclature of Veterinary Diseases and Operations, 2nd (abridged) ed., DHEW publication No. (NIH) 76-1028. WA Priester, ed. National Cancer Institute, Epidemiology Branch, Bethesda, MD 20014. 1975

SNVDO, Coding Supplement to Standard Nomenclature of Veterinary Diseases and Operations, DHEW Publication No. (NIH) 77-1253, WA Priester, WM Wade, and FW McKay, eds. U.S. Department of Health, Education, and Welfare, Public Health Service, National Cancer Institute, Bethesda, MD 20014. 1977.

Wittmier, JR and CK James. A computerized system for veterinary medical records based on SNOMED. *Lab Anim Sci* 33: 101-105, 1983.

White, RG, CE Burton, and LS Rosenblatt. "The Problem Oriented Medical Records System: a new method for recording clinical data", *Contemporary Topics in Laboratory Animal Science*, 31:8-12, 1992.

This appendix presents the translation between SNOP and SNODOG for those 1090 SNOP terms in use at PNL. The report has 5 columns, defined below.

column	heading	description
1	PNL USES	The frequency of use in the files donated to the NRA by the Pacific Northwest Laboratory.
2	SNOP TRANS-LATION	The 35 character translation of the SNOP code.
3	SNOP CODE	The axis letter and 4 position code.
4	SNODOG CODE	The axis letter and 6 position code.
5	SNODOG TRA-NSLATION	The 60 character translation of the SNOP code.

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
0	ETIOLOGY UNKNOWN. IDIOPATHIC	E0000	E000100	Etiologic agent unknown
13	BACTERIA	E1000	E100000	Bacterium
8	STREPTOCOCCUS	E1680	E250000	Streptococcus
0	FUNGUS	E4010	E400000	Fungus
2	PARASITE. NOS	E4400	E430000	Parasite
5	NEMATODE	E4510	E451000	Nematode
17	FILAROIDES HIRTHI	E4581	E450500	Filarioidea
0	LUNG FLUKE. ORIENTAL	E4658	E465000	Trematode (Fluke. Flatworm)
0	CESTODE	E4670	E471000	Cestode (Tapeworm)
0	ARTHROPOD	E4800	E480000	Arthropod
23	MITE. NOS	E4834	E487000	Mite
2	DEMODECTIC MANGE	E4837	E487300	Demodex
2	DRUG	E7000	E700000	Drug
2.467	ALPHA PARTICLES	E9332	E933100	Alpha particle
6	UREMIA	F1075	D651500	Uremia syndrome
1	HYPOTHYROIDISM	F4302	D220000	Hypothyroidism
9	CUSHING'S SYNDROME	F4633	D230200	Hyperadrenocorticism (Cushings's Disease)
1	AUTOIMMUNE HEMOLYTIC ANEMIA	F6702	D426000	Autoimmune hemolytic anemia
6	HEART FAILURE	F7002	D705000	Heart failure (Congestive)
0	PARALYSIS. NOS	F7450	F808400	Paralysis
0	PARAPLEGIA	F7463	F810700	Paraplegia
0	AMAUROSIS	F7604	FX01100	Blindness. total
5	EPILEPSY	F7801	F870000	Seizure (Epileptic episode)
0	DISEASE. NOS	F9002	FY17100	Complication of disease
2	SEPTICEMIA	F9013	D008000	Sepsis
2	GLAUCOMA	F9051	.DX30000	Glaucoma
0	MORPHOLOGY UNKNOWN	M0000	M000100	Morphology unknown
8.546	NORMAL MORPHOLOGIC STRUCTURE	M0001	M001100	Normal microscopic morphology
0	MORPHOLOGIC ABNORMALITY. NOS	M0002	M010000	Morphologic abnormality
14	INADEQUATE FOR EVALUATION	M0004	M090000	Insufficient tissue for diagnosis
87	SACRIFICE. NO SIGNIFICANT PATHOLOGY	M0005	M094502	Scheduled sacrifice. no significant pathology
1	SACRIFICE. SIGNIFICANT PATHOLOGY OB	M0006	M094503	Scheduled sacrifice. significant pathology observed
1	UNKNOWN CAUSE OF DEATH	M0007	M093002	Cause of death undetermined
0	BACTERIA	M1000	E100000	Bacterium
44	RADIATION INJURY. NOS	M1130	M116000	Radiation injury
0	FRACTURE. NOS	M1200	M120000	Fracture
0	FRACTURE. CLOSED	M1210	M121000	Fracture. closed
0	COMPOUND FRACTURE.NOS	M1220	M122000	Fracture. open
0	PATHOLOGIC FRACTURE	M1250	M120040	Fracture. pathologic
0	HEALED FRACTURE	M1280	M125000	Fracture. healed
0	LUXATED INTERVERTEBRAL DISC	M1350	M316501	Herniated intervertebral disc
0	PERFORATING WOUND	M1460	M140000	Wound
2	COMPRESSION INJURY	M1481	M104000	Compression injury
2	POSTOPERATIVE STATE (EXCISION)	M1520	F010500	Postoperative state
26	ASPIRATION. FOREIGN BODY	M1606	F790100	Aspiration. foreign body
0	ANKYLOSIS. OSSEOUS	M1703	M135300	Ankylosis. osseous
1	RUPTURE	M1803	M144300	Rupture
0	CONGENITAL ANOMALY	M2100	M206000	Growth alteration. congenital (Congenital anomaly)
3	AGENESIS	M2120	M210000	Absence. congenital (Congenital aplasia. Agenesis)
0	MALOCCLUSION	M2215	M221500	Malocclusion. congenital
0	ACCESSORY ADRENAL CORTEX	M2234	M223000	Structure. supernumerary

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
1	CONGENITAL CONTRACTURE	M2264	M226400	Contracture, congenital
0	UNDESCENDED TESTIS	M2314	M262000	Ectopic testis (Cryptorchidism)
5	VASCULAR ANOMALY	M2460	M246000	Vascular malformation, congenital (Vascular anomaly)
27	ECTOPIA	M2510	M260000	Ectopia
0	WOLFFIAN REST	M2527	M263700	Rest, Wolffian (Mesonephric rest)
2	EMBRYONAL DUCT CYST	M2530	M265000	Cyst, embryonic
1	DENTIGEROUS CYST	M2532	M265600	Cyst, dentigerous odontiogenic (Dentigerous cyst)
0	MECHANICAL ABNORMALITIES	M3000	M100000	Traumatic abnormality
6	CALCULUS, NOS	M3100	M300000	Calculus
5	FOREIGN BODY, NOS	M3200	M304000	Foreign body
0	DISPLACEMENT, NOS	M3310	M310000	Displacement
0	DISPLACEMENT, INFERIOR	M3315	M310500	Displacement, inferior (Prolapse)
0	INTUSSUSCEPTION	M3322	M311300	Intussusception
2	HERNIA,NOS	M3330	M316000	Hernia
8	HERNIATED DISC	M3351	M316501	Herniated intervertebral disc
0	PRESSURE CONE	M3353	M314300	Pressure cone (Cerebellar pressure cone)
46	DILATATION, NOS	M3410	M321000	Dilatation
11	BRONCHIECTASIS	M3412	M321001	Dilatation, bronchiectasis
3	DILATATION, SUBMUCOSAL GLAND	M3417	M321002	Dilatation, submucosal gland
2	DISTENTION	M3420	M322000	Distention
390	EMPHYSEMA, NOS	M3430	M328000	Emphysema
2	EMPHYSEMA,BULLOUS	M3431	M328300	Emphysema, bullous
76	EMPHYSEMA, VESICULAR	M3432	M328210	Emphysema, vesicular acute
0	ANEURYSM, NOS	M3440	M324000	Aneurysm
1	DISSECTING ANEURYSM	M3447	M324700	Aneurysm, dissecting
0	ANEURYSM, FALSE	M3450	M325900	Aneurysm, false
1	VARICES	M3460	M326000	Varix (Varices, Vericose vein, Phlebectasia)
1	HEMORRHOIDS	M3461	M326200	Hemorrhoids
6	INCOMPETENCE, VALVULAR	M3481	M219001	Valvular incompetence
0	CAST, NOS	M3501	M330100	Cast
14	BILE STASIS	M3504	M330600	Bile stasis
1	CYST, EPIDERMOID	M3514	M334100	Cyst, epithelial inclusion
2	HYDRONEPHROSIS, NOS	M3520	M333000	Retention of fluid (Hydronephrosis)
0	HYDROCEPHALUS, NOS	M3521	M333200	Hydrocephalus
0	GALACTOCELE	M3530	M332200	Galactocele (Milk cyst)
195	CYST, NOS	M3540	M334000	Cyst
42	EPITHELIAL CYST, NOS	M3541	M334200	Cyst, epithelial
0	SEBACEOUS CYST	M3543	M334300	Cyst, sebaceous
0	FOLLICULAR CYST, NOS	M3549	M335000	Cyst, follicular
0	POLYCYSTIC KIDNEY	M3558	M338200	Multicystic kidney
:	OCCLUSION, NOS	M3600	M340000	Obstruction
0	TORSION, NOS	M3621	M342100	Torsion
15	ATELECTASIS	M3631	M343100	Atelectasis
172	THROMBUS, NOS	M3700	M351000	Thrombus
5	ORGANIZED THROMBUS	M3702	M351030	Thrombus, organized
0	THROMBUS, MURAL	M3703	M351300	Thrombus, mural
3	RECANALIZED THROMBUS	M3704	M351400	Thrombus, canalized
34	THROMBUS, TUMOR	M3705	M800069	Thrombus, tumor
16	EMBOLISM	M3710	M353000	Embolus
2	EMBOLUS, FAT	M3711	M354500	Embolus, fat
8	EMBOLUS,FOREIGN BODY	M3715	M353500	Embolus, foreign body
0	EMBOLUS, SEPTIC	M3719	M353900	Embolus, septic
3	EMBOLUS, TUMOR	M3723	M800068	Embolus, tumor
93	CONGESTION, NOS	M3810	M361000	Congestion
26	CHRONIC PASSIVE CONGESTION	M3816	M361020	Congestion, chronic

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
32	EDEMA. NOS	M3840	M365000	Edema
1	SPONGIOSIS	M3847	M366200	Edema. intercellular (Spongiosis)
936	HEMORRHAGE. NOS	M3850	M370000	Hemorrhage
4	HEMATOMA. NOS	M3855	M371000	Hematoma
0	HEMATOMA. ORGANIZED	M3856	M371060	Hematoma. localized/slit
4	HEMORRHAGIC CYST	M3857	M335400	Cyst. hemorrhagic
1	HEMOPERITONEUM	M3867	M370000	Hemorrhage
0	FIBRIN BODY	M3914	M391400	Fibrin body
0	CANALIZATION	M3930	M392500	Canalization
6	INFLAMMATION. NOS	M4000	M400000	Inflammation
0	SITE SPECIFIC INFLAMMATION	M4001		*** UNDEFINED ***
36	ULCER. NOS	M4003	M380000	Ulcer
742	INFLAMMATION. FOCAL. NOS	M4010	M400010	Inflammation. focal/circumscribed/local
4	ULCER. FOCAL	M4013	M380300	Ulcer. focal
2	INFLAMMATION. FOLLICULAR (LYMPHOCIT	M4014	M430800	Inflammation. follicular
2	FOLLICULITIS	M4015	M474000	Folliculitis
15	INFLAMMATION. DIFFUSE. NOS	M4020	M402000	Inflammation. diffuse
0	BRONCHOPNEUMONIA. DIFFUSE	M4021	M40002H	Inflammation. broncho-pneumonia. confluent. disseminated
31	INFLAMMATION. INTERSTITIAL	M4024	M402001	Inflammation. diffuse. interstitial
0	PNEUMONIA. ASPIRATION	M4028	M40000J	Inflammation. pneumonia. aspiration
0	INFLAMMATION. SEROUS. NOS	M4030	M403000	Inflammation. serous
27	INFLAMMATION. EXUDATIVE. NOS	M4040	M404000	Inflammation. exudative
0	PYOMETRA	M4046	M404600	Pus (Pyorrhea. Pyometra if T820000)
3	PYOMETRA	M4048	M404601	Pyometra
1	INFLAMMATION. FIBRINOUS	M4050	M405000	Inflammation. fibrinous
0	GLOMERULONEPHRITIS. MEMBRANOUS	M4051	M40000K	Inflammation. glomerulonephritis. membranous
0	INFLAMMATION. HEMORRHAGIC. NOS	M4060	M406000	Inflammation. hemorrhagic
9	INFLAMMATION.ACUTE NECROTIZING. NOS	M4070	M417000	Inflammation. acute necrotizing
555	INFLAMMATION. ACUTE. NOS	M4100	M410000	Inflammation. acute
36	BRONCHOPNEUMONIA.ACUTE	M4101	M410001	Inflammation. acute. bronchopneumonia
1	PYELONEPHRITIS.ACUTE	M4102	M410002	Inflammation. acute. pyelonephritis
2	ULCER. ACUTE	M4103	M380100	Ulcer. acute
92	INFLAMMATION. ACUTE FOCAL	M4110	M410010	Inflammation. acute. focal/circumscribed/local
5	INFLAMMATION. ACUTE DIFFUSE	M4120	M412000	Inflammation. acute diffuse
10	INFLAMMATION. ACUTE EXUDATIVE	M4140	M414000	Inflammation. acute exudative (suppurative)
21	INFLAMMATION.ACUTE FIBRINOUS	M4150	M415000	Inflammation. acute fibrinous
0	INFLAMMATION. ACUTE HEMORRHAGIC	M4160	M416000	Inflammation. acute hemorrhagic
11	INFLAMMATION. ACUTE NECROTIZING	M4170	M417000	Inflammation. acute necrotizing
0	APPENDICITIS. ACUTE GANGRENOUS	M4171	M417001	Inflammation. acute necrotizing. appendicitis
24	ABSCESS. NOS	M4174	M417400	Abscess
1	INFLAMMATION. ACUTE PUSTULAR	M4175	M417500	Inflammation. acute pustular
1	CYST. ACUTE INFLAMMATION	M4180	M000300	Morphology not assigned in SNOMED or SNODOG
54	INFLAMMATION. SUBACUTE	M4200	M420000	Inflammation. subacute
43	EOSINOPHIL LEUKOCYTIC INFILTRATE	M4206	M471500	Eosinophilic infiltration
1	SUBACUTE INFLAMMATION	M4240	M420000	Inflammation. subacute
0	SUBACUTE INFLAMMATION	M4260	M420000	Inflammation. subacute
139	INFLAMMATION. CHRONIC. NOS	M4300	M430000	Inflammation. chronic
2	GLOMERULONEPHRITIS. CHRONIC	M4301	M430001	Inflammation. chronic. glomerulonephritis
1	ULCER. CHRONIC	M4303	M380200	Ulcer. chronic
J	PNEUMONIA. INTERSTITIAL CHRONIC	M4304	M431400	Chronic interstitial pneumonia
13	PLASMA CELL INFILTRATE	M4306	M472000	Plasma cell infiltration
21	INFLAMMATION. CHRONIC INTERSTITIAL	M4308	M431400	Chronic interstitial pneumonia
41	INFLAMMATION. FOCAL CHRONIC	M4309	M430010	Inflammation. chronic. focal/circumscribed/local
210	INFLAMMATION. CHRONIC. FOCAL	M4310	M430010	Inflammation. chronic. focal/circumscribed/local
0	CHOLANGITIS	M4312	M40000L	Inflammation. cholangitis

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
0	PERICHOLANGITIS	M4313	M40000M	Inflammation, pericholangitis
11	INFLAMMATION, CHRONIC DIFFUSE	M4320	M432000	Inflammation, chronic diffuse
9	INFLAMMATION, CHRONIC EXUDATIVE	M4340	M434000	Inflammation, chronic exudative
0	CHRONIC EXUDATIVE INFLAMMATION	M4360	M434000	Inflammation, chronic exudative
1	INFLAMMATION, CHRONIC NECROTIZING	M4370	M437000	Inflammation, chronic necrotizing
1	CHRONIC NECROTIZING INFLAMMATION	M4373	M437000	Inflammation, chronic necrotizing
1	ABSCESS, CHRONIC	M4374	M437400	Abscess, chronic
2	INFLAMMATION, CHRONIC CYSTIC	M4380	M438000	Inflammation, chronic cystic
34	INFLAMMATION, GRANULOMATOUS, NOS	M4400	M440000	Inflammation, granulomatous
0	SMOKE GRANULOMA	M4401	M440100	Pseudopyogenic granuloma
277	LIPOGRANULOMA	M4404	M440400	Lipogranuloma
103	INFLAMMATION, FOCAL GRANULOMATOUS	M4410	M440010	Inflammation, granulomatous, focal/circumscribed/local
9	INFLAMMATION, EXUDATIVE GRANULOMATU	M4440	M444000	Inflammation, exudative granulomatous
1	NECROTIZING GRANULOMATOUS INFLAMMAT	M4470	M447000	Inflammation, necrotizing granulomatous
2	SPERMATOGENIC GRANULOMA	M4498	M441800	Spermatogenic granuloma
8	INFLAMMATION WITH FIBROSIS	M4500	M450000	Inflammation with fibrosis
43	PERIGLOMERULAR FIBROSIS	M4511	M468601	Periglomerular fibrosis
0	GRANULATION TISSUE	M4524	M450200	Granulation tissue
0	OSTEITIS, SCLEROSING	M4527	M452700	Osteitis, sclerosing
14	ANKYLOSING SPONDYLITIS	M4566	D320200	Ankylosing spondylitis
40	EROSIVE INFLAMMATION	M4610	M400400	Inflammation, erosive
176	INFLAMMATION WITH CAVITATION	M4620	M462000	Inflammation with cavitation
4·	FISTULA, NOS	M4631	M393000	Fistula, acquired
0	ULCER,PERFORATED	M4633	M380030	Ulcer, perforated
7	INFLAMMATION, PROLIFERATIVE	M4701	M467000	Inflammation, proliferative
0	INFLAMMATION, PROLIFERATIVE CHRONIC	M4702	M467090	Inflammation, proliferative, chronic
1	INFLAMMATION, PROLIFERA SUBACUTE	M4703	M467080	Inflammation, proliferative, subacute
86	FIBROSIS, NOS	M4800	M490000	Fibrosis
679	SCLEROSIS, NOS	M4801	M490200	Sclerosis
23	GLIOSIS	M4802	M491600	Gliosis
216	FIBROSIS, FOCAL	M4805	M490010	Fibrosis, focal
36	SCAR, NOS	M4806	M490600	Scar
14	BONY CALLUS	M4807	M499200	Bony callus
433	FIBROSIS, MULTIFOCAL	M4814	M490040	Fibrosis, multifocal
736	FIBROSIS, DIFFUSE	M4815	M490020	Fibrosis, diffuse/disseminated
540	FIBROSIS, SUBPLEURAL	M4817	M490001	Fibrosis, subpleural
199	FIBROSIS, PLEURAL	M4818	M490002	Fibrosis, pleural
0	ADHESION, NOS	M4824	M494000	Adhesion
8	FIBROUS ADHESIONS	M4826	M494300	Adhesion, fibrous
1	SYNECHIA, NOS	M4827	M494600	Synechia
1	SYNECHIA, ANTERIOR	M4828	M494700	Synechia, anterior
0	SYNECHIA, POSTERIOR	M4829	M494800	Synechia, posterior
2	INFLAMMATION, OBLITERATIVE	M4833	M457000	Inflammation, obliterative
5	VALVULAR FIBROSIS	M4843	M490003	Fibrosis, valvular
1	CIRRHOSIS, NOS	M4850	M495000	Cirrhosis
5	PERIBILIARY FIBROSIS	M4852	M490004	Fibrosis, prebiliary
1	VASCULITIS,NODULAR	M4926	M478001	Vasculitis, nodular
12	PERIVASCULITIS	M4927	M478000	Perivasculitis / Perivascular inflammation
9	BRONCHITIS	M4968	M40000A	Inflammation, bronchitis
21	PERIBRONCHITIS	M4969	M40000B	Inflammation, peribronchitis
14	BRONCHIOLITIS	M4970	M40000C	Inflammation, bronchiolitis
98	PERIBRONCHIOLITIS	M4971	M40000D	Inflammation, peribroncholitis
96	ALVEOLITIS	M4972	M40000E	Inflammation, alveolitis
272	INTERSTITIAL PNEUMONITIS	M4973	M40000F	Inflammation, pneumonitis
17	PLEURITIS	M4974	M40000G	Inflammation, pleuritis

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
7	BRONCHO-PNEUMONIA	M4975	M40000H	Inflammation, broncho-pneumonia
8	PERIPHLEBITIS	M4976	M40000I	Inflammation, periphlebitis
198	RADIATION PNEUMONITIS	M4977	M497701	Inflammation, pneumonitis, radiation induced
1	ACUTE VALVULITIS	M4978	M410000	Inflammation, acute, NOS
89	DEGENERATION, NOS	M5000	M500000	Degeneration
1	BASOPHILIC DEGENERATION	M5001	M500100	Degeneration, basophillic
26	DEGENERATION, CYSTIC	M5003	M500300	Degeneration, cystic
210	OSTEOPOROSIS	M5021	M502100	Osteoporosis
12	DEGENERATION, ZENKER'S	M5022	M500001	Degeneration of striated muscle (Zenker's degeneration)
109	OSTEOARTHRITIS	M5023	M502300	Osteoarthritis
0	PELIOSIS NOS	M5031	M370500	Peliosis
13	SENILE PLAQUE	M5045	M506040	Senile plaque
1	DYSTROPHIC AXONS	M5046	M500002	Degeneration, distrophic axons
2	MYELOPATHY, TRANSVERSE	M5051	M500003	Degeneration, myelopathy, transverse
1	SPONGY DEGENERATION	M5079	M000300	Morphology not assigned in SNOMED or SNODOG
8	RETINOPATHY	M5080	DX01100	Retinopathy
41	CATARACT	M5086	M511000	Cataract
47	DEGENERATION, GRANULAR	M5100	M500500	Degeneration, granular
358	DEGENERATION, HYALINE	M5110	M500600	Degeneration, hyaline
2	DEGENERATION, HYDROPIC	M5120	M500700	Degeneration, hydropic
0	DEGENERATION, MUCOID	M5130	M501000	Degeneration, mucoid
0	DEGENERATION, PIGMENTARY	M5140	M501200	Degeneration, pigmentary
1	DEGENERATION, LIPOID	M5150	M500800	Degeneration, fatty
1	ARTERIOSCLEROSIS, NOS	M5200	M520000	Arteriosclerosis
1	ATHEROSCLEROSIS	M5210	M521100	Atherosclerosis
1	ATHEROMA	M5211	M521000	Atheroma
434	ARTERIOLOSCLEROSIS	M5220	M522000	Arteriolosclerosis
0	FIBROELASTOSIS, ENDOCARDIAL	M5231	M523000	Fibroelastosis (Endocardial fibroelastosis)
0	SCLEROSIS, ENDOCARDIAL, DILATED	M5233	M523300	Sclerosis, endocardial, dialated type
443	MEDIAL DEGENERATION	M5240	M524100	Degeneration, medial
11	MEDIAL CALCIFICATIOM	M5241	M524200	Medial calcification
9	ENDOCARDIOSIS, NOS	M5260	M526000	Endocardiosis
186	CHRONIC NEPHROPATHY	M5310	D650201	Nephropathy, chronic
5	GLOMERULOSCLEROSIS, NOS	M5330	M533000	Glomerulosclerosis
131	NECROSIS, NOS	M5400	M540000	Necrosis
190	NECROSIS, FOCAL	M5401	M540010	Necrosis, focal
6	NECROSIS, DIFFUSE	M5402	M540020	Necrosis, diffuse/massive
1	NECROSIS, LIQUEFACTIVE	M5405	M540500	Necrosis, liquefactive
42	NECROSIS, COAGULATIVE	M5406	M540600	Necrosis, coagulative
8	NECROSIS, CASEOUS	M5408	M540800	Necrosis, caseous
6	NECROSIS,FIBRINOID	M5409	M540900	Necrosis, fibrinoid
13	AUTOLYSIS	M5411	M543100	Autolysis
0	POSTMORTEM CHANGE	M5412	M543000	Postmortem change
17	MALACIA	M5420	M544000	Malacia
6	NECROSIS, FAT	M5441	M541100	Necrosis, fat
2	DECUBITOUS ULCER	M5442	M105400	Decubitus ulcer
17	ONCOLYSIS (NECROSIS, TUMOR)	M5443	M540011	Necrosis, oncocytic (Tumor necrosis, Oncolysis)
3	NECROSIS, CORTICAL	M5454	M540002	Necrosis, cortical
14	NECROSIS, MEDULLARY	M5455	M540003	Necrosis, medullary
0	GANGRENE, NOS	M5460	M546000	Gangrene
57	INFARCT, NOS	M5470	M547000	Infarct
1	DEPOSITION, NOS	M5500	M550000	Deposition
0	ALVEOLAR PROTEINOSIS	M5502	M556400	Proteinosis
79	CORPORA AMYLACEA	M5503	M550300	Corpora amylacea
10	AMYLOID	M5510	M551000	Deposition, amyloid

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
6	AMYLOIDOSIS, DIFFUSE	M5511	M551120	Amyloidosis, diffuse
2	AMYLOID TUMOR	M5516	M551600	Amyloid tumor
134	PARAMYLOID	M5517	M551001	Deposition, paramyloid
8	METAMORPHOSIS, FATTY	M5521	M500800	Degeneration, fatty
7	LIPOIDOSIS	M5522	D140000	Lipid storage disease
18	CHOLESTEROL DEPOSITION	M5524	M552400	Deposition, cholesterol
2	ASTEROID OR SPICULATED BODY	M5525	M667700	Asteroid body
37	CALCIUM DEPOSITION	M5540	M554000	Deposition, calcium
41	CALCIFICATION, NOS	M5541	M554000	Deposition, calcium
542	CALCIFICATION, FOCAL	M5542	M554010	Deposition, calcium, focal
121	CALCIFICATION, DYSTROPHIC	M5543	M554300	Calcification, dystrophic
121	CALCIFICATION, METASTATIC	M5544	M554400	Calcification, metastatic
0	CALCINOSIS, NOS	M5545	M555000	Calcinosis
11	CALCINOSIS CIRCUMSCRIPTA	M5546	M555700	Calciis circumscripta
5	CALCIFICATION OF DEBRIS	M5549	M554900	Calcification of debris
2	PSAMMOMA BODIES	M5551	M555900	Psammoma bodies
0	DEPOSITION OF FOREIGN MATERIAL	M5600	M557000	Deposition of foreign material
1	PNEUMOCONIOSIS	M5602	D760000	Pneumoconiosis
1,132	ANTHRACOSIS	M5603	M557801	Anthrocosis
3	SILICOSIS	M5605	M557900	Deposition of silica
1	SIDEROSIS	M5606	M575100	Hemosiderosis (siderosis)
343	TATTOO PIGMENT	M5634	M559300	Tattoo
294	PIGMENTATION, NOS	M5700	M570000	Pigmentation
319	PIGMENTATION, LIPOFUSCIN	M5703	M577400	Pigmentation, lipochrome
3	MELANIN PIGMENTATION	M5711	M572000	Pigmentation, melanin
27	HEMATOIDIN PIGMENTATION	M5722	M574200	Pigmentation, hematoidin
0	HEMOFUSCIN PIGMENTATION	M5724	M574400	Pigmentation, hemofuscin
2,160	HEMOSIDERIN DEPOSITION	M5731	M575000	Pigmentation, hemosiderin
20	FIBROSIDEROTIC NODULE	M5734	M575200	Fibrosiderotic nodule
1	FINE STRUCTURE ALTERATIONS	M6000	M000300	Morphology not assigned in SNOMED or SNODOG
0	NUCLEAR ALTERATION	M6300	M650000	Nuclear alteration
0	NUCLEAR INCLUSION BODY	M6391	M655000	Nuclear inclusion body
0	AGGREGATE, NUCLEAR, NOS	M6392	M655200	Nuclear aggregate
331	NUCLEAR CRYSTALLINE AGGREGATE	M6394	M655400	Nuclear crystalline aggregate
148	CYTOPLASMIC VACUOLATION	M6401	M660400	Cytoplasmic vacuolization
0	MITOCHONDRIAL ALTERATION	M6410	M661000	Mitochondrail alteration
55	CYTOPLASMIC INCLUSION	M6501	M667000	Cytoplasmic inclusion body
1	EXTRACELLULAR ALTERATION	M6700	M680000	Extracellular alteration
8	BASEMENT MEMBRANE ALTERATION	M6710	M681000	Alateration, basement membrane
0	EXTRACELLULAR FLUID ALTERATION	M6820	M680000	Extracellular alteration
6	RUSSELL BODY	M6913	M691300	Russell body
10	LAFORA BODY	M6914	M667001	Lafora body
0	CELL SIZE ALTERATION	M6920	M692000	Cell size alteration
2	CYTOMEGALY	M6921	M692200	Cytomegaly
1	CELL CONTENT ALTERATION	M6950	M697800	Alteration of cellular material, inflammatory
0	GROWTH ALTERATIONS	M7000	M700000	Growth alteration
9	HYPOPLASIA	M7030	M753000	Hypoplasia
29	INVOLUTION	M7040	M708000	Involution
1,357	ATROPHY, NOS	M7100	M580000	Atrophy
27	FOCAL ATROPHY	M7101	M580010	Atrophy, focal/circumscribed
0	ATROPHY, EXHAUSTION	M7102	M581500	Atrophy, exhaustion
0	ATROPHY, PRESSURE	M7111	M581200	Atrophy, pressure
0	DEPLETION, NOS	M7120	M590000	Depletion
5	GASTRITIS, ATROPHIC	M7163	M580100	Atrophy, primary (Essential atrophy, Atrophic gastritis)
0	PHTHISIS BULBI	M7180	M585000	Phthisis bulbi

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9	HYPERTROPHY, NOS	M7200	M710000	Hypertrophy
1	LYMPHADENOPATHY	M7208	M710000	Hypertrophy
58	EXOSTOSIS, NOS	M7211	M714400	Exostosis
30	HYPEROSTOSIS, NOS	M7212	M714500	Hyperostosis
1	ENOSTOSIS	M7214	M714800	Enostosis
0	OSTEOSCLEROSIS	M7215	M499100	Sclerosis, bony (Osteosclerosis)
3	OSTEOARTHOPATHY,HYPERTROPHIC,NOS	M7216	D301002	Osteoarthropathy, hypertrophic
34	OSTEOARTHOPATHY,HYPERTROPHIC PULMON	M7217	D301003	Osteoarthropathy, hypertrophic, pulmonary
200	HYPERPLASIA, NOS	M7300	M720000	Hyperplasia
36	HYPERPLASIA, FOCAL	M7303	M720010	Hyperplasia, focal
4	HYPERPLASIA, DIFFUSE	M7304	M720030	Hyperplasia, diffuse
1	HYPERPLASIA, PAPILLARY	M7305	M720500	Hyperplasia, papillary
145	CYSTIC HYPERPLASIA	M7306	M720600	Hyperplasia, cystic
904	HYPERPLASIA, ADENOMATOUS	M7308	M724900	Hyperplasia, adenomatoid
5	HYPERPLASIA, INTRADUCTAL	M7310	M721700	Hyperplasia, intraductal
21	HYPERPLASIA, PSEUDOEPITHELIOMATOUS	M7311	M720900	Hyperplasia, pseudoepitheliomatous
10	HYPERPLASIA, BASAL CELL	M7312	M721200	Hyperplasia, basal cell
0	HYPERPLASIA, STROMAL	M7313	M724300	Hyperplasia, stromal
11	HYPERPLASIA, LEYDIG CELL	M7314	M720004	Hyperplasia, leydic cell
803	HYPERPLASIA, REACTIVE	M7315	M720201	Hyperplasia, reactive
325	HYPERPLASIA, INTIMAL	M7316	M720005	Hyperplasia, intimal
124	HYPERPLASIA, BILE DUCT	M7317	M720006	Hyperplasia, byle duct
285	HYPERPLASIA, TYPE II CELL	M7318	M720007	Hyperplasia, type II cell
74	INTERSTITUAL REACTION	M7319	M720008	Hyperplasia, interstitial reaction
14	HYPERKERATOSIS, NOS	M7320	M726000	Hyperkeratosis
13	BRONCHIAL GLAND HYPERPLASIA	M7321	M720009	Hyperplasia, bronchial gland
14	CHOLESTEATOMA	M7329	M729000	Cholesteatoma
1	CALLOUS	M7331	M499200	Bony callus
0	CUTANEOUS HORN	M7333	M728400	Cutaneous horn
1	NODULAR HYPERTRICHOSIS	M7334	M564400	Hypertrichosis
0	ACANTHOSIS	M7341	M727100	Acanthosis
0	KERATOACANTHOMA	M7348	M728600	Keratoacanthoma
6	POLYPOID HYPERPLASIA	M7380	M720400	Hyperplasia, polypoid
18	POLYP, NOS	M7381	M768000	Polyp
1	FIBROEPITHELIAL PAPILLOMA	M7382	M768100	Polyp, fibroepithelial
1	POLYP, INFLAMMATORY	M7383	M768200	Polyp, inflammatory
5	EPULIS	M7386	M768500	Epulis
1	FIBROMATOSIS	M7390	M761000	Fibromatosis
1	PSEUDOSARCOMATOUS FASCIITIS	M7394	M761300	Infiltrative fasciitis
58	TELANGIECTASIS	M7400	M763000	Angiectasis
0	FASICULATION, NOS	M7478	F814700	Fasciculaton
0	METAPLASIA, NOS	M7500	M730000	Metaplasia
23	METAPLASIA, CARTILAGINOUS	M7501	M736000	Metaplasia, cartilaginous
3	METAPLASIA, C-CELL	M7505	M730501	Metaplasia, oncocytic, C-cell
70	VASCULARIZATION	M7507	M730700	Vascularization
0	EPITHELIALIZATION	M7510	M732000	Metaplasia, epithelial
4	BRONCHIOLIZATION	M7512	M730001	Metaplasia, bronchiolization
119	METAPLASIA, SQUAMOUS	M7520	M732200	Metaplasia, squamous
0	KERATIN PEARL FORMATION	M7521	M732300	Keratin pearl formation
2	METAPLASIA, GLANDULAR	M7530	M733000	Metaplasia, glandular
508	METAPLASIA, OSSEOUS	M7540	M734000	Metaplasia, osseous
0	OSSEOUS METAPLASIA	M7546	M734000	Metaplasia, osseous
14	DYSPLASIA, NOS	M7600	M740000	Dysplasia
1	PARAKERATOSIS	M7612	M740300	Parakeratosis
0	LIPOMATOSIS	M7615	M741000	Lipomatosis

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0	ADENOSIS	M7621	M742000	Adenosis
0	CYSTIC DISEASE, NOS	M7630	M743000	Cystic disease
0	FIBROCYSTIC DISEASE, BREAST	M7631	M743200	Fibrocystic disease
0	OSTEITIS FIBROSA, NOS	M7641	M748100	Osteitis fibrosa
0	OSTEITIS FIBROSA CYSTICA	M7644	M748400	Osteitis fibrosa cystica
1	FIBROUS DYSPLASIA, NOS	M7651	M749100	Dysplasia, fibrous
2	ENDOMETRIOSIS	M7671	M765000	Endometriosis
1	OSTEODYSTROPHY	M7674	M560001	Osteodystrophy
418	HISTIOCYTOSIS, NOS	M7680	M778000	Histiocytosis
0	HISTIOCYTOSIS, NONLIPID	M7682	M778300	Histiocytosis, non-lipoid
1	EOSINOPHILIC GRANULOMA	M7684	M440500	Eosinophillic granuloma
384	HISTIOCYTOSIS, ALVEOLAR	M7687	M778001	Histiocytosis, alveolar
0	HEMATOPOIETIC TISSUE DISORDER	M7700	M770000	Hematopoietic tissue disorder
1	LEUKOCYTOSIS, NOS	M7710	M776001	Hematopoietic cell proliferation, leukocytosis
4	LEUKOCYTOSIS,NEUTROPHILIC	M7711	M776002	Hematopoietic cell proliferation, neutrophilic leukocytosis
5	LEUKOCYTOSIS,EOSINOPHILIC	M7713	M776004	Hematopoietic cell proliferation, eosinphilic leukocytosis
0	EXOSTOSIS	M7721	M714400	Exostosis
9	MEGAKARYOCYTOSIS	M7737	M780001	Megakaryocytosis
377	HYPERPLASIA, HEMATOPOIETIC	M7770	M72000A	Hyperplasia, hematopoietic
8	HYPERPLASIA, GRANULOCYTIC	M7772	M72000B	Hyperplasia, granulocytic
2	HYPERPLASIA, NEUTROPHILIC	M7773	M72000C	Hyperplasia, neutrophilic
14	HYPERPLASIA, EOSINOPHILIC	M7774	M72000D	Hyperplasia, eosinophilic
25	HYPERPLASIA, PLASMA CELLS	M7776	M721500	Hyperplasia, plasma cell
30	HYPERPLASIA, RETICULUM CELL	M7777	M721800	Hyperplasia, reticuloendothelial cell
134	LYMPHOID HYPERPLASIA	M7780	M722000	Hyperplasia, lymphoid
2	MASTOCYTOSIS	M7781	M72000E	Hyperplasia, mastocytosis
2	HEMATOPOIESIS, EXTRAMEDULLARY	M7782	M735000	Metaplasia, myeloid (Extra medulary hematopoesis)
180	MYELOID METAPLASIA	M7786	M735000	Metaplasia, myeloid (Extra medulary hematopoesis)
1	RETICULOSIS	M7787	M776009	Hematopoietic cell proliferation, reticulocytosis
12	HYPOPLASIA, HEMATOPOIETIC	M7790	M753001	Hypoplasia, hematopoietic
1	CYSTIC OVARIAN FOLLICLE	M7861	M796100	Cystic ovarian follicle
11	CORPUS LUTEUM, NOS	M7866	M001003	Normal tissue morphology, corpus luteum
0	REPAIR	M7900	M799000	Regeneration
2	REGENERATION, NOS	M7910	M799000	Regeneration
0	BENIGN TUMORS	M8000	M800000	Neoplasm {benign}
1	NEOPLASM, NOS	M8001	M800010	Neoplasm {uncertain whether benign or malignant}
1	NEOPLASM, MALIGNANT	M8003	M800030	Neoplasm {malignant}
1	NEOPLASM, METASTATIC	M8006	M800060	Neoplasm {metastatic}
11	EPITHELIAL TUMOR, BENIGN	M8010	M801000	Epithelial tumor {benign}
0	CARCINOMA IN SITU	M8012	M801020	Carcinoma in-situ
17	CARCINOMA, NOS	M8013	M801030	Carcinoma {malignant}
11	CARCINOMA, METASTATIC	M8016	M801060	Carcinoma {metastatic}
0	UNDIFFERENTIATED CARCINOMA,NOS	M8023	M802030	Carcinoma, undifferentiated type {malignant}
0	UNDIFFERENTIATED CA, METAST MALIG	M8026	M802060	Carcinoma, undifferentiated type {metastatic}
1	GIANT CELL CARCINOMA	M8033	M925030	Giant cell tumor of bone {malignant}
0	SMALL CELL CARCINOMA	M8043	M804030	Tumorlet primary site {malignant}
51	PAPILLOMA, NOS	M8050	M805000	Papilloma {benign} (except Papilloma of urinary bladder)
0	PAPILLARY CARCINOMA, NOS	M8053	M805030	Papillary carcinoma {malignant}
0	PAPILLARY CARCINOMA, MAL., METASTAT	M8056	M805060	Papillary carcinoma {metastatic}
0	SQUAMOUS CELL PAPILLOMA	M8070	M805200	Squamous cell papilloma {benign}
0	EPIDERMOID CARCINOMA	M8072	M807020	Squamous cell carcinoma in-situ (epidermoid carcinoma in-situ)
6	SQUAMOUS CELL CARCINOMA, NOS	M8073	M807030	Squamous cell carcinoma {malignant} (epidermoid carcinoma)
27	SQUAMOUS CARCINOMA, METASTATIC	M8076	M807060	Squamous cell carcinoma {metastatic}
8	BASAL CELL CARCINOMA	M8093	M809030	Basal cell carcinoma {malignant}
0	BASAL CELL CARCINOMA, METASTATIC	M8096	M809060	Basal cell carcinoma {metastatic sitr}

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8	TRICHOEPITHELIOMA	M8100	M810000	Tricheopithelioma {benign}
1	CALCIFYING EPITHELIOMA	M8110	M811000	Pilomatrixoma {benign} (Calcifying epithelioma)
23	TRANSITIONAL CELL CARCINOMA	M8123	M812030	Transitional cell carcinoma {malignant}
84	TRANSITIONAL CELL CARCINOMA, METAST	M8126	M812060	Transitional cell carcinoma {metastatic}
71	ADENOMA, NOS	M8140	M814000	Adenoma {benign}
20	ADENOCARCINOMA, NOS	M8143	M814030	Adenocarcinoma {malignant}
31	ADENOCARCINOMA, METASTATIC	M8146	M814060	Adenocarcinoma {metastatic}
6	ISLET CELL ADENOMA	M8150	M815000	Islet cell adenoma {benign}
1	ISLET CELL CARCINOMA	M8153	M815030	Islet cell carcinoma {malignant}
8	ADENOMA, BILE DUCT	M8160	M816000	Bile duct adenoma {benign}
12	CHOLANGIOCARCINOMA	M8163	M816030	Cholangiocarcinoma {malignant} (Bile duct carcinoma)
24	CHOLANGIOCARCINOMA, METASTATIC	M8166	M816060	Cholangiocarcinoma {metastatic}
0	HEPATOMA, BENIGN	M8170	M817000	Liver cell adenoma {benign}
8	HEPATOMA, NOS	M8173	M817030	Hepatocellular carcinoma {malignant}
0	HEPATOMA, METASTATIC	M8176	M817060	Hepatocellular carcinoma {metastatic}
3	ADENOMATOUS POLYP	M8210	M821000	Adenomatous polyp {benign}
0	ADENOMATOSIS, NOS	M8220	M822000	Adenomatous polyosis coli {benign} (Adenomatosis, Familial p
0	UNDIFFERENTIATED ADENOCARCINOMA, ME	M8236	M823060	Solid carcinoma {metastatic}
2	CARCINOID TUMOR	M8241	M824010	Carcinoid tumor {uncertain if benign or malignant}
6	PULMONARY ADENOMATOSIS	M8251	M825100	Alveolar adenoma {benign}
80	BRONCHIOLAR ADENOCARCINOMA	M8253	M825030	Bronchiolo-alveolar adenocarcinoma {malignant}
168	METASTATIC BRONCHIOLAR ADENOCARCINO	M8256	M825060	Bronchiolo-alveolar adenocarcinoma {metastatic}
4	PAPILLARY ADENOMA	M8260	M826000	Papillary adenoma {benign}
48	PAPILLARY ADENOCARCINOMA	M8263	M826030	Papillary adenocarcinoma {malignant}
222	PAPILLARY ADENOCARCINOMA, METASTATI	M8266	M826060	Papillary adenocarcinoma {metastatic}
9	CHROMOPHOBE ADENOMA	M8270	M827000	Chromophobe adenoma {benign}
0	ACIDOLPHIL ADENOMA	M8280	M828000	Acidophil carcinoma {benign}
13	FOLLICULAR ADENOMA	M8330	M833000	Follicular adenoma {benign}
20	FOLLICULAR ADENOCARCINOMA	M8333	M833030	Follicular adenocarcinoma {malignant}
18	FOLLICULAR ADENOCARCINOMA,METASTATI	M8336	M833060	Follicular adenocarcinoma {metastatic}
5	C-CELL ADENOMA	M8360	M851000	Medullary adenoma {benign} (C-cell adenoma)
5	C-CELL CARCINOMA	M8363	M851030	Medullary carcinoma {malignant} (C-cell carcinoma)
0	C-CELL CARCINOMA, METASTATIC	M8366	M851060	Medullary carcinoma {metastatic}
13	ADRENAL CORTICAL ADENOMA	M8370	M837000	Adrenal cortical adenoma {benign}
14	ADRENAL CORTICAL CARCINOMA	M8373	M837030	Adrenal cortical carcinoma {malignant}
48	ADRENAL CORTICAL CARCINOMA, METASTA	M8376	M837060	Adrenal cortical carcinoma {metastatic}
6	PERIANAL GLAND ADENOMA	M8380	M838200	Perinal gland adenoma {benign}
1	PERIANAL GLAND CARCINOMA	M8383	M838230	Perinal gland carcinoma {malignant}, primary site
1	METASTATIC PERIANAL GLAND CARCINOMA	M8386	M838260	Perinal gland carcinoma {metastatic}
0	ADNEXAL ADENOMA	M8390	M839000	Skin appendage adenoma {benign}
2	SWEAT GLAND ADENOMA	M8400	M840000	Sweat gland adenoma {benign}
2	SWEAT GLAND ADENOCARCINOMA	M8403	M840030	Sweat gland adenocarcinoma {malignant}
6	SWEAT GLAND ADENOCARCINOMA	M8406	M840060	Sweat gland adenocarcinoma {metastatic}
31	SEBACEOUS ADENOMA	M8410	M841000	Sebaceous adenoma {benign}
6	SEBACEOUS ADENOCARCINOMA	M8413	M841030	Sebaceous adenocarcinoma {malignant}
3	SEBACEOUS ADENOCARCINOMA, METASTATI	M8416	M841060	Sebaceous adenocarcinoma {metastatic}
1	CERUMINOUS CARCINOMA	M8423	M842030	Ceruminous adenocarcinoma {malignant}
6	CYSTADENOMA, NOS	M8440	M844000	Cystadenoma {benign}
1	CYSTADENOCARCINOMA, NOS	M8443	M844030	Cystadenocarcinoma {malignant}
3	PAPILLARY CYSTADENOMA	M8450	M845000	Papillary cystadenoma {benign}
1	PAPILLARY CYSTADENOCARCINOMA	M8453	M845030	Papillary cystadenocarcinoma {malignant}
0	MUCINOUS ADENOCARCINOMA	M8483	M848030	Mucinous adenocarcinoma {malignant}
2	DUCTAL ADENOCARCINOMA	M8503	M850330	Non infiltrating intraductal papillary adenocarcinoma, malig
4	LOBULAR ADENOMA	M8520	M852020	Lobular carcinoma in-situ (Lobular adenoma)
10	LOBULAR ADENOCARCINOMA	M8523	M852030	Lobular carcinoma {malignant} (lobular adenocarcinoma)

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
7	LOBULAR ADENOCARCINOMA, METASTATIC	M8526	M852060	Lobular carcinoma {malignant}, metastatic/
0	ACINAR CELL CARCINOMA	M8553	M855030	Acinar cell carcinoma {malignant}
24	ADENOSQUAMOUS CARCINOMA	M8563	M856030	Adenosquamous carcinoma {malignant}
133	ADENOSQUAMOUS CARCINOMA, METASTATIC	M8566	M856060	Adenosquamous carcinoma {metastatic}
5	THYMOMA, NOS	M8580	M858000	Thymoma {benign}
2	THYMOMA, MALIGNANT	M8583	M858030	Thymoma {malignant}
0	THYMOMA, METASTATIC	M8586	M858060	Thymoma {metastatic}
0	LUTEOMA	M8610	M861000	Luteoma {benign}
7	GRANULOSA CELL TUMOR	M8621	M862010	Granulosa cell tumor {uncertain if bening or malignant}
2	GRANULOSA CELL CARCINOMA	M8623	M862030	Granulosa cell tumor {malignant}
1	GONADAL NEOPLASM, METASTATIC	M8626	M000300	Morphology not assigned in SNOMED or SNODOG
12	SERTOLI CELL TUMOR (ANDROBLASTOMA)	M8630	M864000	Tubular androblastoma {benign} (Sartoli Cell Tumor)
62	INTERSTITIAL CELL TUMOR	M8650	M883500	Interstitial Cell Tumor {benign}
5	NONCHROMAFFIN PARAGANGLIOMA, NOS	M8690	M869310	Extra-adrenal (nonchromaffin) paraganglioma (Chemodectoma)
2	NONCHROMAFFIN PARAGANGLIOMA, MALIGN	M8693	M869330	Extra-adrenal (nonchromaffin) paraganglioma {malignant}
1	NONCHROMAFFIN PARAGANGIOMA, METASTA	M8696	M869360	Extra-adrenal paraganglioma {metastatic}
9	PHEOCHROMOCYTOMA, NOS	M8700	M870000	Pheochromocytoma {benign}
3	PHEOCHROMOCYTOMA, MALIGNANT	M8703	M870030	Pheochromocytoma {malignant}
10	PHEOCHROMOBLASTOMA, METASTATIC	M8706	M870060	Pheochromocytoma {metastatic}
2	BENIGN MELANOMA	M8720	M872000	Pigmented nevus {benign}
2	MELANOMA, BENIGN	M8721	M872010	Pigmented nevus {benign}
13	MALIGNANT MELANOMA	M8723	M872030	Melanoma {malignant}
59	METASTATIC MELANOMA	M8726	M872060	Melanoma {metastatic}
2	SARCOMA, NOS	M8803	M880030	Sarcoma {malignant}
0	MYELOSARCOMA	M8804	M880030	Sarcoma {malignant}
8	SARCOMA, METASTATIC	M8806	M880060	Sarcomatosis {metastatic}
0	MYELOSARCOMA, METASTATIC	M8807	M880060	Sarcomatosis {metastatic}
6	FIBROMA, NOS	M8810	M881000	Fibroma {benign}
5	FIBROSARCOMA, NOS	M8823	M881030	Fibrosarcoma {malignant}
12	FIBROSARCOMA, METASTATIC	M8826	M881060	Fibrosarcoma {metastatic}
2	HISTIOCYTOMA	M8830	M883000	Fibrous histiocytoma {benign}
0	FIBROUS HISTIOCYTOMA, MALIGNANT	M8833	M883030	Fibrous histiocytoma {malignant}
0	FIBROUS HISTIOCYTOMA, METASTATIC MAL	M8836	M883060	Fibrous histiocytoma {metastatic}
0	MYXOMA, NOS	M8840	M884000	Myxoma {benign}
18	LIPOMA, NOS	M8850	M885000	Lipoma {benign}
0	LIPOSARCOMA, NOS	M8853	M885030	Liposarcoma {malignant}
0	LIPOSARCOMA, METASTATIC	M8856	M885600	Intramuscular lipoma {benign}
1	MYELOLIPOMA	M8870	M887000	Myelolipoma {benign}
0	HIBERNOMA, NOS	M8880	M888000	Hibernoma {benign} (Fetal fat cell lipoma, Brown fat tumor)
0	HIBERNOMA, MALIGNANT	M8883	M888030	Hibernoma {malignant} (Fetal fat cell lipoma, Brown fat tum
78	LEIOMYOMA, NOS	M8890	M889000	Leiomyoma {benign}
5	LEIOMYOSARCOMA	M8893	M889030	Leiomyosarcoma {malignant}
1	LEIOMYOSARCOMA, METASTATIC	M8896	M889060	Leiomyosarcoma {metastatic}
0	RHABDOMYOMA	M8900	M890000	Rhabdomyoma {benign}
2	RHABDOMYOSARCOMA	M8903	M890030	Rhabdomyosarcoma {malignant}
8	MIXED TUMOR	M8940	M894000	Pleomorphic adenoma {benign} (Mixed Tumor)
2	MIXED TUMOR, MALIGNANT	M8943	M894030	Mixed tumor {malignant}
13	MIXED MAMMARY TUMOR, METASTATIC	M8946	M894060	Mixed tumor {metastatic}
0	NEPHROBLASTOMA	M8963	M896030	Nephroblastoma {malignant} (Wilms' tumor, Adearcoma)
0	HEPATOBLASTOMA, MALIGNANT	M8973	M897030	Heptoblastoma {malignant}
0	HEPATOBLASTOMA, METASTATIC	M8976	M897060	Heptoblastoma {metastatic}
0	CARCINOSARCOMA	M8983	M898030	Carcinosarcoma {malignant}
3	FIBROADENOMA, NOS	M9010	M901000	Fibroadenoma {benign}
0	SYNOVIAL SARCOMA	M9043	M904030	Synovial sarcoma {malignant}
0	SYNOVIAL SARCOMA, METASTATIC	M9046	M904060	Synovial sarcoma {metastatic}

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0	MESOTHELIOMA, BENIGN	M9050	M905000	Mesothelioma {benign}
0	MESOTHELIOMA, NOS	M9051	M905010	Mesothelioma {uncertain whether benign or malignant}
2	MESOTHELIOMA, MALIGNANT	M9053	M905030	Mesothelioma {malignant}
20	MESOTHELIOMA, METASTATIC	M9056	M905060	Mesothelioma {metastatic}
9	SEMINOMA IN SITU	M9062	M906120	Seminoma, carcinoma in-situ
20	SEMINOMA, NOS	M9063	M906130	Seminoma {malignant}
101	HEMANGIOMA, NOS	M9120	M912000	Hemangioma {benign}
18	HEMANGIOSARCOMA	M9123	M912030	Hemangiosarcoma {malignant} (Angiosarcoma)
88	HEMANGIOSARCOMA, METASTATIC	M9126	M912060	Hemangiosarcoma {metastatic}
0	HEMANGIOENDOTHELIOMA, NOS	M9131	M913100	Capillary hemangioma {benign}
3	HEMANGIOPERICYTOMA, NOS	M9151	M915010	Hemangiopericytoma {uncertain whether benign or malignant}
0	HEMANGIOPERICYTOMA, MAL	M9153	M915030	Hemangiopericytoma {malignant}
0	LYMPHANGIOMA	M9170	M917000	Lymphangioma {benign}
1	OSTEOMA, NOS	M9180	M918000	Osteoma {benign}
69	OSTEOSARCOMA, NOS	M9183	M918030	Osteosarcoma {malignant}
131	OSTEOSARCOMA, METASTATIC	M9186	M918060	Osteosarcoma {metastatic}
0	OSTEOCARTILAGINOUS EXOSTOSIS	M9210	M921000	Osteochondroma {benign}
0	CHONDROMA	M9220	M922000	Chondroma {benign}
1	CHONDROSARCOMA	M9223	M922030	Chondrosarcoma {malignant}
1	ODONTOMA	M9271	M928000	Odontoma {benign}
0	HAMARTOMA	M9350	M755000	Hamartoma {benign}
1	CHORDOMA	M9363	M937030	Chordoma {malignant}
1	GRANULAR CELL MYOBLASTOMA	M9370	M958000	Granular cell tumor {benign} (Granular cell myoblastoma)
0	EPENDYMOMA, MALIGNANT	M9393	M939030	Choroid plexus papilloma {malignant}
0	ASTROCYTOMA, NOS	M9403	M940030	Astrocytoma {malignant}
0	OLIGODENDROGLIOMA,NOS	M9453	M945030	Oligodendroglioma {malignant}
0	GANGLIONEUROMA	M9490	M949000	Ganglioneuroma {benign}
0	GANGLIONEUROBLASTOMA	M9493	M949030	Ganglioneuroblastoma {malignant}
1	NEUROBLASTOMA	M9503	M950030	Neuroblastoma {malignant}
1	MENINGIOMA, NOS	M9530	M953000	Meningioma {benign}
3	MENINGIOMA, MALIGNANT	M9533	M953030	Meningioma {malignant}
0	NEUROFIBROMA, NOS	M9540	M954000	Neurofibroma {benign}
3	NEUROFIBROSARCOMA	M9543	M954030	Neurofibrosarcoma {malignant}
0	NEUROFIBROSARCOMA, METASTATIC	M9546	M954060	Neurofibrosarcoma {metastatic}
2	NEURILEMOMA, MALIGNANT	M9563	M956030	Neurilemmona {malignant} (Schwannoma)
7	LYMPHOMATOUS TUMOR, BENIGN	M9590	M959000	Lymphomatous tumor {benign}
38	MALIGNANT LYMPHOMA, NOS	M9593	M959030	Lymphoma {malignant}
352	LYMPHOMA, METASTATIC	M9596	M959060	Lymphoma {metastatic}
0	LYMPHOSARCOMA, NOS	M9613	M961030	Lymphosarcoma {malignant}
0	LYMPHOSARCOMA, METASTATIC	M9616	M961060	Lymphosarcoma {metastatic}
0	LYMPHOSARCOMA,UNSURE IF PRIM OR MET	M9619	M961090	Lymphosarcoma {malignant, uncertain whether primary or metas
0	LYMPHOCYTIC LYMPHOSARCOMA	M9623	M962030	Lymphoma, lymphocytic, well differentiated {malignant}
4	RETICULUM CELL SARCOMA	M9643	M964030	Reticulosarcoma {malignant} (Histocytic Lymphosarcoma)
11	RETICULUM CELL SARCOMA, METASTATIC	M9646	M964060	Reticulosarcoma {metastatic}
1	RETICULOENDOTHELIAL SARCOMA, MALIGN	M9723	M972030	Histiocytosis {malignant} (Reticulendothelial sarcoma)
0	RETICULOENDOTHELIAL SARCOMA, METAST	M9726	M972060	Histiocytosis {metastatic}
3	PLASMOCYTOMA	M9731	M973100	Plasma cell tumor {benign}
2	MYELOMA	M9733	M973030	Plasma cell myeloma {malignant}
8	MYELOMA,METASTATIC	M9736	M973060	Plasma cell myeloma {metastatic}
0	MAST CELL TUMOR	M9741	M974010	Mastocytoma {uncertain whether benign or malignant}
3	MASTOCYTOMA	M9743	M974030	Mast cell sarcoma {malignant}
0	MYELOSARCOMA, MALIGNANT	M9763	M000300	Morphology not assigned in SNOMED or SNODOG
0	MYELOSARCOMA, METASTATIC	M9766	M000300	Morphology not assigned in SNOMED or SNODOG
0	LEUKEMIA, NOS	M9803	M980030	Leukemia {malignant}
0	LEUKEMIA, METASTATIC	M9806	M980060	Leukemia {metastatic}

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
1	LYMPHOCYTIC LEUKEMIA, NOS	M9823	M982030	Lymphoid leukemia (malignant)
0	LYMPHOCYTIC LEUKEMIA, METASTATIC	M9826	M982060	Lymphoid leukemia (metastatic)
0	CHRONIC LYMPHOCYTIC LEUKEMIA	M9827	M982330	Chronic lymphoid leukemia (malignant)
0	GRANULOCYTIC LEUKEMIA, NOS	M9863	M986030	Myeloid leukemia (malignant)
0	GRANULOCYTIC LEUKEMIA, METASTATIC	M9866	M986060	Myeloid leukemia (metastatic)
0	MONOCYTIC LEUKEMIA, NOS	M9893	M989030	Monocytic leukemia (malignant)
0	MONOCYTIC LEUKEMIA, METASTATIC	M9896	M989060	Monocytic leukemia (metastatic)
0	MEGAKARYOCYTIC MYELOSIS	M9923	M992030	Megakaryocytic myelosis (malignant)
0	CHLOROMA	M9933	M993030	Myeloid sarcoma (malignant)
0	CHLOROMA, METASTATIC MALIGNANT	M9936	M993060	Myeloid sarcoma (metastatic)
0	INFARCT	MM547		*** UNDEFINED ***
0	SKIN	T 01	T010000	Skin
1	TOPOGRAPHIC SITE UNKNOWN	T0000	T000010	Topography unknown
0	NO SPECIFIC LOCATION SPECIFIED	T0001	T000031	No specific topography specified
88	BODY AS A WHOLE	T0002	T000100	
311	SKIN, NOS	T0100	T010000	Skin
0	EPIDERMIS	T0110	T011000	Epidermis
151	SEBACEOUS GLAND	T0131	T013100	Sebaceous gland
0	APOCRINE SWEAT GLAND, NOS	T0133	T013200	Apocrine gland
0	HAIR, NOS	T0140	T014000	Hair
0	NAIL, NOS	T0160	T016000	Nail
0	SKIN OF FOREHEAD	T0202	T021040	Skin of forehead
0	SKIN OF FACE	T0205	T021200	Skin of face
0	SKIN OF EAR	T0221	T022000	Skin of external ear
0	SKIN OF NECK	T0224	T023000	Skin of neck
0	SKIN OF SHOULDER	T0227	T024100	Skin of shoulder
0	SKIN OF CHEST	T0252	T024240	Skin of chest
0	SKIN OF BREAST	T0255	T024300	Skin of breast
0	SKIN OF BACK	T0258	T024500	Skin of back
0	SKIN OF ABDOMEN	T0261	T024800	Skin of abdomen
0	SKIN OF BUTTOCK	T0272	T024710	Skin of buttock
0	SKIN OF FOOT AND TOE, NOS	T0289	T028600	Skin of foot and toe
0	PLANTAR SKIN OF FOOT AND TOE	T0293	T028620	Skin of plantar surface of foot and toe
134	SUBCUTANEOUS TISSUE, NOS	T0300	T030000	Subcutaneous tissue
0	SUBCUTANEOUS TISSUE OF SCALP	T0301	T031020	Subcutaneous tissue of scalp
0	SUBCUTANEOUS TISSUE OF FACE	T0305	T031200	Subcutaneous tissue of face
0	SUBCUTANEOUS TISSUE OF LIP, NOS	T0317	T031500	Subcutaneous tissue of lip
2	SUBCUTANEOUS TISSUE OF NECK	T0324	T033000	Subcutaneous tissue of neck
0	SUBCUTANEOUS TISSUE OF SHOULDER	T0327	T034100	Subcutaneous tissue of shoulder
0	SUBCUTANEOUS TISSUE OF BACK	T0358	T034500	Subcutaneous tissue of back
0	SUBCUTANEOUS TISSUE OF ABDOMEN	T0361	T034800	Subcutaneous tissue of abdomen
0	SUBCUTANEOUS TISS. OF PERIANAL AREA	T0371	T035070	Subcutaneous tissue of perianal area
0	SUBCUTANEOUS TISSUE OF HIP	T0378	T034700	Subcutaneous tissue of hip
0	SUBCUTANEOUS TISSUE OF LOWER LEG	T0386	T038300	Subcutaneous tissue of lower leg
0	SUBCUTANEOUS TISS OF FOOT & TOE,NOS	T0389	T038600	Subcutaneous tissue of foot and toe
0	SUBQ TISSUE OF PLANTAR FOOT AND TOE	T0393	T038620	Subcutaneous tissue of plantar area of foot and toe
68	BREAST, NOS	T0400	T040000	Mammary gland
0	HEMATOPOIETIC AND RE SYSTEM, NOS	T0500	T050000	Hematopoietic and reticuloendothelial system, NOS
2	LYMPHOCYTIC TISSUE	T0520	T052000	Lymphocytic tissue
6	BONE MARROW	T0600	T060000	Bone marrow
817	SPLEEN,NOS	T0700	T070000	Spleen
0	SPLENIC HILUS	T0702	T070200	Hulus of spleen
0	SPLENIC LYMPHATIC FOLLICLE	T0703	T070300	Lymphatic follicle of spleen (Spleenic white pulp)

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
0	SPLENIC SINUSOIDS	T0706	T070600	Splenic sinusoids
0	PERISPLENIC REGION	T0710	T071000	Perisplenic region
2	LYMPH NODE, NOS	T0800	T080000	Lymph node
0	SINUSOID OF LYMPH NODE	T0802	T080200	Sinusoid of lymph node
0	HILUS OF LYMPH NODE	T0805	T080500	Hilus of lymph node
0	PERI-LYMPHATIC TISSUE	T0809	T080900	Paracortical area of lymph node
0	FACIAL LYMPH NODE	T0815	T081500	Facial lymph node
0	SUBMANDIBULAR LYMPH NODE	T0816	T081600	Submandibular lymph node
568	MANDIBULAR LYMPH NODE	T0818	T081800	Mandibular lymph node
1	CERVICAL LYMPH NODE, NOS	T0820	T082000	Lymph node of neck (Cervical lymph node)
0	LYMPH NODE OF THORAX	T0830	T083000	Lymph node of thorax
16	TRACHEOBRONCHIAL LYMPH NODE	T0833	T083300	Tracheobronchial lymph node
4	TRACHEAL LYMPH NODE	T0834	T083400	Trachael lymph node (Paratrachael lymph node)
772	PARASTERNAL LYMPH NODE	T0835	T083500	Parasternal lymph node
880	MEDIASTINAL LYMPH NODE	T0836	T083600	Mediastinal lymph node
0	DIAPHRAGMATIC LYMPH NODE	T0838	T083661	Diaphragmatic lymph node
2	ABDOMINAL LYMPH NODE	T0840	T084000	Abdominal lymph node
0	SUPERIOR MESENTERIC LYMPH NODE	T0842	T085101	Superior mesenteric lymph node
0	INFERIOR MESENTERIC LYMPH NODE	T0843	T085102	Inferior mesenteric lymph node
693	HEPATIC LYMPH NODE	T0844	T084400	Hepatic lymph node
674	PANCREATOSPLENIC LYMPH NODE	T0847	T084700	Pancreaticosplenic lymph node
18	LYMPH NODE, LUMBAR	T0849	T084900	Lumbar lymph node
546	MESENTERIC LYMPH NODE, NOS	T0851	T085100	Mesenteric lymph node
7	LYMPH NODE, LEFT COLIC	T0855	T085601	Colic lymph node, left
0	LYMPH NODE, PELVIC	T0860	T086000	Pelvic lymph node
9	ILIAC LYMPH NODE	T0861	T086100	Iliac lymph node
640	AXILLARY LYMPH NODE	T0871	T087100	Axillary lymph node
0	PECTORAL LYMPH NODE, NOS	T0875	T087500	Pectoral lymph node
18	INGUINAL LYMPH NODE	T0881	T088100	Inguinal lymph node
38	DEEP INGUINAL LYMPH NODE	T0882	T088101	Inguinal lymph node, deep
516	POPLITEAL LYMPH NODE	T0885	T088500	Popliteal lymph node
1,096	TRACHEOBRONCHIAL LYMPH NODE, MIDDLE	T0887	T088604	Tracheobronchial lymph node, middle
990	TRACHEOBRONCHIAL LYMPH NODE, RIGHT	T0888	T088602	Tracheobronchial lymph node, right
1,032	TRACHEOBRONCHIAL LYMPH NODE, LEFT	T0889	T088603	Tracheobronchial lymph node, left
703	POSTCERVICAL LYMPH NODE	T0890	T088701	Postcervical lymph node
787	PRESCAPULAR LYMPH NODE	T0893	T087001	Prescapular lymph node
0	INTERCOSTAL LYMPHATICS	T0952	T095200	Intercostal lymphatic
0	LYMPHATICS OF ADRENAL GLAND	T0968	T096800	Lymphatic of adrenal gland
0	BLOOD, NOS	T0X00	T0X0000	Blood
0	PLASMA, NOS	T0X40	T0X4000	Plasma
0	BONE, NOS	T1100	T100200	Skeletal bone
0	PERIOSTEUM	T1101	TY44000	Peritoneum
1	ENDOSTEUM	T1103	T1X5300	Endosteum
14	CRANIAL & FACIAL BONES	T1110	T101000	Cranial and facial bone
1	SPHENOID AND ETHMOID BONES	T1115	T101500	Sphenoid and ethmoid bone
14	MAXILLA	T1117	T101700	Maxilla (Upper jaw bone)
19	MANDIBLE	T1118	T101800	Mandible (Lower jaw bone)
1	HYOID BONE	T1119	T101900	Hyoid bone
114	VERTEBRAL COLUMN	T1120	T105000	Vertebral column (Spine, Spinal column, Backbone)
59	CERVICAL VERTEBRA, NOS	T1123	T105950	Cervical vertebra
118	THORACIC VERTEBRA, NOS	T1124	T106000	Thoracic vertebra
290	LUMBAR VERTEBRA, NOS	T1125	T107400	Lumbar vertebra
26	SACRUM	T1126	T108000	Sacrum
25	SCAPULA	T1128	T112800	Scapula
0	SHOULDER GIRDLE	T1130	T113000	Sholder girdle

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
0	CLAVICLE	T1131	T113100	Clavicle
31	NON-VERTEBRAL THORACIC BONES	T1132	T103000	Rib cage
438	RIB	T1133	T103500	Rib
47	PELVIC BONES	T1138	T113800	Pelvic bones
0	BONE OF UPPER OR LOWER EXTREMITY	T1140	T114000	Bone of upper extremity (Bone of foreleg)
316	HUMERUS	T1141	T114100	Humerus
32	RADIUS	T1142	T114200	Radius
19	ULNA	T1143	T114300	Ulna
6	CARPAL BONE	T1144	T114400	Carpal bone
3	METACARPAL	T1154	T115400	Metacarpal
4	PHALANGES	T1160	T116000	Phalanx
1	BONE OF LOWER EXTREMITY	T1170	T117000	Bone of lower extremity (Bone of hindleg)
495	FEMUR	T1171	T117100	Femur
3	PATELLA	T1172	T117200	Patella
187	TIBIA	T1173	T117300	Tibia
0	FIBULA	T1174	T117400	Fibula
5	TARSAL BONE	T1175	T117500	Tarsal bone
3	METATARSAL, NOS	T1184	T118400	Metatarsal
0	JOINT, NOS	T1200	T120000	Joint
0	JOINT OF UPPER EXTREMITY	T1240	T124000	Joint of upper extremity (Joint of foreleg)
0	ACROMIOCLAVICULAR JOINT, NOS	T1242	T124200	Acromioclavicular joint
2	CARPAL JOINTS	T1246	T124600	Joint of wrist
1	REAR LEG JOINT, NOS	T1270	T127000	Joint of lower extremity (Joint of hindleg)
0	KNEE JOINT, NOS	T1272	T127200	Knee joint
0	ANKLE JOINT, NOS	T1275	T127500	Ankle joint
0	TARSAL JOINT	T1277	T127700	Tarsal joint
0	METATARSOPHALANGEAL JOINT, NOS	T1281	T128100	Metatarsophalangeal joint
18	SKELETAL MUSCLE	T1300	T130000	Skeletal muscle
11	MUSCLE OF BACK	T1301	T140900	Muscle of back
0	FACIAL MUSCLE	T1315	T131500	Facial muscle
1	TEMPORAL MUSCLE	T1327	T132700	Temporal muscle
1	TEMPORAL MUSCLE	T1328	T132800	Pterygoid muscle
7	MUSCLE OF NECK	T1330	T133000	Muscle of neck
5	MUSCLE OF UPPER LIMB	T1360	T136000	Muscle of upper extremity
0	SKELETAL MUSCLE	T1400	T130000	Skeletal muscle
6	INTERCOSTAL MUSCLE	T1416	T141600	Intercostal muscle
363	DIAPHRAGM, NOS	T1417	TY24000	Diaphragm
8	MUSCLE OF HIP AND THIGH	T1440	T144000	Muscle of hip and thigh
0	MUSCLE OF LEG	T1470	T147000	Muscle of leg
0	COSTAL CARTILAGE	T1510	T104000	Costal cartilage
0	INTERVERTEBRAL DISC, NOS	T1520	T121030	Intervetrebral disc
0	INTERVERTEBRAL DISC OF LUMAR VERTEB	T1523	T123410	Intervertebral disc of lumbar veterbra
0	VERTEBRA,SACRAL	T1524	T108060	Sacral vertebra
1	TENDON, NOS	T1701	T170100	Tendon
0	SOFT TISSUE	T1900	T1X0000	Soft tissues
0	SOFT TISSUES, NOS	T1X00	T1X0000	Soft tissues, NOS
0	ADIPOSE TISSUE	T1X01	T1X0100	Adipose tissue
0	ABDOMINAL FAT	T1X02	T1X0200	Abdominal Fat
0	FIBROUS TISSUE	T1X10	T1X1000	Fibrous tissue
0	CONNECTIVE TISSUE, NOS	T1X20	T1X2000	Connective tissue
0	LOOSE AREOLAR CONNECTIVE TISSUE	T1X21	T1X2100	Loose alveolar connective tissue
0	SMOOTH MUSCLE	T1X30	T1X3000	Smooth muscle
0	UPPER RESPIRATORY TRACT, NOS	T2010	T201000	Upper respiratory tract
2	NOSE, NOS	T2100	T210000	Nose
0	MUCOUS MEMBRANE OF NOSE	T2101	T210100	Mucous membrane of nose

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
542	NASAL TURBINATES	T2136	T213600	Nasal turbinate
1	PARANASAL SINUS	T2200	T220000	Accessory sinus (Paranasal sinus)
0	NASOPHARYNX,NOS	T2300	T230000	Nasopharynx
0	LARYNX	T2400	T240000	Epiglottis and larynx
1	EPIGLOTTIS	T2401	T240100	Epiglottis
1	LARYNX, NOS	T2410	T241000	Larynx
545	TRACHEA, NOS	T2500	T250000	Trachea
0	TRACHEAL SUBMUCOSA	T2502	T250200	Trachael submucosa
511	TRACHEAL BIFURCATION	T2520	T252000	Tracheal bifurcation
0	TRACHEAL MUSCLE	T2530	T253000	Trachael muscle
1	PERITRACHEAL TISSUE	T2540	T254000	Peritracheal tissue
4	BRONCHUS, NOS	T2600	T260000	Bronchus
0	BRONCHIAL SUBMUCOSA	T2602	T260200	Bronchial submucosa
0	BRONCHIOLE, NOS	T2700	T270000	Bronchiole
40	LUNG	T2800	T280000	Lung
0	PULMONARY ALVEOLI	T2801	T280100	Pulmonary alveoli
0	RIGHT LUNG, NOS	T2810	T281000	Lung, right
1,358	LUNG, RIGHT INTERMEDIATE	T2846	T283500	Lung Lobe, right intermediate
1,665	LUNG, RIGHT APICAL	T2847	T282000	Lung Lobe, right apical
1,406	LUNG, RIGHT CARDIAC	T2848	T283000	Lung Lobe, right cardiac
1,479	LUNG, RIGHT DIAPHRAGMATIC	T2849	T284000	Lung Lobe, right diaphragmatic
0	LEFT LUNG, NOS	T2850	T285000	Lung, Left
1,698	LUNG, LEFT APICAL	T2875	T286000	Lung Lobe, left apical
1,316	LUNG, LEFT CARDIAC	T2876	T286801	Lung Lobe, left cardiac
1,396	LUNG, LEFT DIAPHRAGMATIC	T2877	T287000	Lung Lobe, left diaphragmatic
11	PLEURA, NOS	T2900	T290000	Pleura
8	PLEURAL MESOTHELIUM	T2901	T290100	Pleural mesothelium
10	COSTAL PLEURA	T2932	T293200	Costal pleura
6	DIAPHRAGMATIC PLEURA	T2933	T293300	Diaphragmatic pleura
0	NASAL CAVITY	T2X12	T2X1200	Nasal cavity
2	PERICARDIUM, NOS	T3100	T310000	Pericardium
0	VISCERAL PERICARDIUM	T3101	T310100	Visceral pericardium (Epicardium)
407	HEART, NOS	T3200	T320000	Heart
8	ATRIUM, NOS	T3210	T321000	Atrium
0	AURICULAR APPENDAGE, NOS	T3211	T321100	Auricular appendage
2	RIGHT ATRIUM, NOS	T3220	T322000	Atrium, right
2	LEFT ATRIUM, NOS	T3230	T323000	Atrium, left
0	VENTRICLE, NOS	T3240	T324000	Ventricle
115	INTERVENTRICULAR SEPTUM	T3241	T324100	Interventricular septum
126	RIGHT VENTRICLE, NOS	T3250	T325000	Ventricle, right
119	LEFT VENTRICLE, NOS	T3260	T326000	Ventricle, left
0	MYOCARDIUM & CARDIAC CONDUCTION SYS	T3300	T330000	Myocardium and cardiac conduction system
1	MYOCARDIUM, NOS	T3301	T330100	Myocardium
0	ENDOCARDIUM, NOS	T3400	T340000	Endocardium
4	CARDIAC VALVE	T3500	T350000	Cardiac valve
3	MITRAL VALVE	T3800	T380000	Mitral valve
0	AORTA VALVE	T3900	T390000	Aortic valve
0	PERICARDIAL CAVITY, NOS	T3X20	T3X2000	Pericardial cavity
0	BLOOD VESSEL, NOS	T4000	T400000	Blood vessel
0	ARTERY, NOS	T4100	T410000	Artery
0		T4110	T411000	Lumen of artery
16	AORTA, NOS	T4200	T420000	Aorta
0	AORTIC TUNICA INTIMA	T4201	T420100	Aortic tunica intima
0	AORTIC TUNICA MEDIA	T4203	T420300	Aortic tunica media
2	PERIAORTIC TISSUE	T4205	T420500	Periaortic tissue

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
104	AORTIC ARCH	T4230	T423000	Aortic arch
66	ABDOMINAL AORTA	T4250	T425000	Abdominal aorta
0	CORONARY ARTERY. NOS	T4300	T430000	Coronary artery
45	PULMONARY ARTERY. NOS	T4400	T440000	Pulmonary artery
0	ARTERY OF HEAD. NECK AND BRAIN	T4500	T450000	Artery of head. neck and brain
3	CAROTID ARTERY. NOS	T4501	T450100	Carotid artery
0	ARTERY OF THORAX AND ABDOMEN	T4600	T460000	Artery of thorax and abdomen
0	PERICARDIAL ARTERY	T4636	T463600	Pericardial artery
0	MEDIASTINAL ARTERY. NOS	T4637	T463700	Mediastinal artery
0	GASTRODUODENAL ARTERY	T4644	T464400	Gastrocuodenal artery
0	SUPERIOR PANCREATICODUODENAL ARTERY	T4647	T464700	Superior pancreaticoduodenal artery
0	MESENTERIC ARTERY. NOS	T4650	T465000	Mesenteric artery
0	INFERIOR PANCREATICODUODENAL ARTERY	T4653	T465300	Inferior pancreaticoduodenal artery
0	RENAL ARTERY. NOS	T4660	T466000	Renal artery
0	ADRENAL ARTERY	T4695	T469500	Adrenal artery
0	TESTICULAR ARTERY	T4697	T469700	Testicular artery
0	VEIN. NOS	T4800	T480000	Vein
1	PULMONARY VEIN. NOS	T4850	T485000	Pulmonary vein
0	VENA CAVA. NOS	T4860	T486000	Vena cava
0	HEPATIC VEIN	T4872	T487200	Hepatic vein
0	PORTAL VEIN	T4881	T488100	Portal vein
0	VEINS	T4900	T480000	Vein
2	FEMORAL VEIN	T4941	T494100	Femoral vein
0	DIGESTIVE SYSTEM	T5000	T500000	Digestive system
4	INTESTINAL TRACT	T5010	T501000	Gastrointestinal tract
20	MOUTH. NOS	T5100	T510000	Mouth
4	ORAL CAVITY	T5102	T510200	Oral cavity
3	SOFT PALATE	T5112	T511200	Soft palate
0	BUCCAL MUCOSA	T5130	T513000	Buccal mucosa
4	LIP	T5200	T520000	Lip
4	TONGUE. NOS	T5300	T530000	Tongue
1	TEETH. NOS	T5400	T540000	Tooth. gum and supporting structure
0	GUM. NOS	T5491	T549100	Gum
1	TOOTH SOCKET	T5497	T549700	Alveolus dentalis (Tooth Socket)
433	SALIVARY GLAND. NOS	T5500	T550000	Salivary gland
0	SALIVARY GLAND INTERSTITIAL TISSUE	T5507	T550700	Salivary gland interstitial tissue
1.799	LIVER. NOS	T5600	T560000	Liver
0	HEPATIC CAPSULE	T5606	T560600	Hepatic capsule
0	PORTAL TRACT	T5610	T561000	Portal tract
1	INTRAHEPATIC BILE DUCT	T5611	T561100	Intrahepatic bile duct
0	INTERLOBULAR BILE DUCT	T5612	T561200	Interlobular bile duct
0	INTRALOBULAR BILE DUCTULE	T5613	T561300	Interlobular bile ductile
0	PERIPORTAL BILE DUCTULE	T5614	T561400	Periportal bile ductile
0	CENTRILOBULAR REGION	T5621	T562100	Centrilobular region of liver
0	PERIPHERAL LOBULAR REGION	T5623	T562300	Peripheral lobular region of liver
0	HEPATIC SINUSOID	T5624	T562400	Hepatic sinusoid
29	GALLBLADDER. NOS	T5700	T570000	Gallbladder
0	BILE DUCT. NOS	T5800	T580000	Extrahepatic bile duct
1	COMMON BILE DUCT	T5850	T585000	Common bile duct. NOS
376	PANCREAS. NOS	T5900	T590000	Pancreas (Exocrine Pancreas)
1	PANCREATIC DUCT. NOS	T5901	T590100	Pancreatic duct
0	PANCREATIC ACINUS	T5909	T590900	Pancreatic acinus
156	PANCREAS. RIGHT	T5910	T591000	Head of pancreas (right)
150	PANCREAS. LEFT	T5930	T593000	Tail of pancreas (left)
0	PANCREATIC INTERSTITIAL TISSUE	T5950	T595000	Pancreatic interstitial tissue

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
0	PERIPANCREATIC TISSUE	T5951	T595100	Peripancreatic tissue
0	BILE, NOS	T5Y01	T5Y0100	Bile
6	TONSIL AND ADENOID, COMBINED SITE	T6100	T610000	Tonsils and adenoids
424	TONSIL, NOS	T6110	T611000	Tonsil
421	ESOPHAGUS, NOS	T6200	T620000	Esophagus
0	PERIESOPHAGEAL TISSUE	T6240	T624000	Periesophageal tissue
460	STOMACH, NOS	T6300	T630000	Stomach
0	GASTRIC MUCOUS MEMBRANE	T6301	T630100	Gastric mucous membrane
0	STOMACH, NONGLANDULAR	T6310	T000030	Topography not assigned
0	GASTRIC SUBMUCOSA	T6311	T631100	Gastric submucosa
0	GASTRIC SEROSA	T6314	T631400	Gastric serosa
2	OMENTUM, NOS	T6385	T638500	Omentum
0	SMALL INTESTINE: DUODENUM	T6400	T640000	Small intestine
447	SMALL INTESTINE, NOS	T6401	T640100	Small intestine
0	SMALL INTESTINAL MUCOUS MEMBRANE	T6402	T640200	Small intestine mucous membrane
0	INTESTINAL VILLUS	T6404	T640400	Intestinal villus
0	SMALL INTESTINAL MUSCULARIS PROPRIA	T6407	T640700	Small intestine muscularis propria
0	SMALL INTESTINAL SEROSA	T6412	T641200	Small intestine serosa
0	MESENTERY, NOS	T6420	T642000	Mesentery
1	DUODENUM, NOS	T6430	T643000	Duodenum
0	JEJUNUM AND ILEUM, COMBINED SITE	T6500	T650000	Jejunum and ileum
2	JEJUNUM, NOS	T6510	T651000	Jejunum
1	ILEUM	T6520	T652000	Ileum
401	COLON, NOS	T6700	T670000	Colon
0	COLONIC MUCOUS MEMBRANE	T6701	T670100	Colonic mucous membrane
0	COLONIC SUBMUCOSA	T6703	T670300	Colonic submucosa
1	CECUM	T6710	T671000	Cecum
1	RECTUM, NOS	T6800	T680000	Rectum
3	ANUS	T6900	T690000	Anus
4	PERIANAL TISSUE	T6920	T692000	Perianal tissue
0	FECES	T6Y10	T6Y1000	Feces
1,187	KIDNEY, NOS	T7100	T710000	Kidney
0	KIDNEY, RIGHT	T7101	T710100	Kidney, right
0	KIDNEY, LEFT	T7102	T710200	Kidney, left
0	CAPSULE OF KIDNEY	T7103	T710300	Capsule of kidney
0	INTERSTITIAL TISSUE OF KIDNEY	T7104	T710400	Interstitial tissue of kidney
0	CORTEX OF KIDNEY	T7105	T710500	Cortex of kidney
0	RENAL CORTICAL INTERSTITIAL TISSUE	T7106	T710600	Renal cortical interstitial tissue
0	MEDULLA OF KIDNEY	T7107	T710700	Medulla of kidney
0	RENAL PAPILLA	T7112	T711200	Renal papilla
0	GLOMERULUS	T7120	T712000	Glomerulus
0	GLOMERULAR CAPILLARY BASEMENT MEMBR	T7123	T712300	Glomerular capillary basement membrane
0	RENAL TUBULE, NOS	T7130	T713000	Renal tubule
0	PROXIMAL CONVOLUTED RENAL TUBULE	T7133	T713300	Proximal convoluted renal tubule
0	RENAL PELVIS, NOS	T7200	T720000	Renal pelvis
0	RIGHT RENAL PELVIS	T7201	T720100	Renal pelvis, right
0	LEFT RENAL PELVIS	T7202	T720200	Renal pelvis, left
399	URINARY BLADDER, NOS	T7400	T740000	Urinary bladder
0	URINARY BLADDER SUBMUCOSA	T7402	T740200	Submucosa of urinary bladder
3	URETHRA, NOS	T7500	T750000	Urethra
1	PROSTATIC URETHRA	T7511	T751100	Prostatic portion of urethra
0	BULBOURETHRAL GLAND	T7517	T751700	Bulburethral gland (Cowper's gland)
0	PENIS, NOS	T7600	T760000	Penis
0	PREPUCE, NOS	T7633	T763300	Prepuce of penis
0	PROSTATE AND SEMINAL VESICLE	T7700	T770000	Prostrate and Seminal vesicle

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
286	PROSTATE, NOS	T7710	T771000	Prostate
0	PROSTATIC GLAND	T7713	T771300	Prostatic glandular tissue
0	SEMINAL VESICLE, NOS	T7750	T775000	Seminal vesicle
364	TESTIS, NOS	T7800	T780000	Testis
2	TESTIS, RIGHT	T7801	T780100	Testis, right
2	TESTIS, LEFT	T7802	T780200	Testis, left
0	SEMINIFEROUS TUBULE, NOS	T7810	T781000	Seminiferous tubule
0	INTERSTITIAL TISSUE OF TESTIS	T7820	T782000	Interstitial tissue of testis
0	TUNICA VAGINALIS	T7840	T784000	Tunica vaginalis
0	EPIDIDYMIS, VAS DEFERENS, SCROTUM	T7900	T790000	Epididymis, vas deferens, spermatic cord and scrotum
1	EPIDIDYMIS, NOS	T7910	T791000	Epididymis
0	VAS DEFERENS, NOS	T7920	T792000	Vas deferens
0	SPERMATIC CORD, NOS	T7930	T793000	Spermatic cord
0	SCROTUM, NOS	T7940	T794000	Scrotum
0	URINE	T7X10	T7X1000	Urine
0		T8001	.	*** UNDEFINED ***
1	VULVA	T8010	T801000	Vulva
19	VAGINA, NOS	T8100	T810000	Vagina
202	UTERUS	T8200	T820000	Uterus
0	CERVIX UTERI	T8300	T830000	Cervix uteri (exocervix and endocervix)
0	EXOCERVICAL CONNECTIVE TISSUE	T8312	T831200	Exocervical connective tissue
0	ENDOMETRIUM	T8400	T840000	Endometrium
0	ENDOMETRIAL GLAND	T8420	T842000	Endometrial gland
0	MYOMETRIUM	T8500	T850000	Myometrium (Uterine muscle wall)
0	FALLOPIAN TUBE, NOS	T8610	T861000	Fallopian tube
250	OVARY, NOS	T8700	T870000	Ovary
0	RIGHT OVARY	T8701	T870100	Ovary, right
0	LEFT OVARY	T8702	T870200	Ovary, left
0	ENDOCRINE GLAND	T9000	T900000	Endocrine system
419	PITUITARY GLAND, NOS	T9100	T910000	Pituitary gland
0	PITUITARY ANTERIOR LOBE	T9110	T911000	Pituitary anterior lobe (Pars Glandularis)
0	PITUITARY CHROMOPHOBE CELL	T9117	T911700	Pituitary chromophobe cell
3	PINEAL BODY	T9200	T920000	Pineal body (Pineal gland)
603	ADRENAL GLAND, NOS	T9300	T930000	Adrenal gland
2	RIGHT ADRENAL GLAND	T9301	T930100	Adrenal gland, right
1	LEFT ADRENAL GLAND	T9302	T930200	Adrenal gland, left
0	ADRENAL CORTEX, NOS	T9310	T931000	Adrenal cortex
0	ADRENAL MEDULLA	T9320	T932000	Adrenal medulla
0	PERIADRENAL TISSUE	T9330	T933000	Periadrenal tissue
0		T9332	M000030	Topography not assigned
602	THYROID GLAND, NOS	T9600	T960000	Thyroid gland
0	THYROID FOLLICLE	T9603	T960300	Thyroid follicle
0	RIGHT LOBE OF THYROID GLAND	T9610	T961000	Thyroid gland, right lobe
0	LEFT LOBE OF THYROID GLAND	T9620	T962000	Thyroid gland, left lobe
305	PARATHYROID GLAND, NOS	T9700	T970000	Parathyroid gland
0	PARATHYROID, LEFT	T9708	T973000	Parathyroid gland, left superior
0	PARATHYROID, RIGHT	T9709	T971000	Parathyroid gland, right superior
71	THYMUS, NOS	T9800	T980000	Thymus
4	ISLETS OF LANGERHANS	T9900	T990000	Endocrine pancreas (Islets of Langerhans)
0	MEDIASTINAL LYMPH NODE	T0836	T083600	Mediastinal lymph node
	ABDOMINAL FAT	TT1X0	T638500	Omentum (Abdominal Fat)
0	NERVOUS SYSTEM, NOS	TX000	TX00000	Nervous system
0	AXON AND AXON HILLOCK	TX028	TX02800	Axon
0	NEUROPIL	TX031	TX03100	Neuropil
0	MICROGLIOCYTE	TX046	TX04600	Microgilocyte (Microgila)

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
1	MENINGES	TX111	TX11100	Meninges
0	LATERAL VENTRICLE, NOS	TX165	TX16500	Lateral ventricle
0	BODY, LATERAL VENTRICLE	TX169	TX16900	Body of lateral ventricle
572	BRAIN, NOS	TX200	TX20000	Brain
0	CEREBRAL CORTEX	TX202	TX20200	Cerebral cortex
0	BRAIN STEM	TX205	TX20500	Brain stem
0	LEFT CEREBRAL HEMISPHERE	TX208	TX20800	Cerebral hemisphere, left
0	THALAMUS, NOS	TX400	TX40000	Thalamus, pulvinar and geniculate bodies
0	THALAMUS	TX401	TX40100	Thalamus
0	MIDBRAIN, NOS	TX510	TX51000	Midbrain
2	CEREBELLUM, NOS	TX600	TX60000	Cerebellum
0	ANTERIOR CEREBELLAR LOBE	TX610	TX61000	Anterior cerebellar lobe
0	SYMPATHETIC TRUNK GANGLION	TX694	TX96400	Sympathetic trunk ganglia
2	MEDULLAR OBLONGATA, NOS	TX700	TX70000	Medulla oblongata
32	SPINAL CORD, NOS	TX741	TX74100	Spinal cord
1	POSTERIOR COLUMN, SPINAL CORD, NOS	TX748	TX74800	Spinal cord, posterior column
0	ANTERIOR COLUMN, SPINAL CORD	TX750	TX75000	Spinal cord, anterior column
1	CERVICAL SPINAL CHORD	TX760	TX76000	Cervical spinal cord
0	VENTRAL COLUMN,CERVICAL SPINAL CORD	TX768	TX76800	Cervical spinal cord, ventral column
1	LUMBAR SPINAL CORD	TX780	TX78000	Lumbar spinal cord
0	CRANIAL NERVE, NOS	TX800	TX80000	Cranial nerve, NOS
1	TRIGEMINAL NERVE	TX815	TX81500	Trigeminal nerve
1	VAGUS NERVE	TX864	TX86400	Vagus nerve
0	SPINAL NERVE, NOS	TX900	TX90000	Spinal nerve, NOS
1	BRACHIAL PLEXUS	TX909	TX90900	Brachial plexus, NOS
1	RADIAL NERVE	TX919	TX91900	Radial nerve
1	SCIATIC NERVE	TX944	TX94400	Sciatic nerve
0	THORACIC PORTION,SYMPAT NERVOUS SYS	TX976	TX97600	Sympathetic nervous system, thoraccic portion
0	ABDOMINAL PORTION,SYMPA NERVOUS SYS	TX979	TX97900	Sympathetic nervous system, abdominal portion
484	EYE, NOS	TXX00	TXX0000	Eye
0	RIGHT EYE	TXX01	TXX0100	Eye, right
0	LEFT EYE	TXX02	TXX0200	Eye, left
0	EYE, POSTERIOR CHAMBER	TXX07	TXX0700	Eye, posterior chamber
3	CORNEA, NOS	TXX20	TXX2000	Cornea
0	CILIARY BODY, NOS	TXX40	TXX4000	Ciliary body
0	IRIS, NOS	TXX50	TXX5000	Iris
0	RETINA, NOS	TXX61	TXX6100	Retina
0	CRYSTALLINE LENS	TXX70	TXX7000	Crystalline lens
0	EYELID	TXX81	TXX8100	Eyelid
0	CONJUNCTIVA, NOS	TXX86	TXX8600	Conjunctiva
2	LACRIMAL GLAND	TXX91	TXX9100	Lacrimal gland
2	EAR, NOS	TXY00	TXY0000	Ear
0	RIGHT EAR	TXY01	TXY0100	Ear, right
0	LEFT EAR	TXY02	TXY0200	Ear, left
0	EXTERNAL EAR	TXY10	TXY1000	Ear, external
1	EXTERNAL AUDITORY CANAL	TXY20	TXY2000	External auditory canal
0	WAX GLAND, AUDITORY CANAL	TXY24	TXY2400	Wax gland of auditory canal
0	MIDDLE EAR	TXY30	TXY3000	Middle ear
0	INTERNAL EAR	TXY70	TXY7000	Inner ear
0	HEAD, NOS	TY010	TY01000	Head
1	PITUITARY FOSSA	TY046	TY04600	Pituitary fossa (Stella turcica)
0	NECK, NOS	TY060	TY06000	Neck
0	BACK, NOS	TY110	TY11000	Back
0	SHOULDER, NOS	TY122	TY12200	Shoulder
0	COCCYGEAL REGION	TY142	TY14200	Coccygeal region

PNL USES	SNOP TRANSLATION	SNOP CODE	SNODOG CODE	SNODOG TRANSLATION
0	HIP	TY150	TY15000	Hip
2	THORAX, MEDIASTINUM, AND DIAPHRAGM	TY200	TY20000	Thorax, mediastinum and diaphragm
0	THORAX, NOS	TY210	TY21000	Thorax
0	THORACIC CAVITY, NOS	TY220	TY22000	Thoracic cavity
22	MEDIASTINUM, NOS	TY230	TY23000	Mediastinum
0	DIAPHRAGM, NOS	TY240	TY24000	Diaphragm
0	THORACIC VISCERA	TY300	TY30000	Thoracic viscera
2	ABDOMEN,PERITONEUM AND RETROPERITON	TY400	TY40000	Abdomen, peritoneum and retroperitoneum
4	ABDOMEN, NOS	TY410	TY41000	Abdomen
0	ABDOMINAL WALL, NOS	TY430	TY43000	Abdominal wall
0	POSTERIOR ABDOMINAL WALL	TY432	TY43200	Posterior abdominal wall
0	PERITONEUM, NOS	TY440	TY44000	Peritoneum
0	PERITONEAL CAVITY, NOS	TY450	TY45000	Peritoneal cavity
0	ABDOMINAL VISCERA	TY500	TY50000	Abdominal viscera
0	PELVIS, NOS	TY600	TY60000	Pelvis
0	UPPER EXTREMITY, NOS	TY800	TY80000	Forelimbs, both (Upper extremities)
0	RIGHT UPPER EXTREMITY	TY801	TY80100	Upper extremity, right
0	LEFT UPPER EXTREMITY	TY802	TY80200	Upper extremity, left
0	FOREARM, NOS	TY850	TY85000	Antebrachium (Forearm)
0	HAND (FORE-FOOT)	TY870	TY87000	Hand
0	LOWER EXTREMITY, NOS	TY900	TY90000	Hindlimbs, both (Lower extremities)
0	RIGHT LOWER EXTREMITY	TY901	TY90100	Lower extremity, right
0	LEFT LOWER EXTREMITY	TY902	TY90200	Lower extremity, left
0	KNEE	TY920	TY92000	Knee
0	LOWER LEG, NOS	TY940	TY94000	Leg
0	FOOT, NOS	TY970	TY97000	Foot
0	ANIMAL FOUND DEAD DURING STUDY	Z0001	FY24501	Found dead in course of study

This appendix presents the translation between the 70 mnemonic codes used at Oak Ridge National Laboratory (ORNL) and SNODOG. These codes were used by Fry and Ulrich. Other ORNL investigators used similar codes. It was typical practice at ORNL that mnemonic codes be assigned ad hoc within each study as research interests dictated. The appendix illustrates how such diagnoses may be translated to a two axis (topography and morphology) observation in SNODOG.

The report has 6 columns, defined below.

column	heading	description
1	TIMES USED	The frequency of use in the files donated to the NRA by ORNL.
2	ORNL CODE	The 1 to 5 character mnemonic code.
2	ORNL CODE TRANSLATION	The 35 character translation of the ORNL mnemonic code.
3	NRA TOPO	The axis letter "T" and 6 position code.
4	NRA DIAG	The axis letter "M" and 6 position code.
5	NRA SNODOG TRANSLATION	The translation of the SNODOG topography and morphology codes (maximum of 120 characters).

ORNL Mouse Pathology Codes

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TIMES USED	ORNL CODE	ORNL CODE TRANSLATION	NRA TOPO	NRA DIAG	NRA SNOMED TOPOGRAPHY TRANSLATION
1	DCMP	Decomp	T000100	M095001	Body as a whole, TISSUE NOT EXAMINED
9	LLYB	Lymphoblastic & Blastic	T0X2100	M982130	Blood lymphocytic cell, NOS, Acute lymphoid leukemia (T-0X...) (T-06...)
169	LLYM	Old lymphoid	T0X2100	M000300	Blood lymphocytic cell, NOS, Morphology not assigned in SNOMED
1	LMON	Monocytic leukemia ???	T0X2900	M989030	Blood monocyte, Monocytic leukemia, NOS (T-0X...) (T-06...)
67	LMYL	Myeloid	T0X0003	M986030	Blood, NOS, Myeloid leukemia, NOS (T-0X...) (T-06...)
3797	LRCS	RCS	T0X1300	M964030	Blood reticulocyte, Reticulosarcoma, (Histocytic Lymphosarcoma)
35	LSAR	Lymphosarcoma	T0X2200	M985030	Blood lymphocyte, Lymphosarcoma cell leukemia (T-0X...) (T-06...)
587	CTHY	Thymic (lymphoma)	T980000	M959030	Thymus, NOS, Malignant lymphoma,
2	LUK	Unknown	T0X0000	M980030	Blood, NOS, Leukemia, NOS (T-0X...) (T-06...)
0	ND	Not done	T000100	M095001	Body as a whole, TISSUE NOT EXAMINED
1443	NVL	No visible lesion	T000100	M001000	Body as a whole, Normal tissue morphology, NOS
1	S	?	T000010	M000300	Topography unknown, Morphology not assigned in SNOMED
0	TACC	Accessory	T770000	M800030	Prostrate and Seminal vesicle, NOS, Neoplasm, malignant
271	TADR	Adrenal (cortinal & med)	T930000	M800030	Adrenal gland, NOS, Neoplasm, malignant
73	TADRC	Adrenal carcinoma ???	T930000	M801030	Adrenal gland, NOS, Carcinoma,
0	TBD	Bile duct	T580000	M800030	Extrahepatic bile duct, NOS, Neoplasm, malignant
2	TBLD	Bladder tumor ???	T740000	M800030	Urinary bladder, NOS, Neoplasm, malignant
1	TBLDC	Bladder carcinoma ???	T740000	M801030	Urinary bladder, NOS, Carcinoma,
36	TBON	Osteosarcoma & oma	T100000	M918030	Skeletal system, NOS, Osteosarcoma, NOS (T-10...)
2	TBRAI	Brain (sarc & others)	TX20000	M800030	Brain, NOS, Neoplasm, malignant
387	TBST	Mammary	T040000	M800030	Mammary gland, NOS, Neoplasm, malignant
0	TCA	Carcinomatosis	T000100	M800030	Body as a whole, Neoplasm, malignant
0	TCART	Cartilage tumor	T1X7000	M800030	Cartilaginous tissue, NOS, Neoplasm, malignant
0	TCVX	Cervical tumor ???	T830000	M800030	Cervix uteri (exocervix and endocervix), Neoplasm, malignant
3	TEA	Ear	TXY1000	M800030	Ear, external, NOS, Neoplasm, malignant
0	TEFN	Too eaten for necropsy	T000100	M095001	Body as a whole, TISSUE NOT EXAMINED
0	TFIB	Fibroma	T000100	M881000	Body as a whole, Fibroma,
0	TGB	Gall bladder	T570000	M800030	Gallbladder, NOS, Neoplasm, malignant
0	THAR	Harderian	TXX8003	M800030	HARDERIAN GLAND, Neoplasm, malignant
266	THARA	Harderian adenoma ???	TXX8003	M814000	HARDERIAN GLAND, Adenoma, benign
45	THARC	Harderian carcinoma ???	TXX8003	M801030	HARDERIAN GLAND, Carcinoma,
0	THD	Head	TY01000	M881000	Head, NOS, Fibroma,
1317	THEP	Hepatic tumor ???	T560000	M817030	Liver, NOS, Hepatocellular carcinoma, NOS (T-56...)
0	THRT	Heart	T320000	M881000	Heart, NOS, Fibroma,
1	THYRC	Thyroid carcinoma ???	T960000	M801030	Thyroid gland, NOS, Carcinoma
31	TINT	Intestine	T505000	M881000	Intestine, NOS, Fibroma,
1	TINTC	Intestinal Carcinoma ???	T505000	M801030	Intestine, NOS, Carcinoma,
18	TKID	Kidney	T710000	M881000	Kidney, NOS, Fibroma,
5	TKIDC	Kidney carcinoma ???	T710000	M801030	Kidney, NOS, Carcinoma,

ORNL Mouse Pathology Codes

November 12, 1991

TIMES USED	ORNL CODE	ORNL CODE TRANSLATION	NRA TOPO	NRA DIAG	NRA SNODOG TOPOGRAPHY TRANSLATION
0	TLIV	Liver (hepatoma)	T560000	M817030	Liver, NOS, Hepatocellular carcinoma, NOS (T-56...)
50	TLIVC	Liver carcinoma ???	T560000	M801030	Liver, NOS, Carcinoma,
1155	TLUNA	Lung adenoma	T280000	M814000	Lung, NOS, Adenoma, benign
410	TLUNC	Lung carcinoma	T280000	M801030	Lung, NOS, Carcinoma,
0	TMASC	Mast cell	T0X0000	M974030	Blood, NOS, Mast cell sarcoma
42	TOTH	Other tumor ???	T000010	M800030	Topography unknown, Neoplasm, malignant
2922	TOV	Ovary	T870000	M800030	Ovary, NOS, Neoplasm, malignant
0	TOV1	Ovary gross or same type	T870000	M800030	Ovary, NOS, Neoplasm, malignant
0	TOV2	Ovary micro two different types	T870000	M800030	Ovary, NOS, Neoplasm, malignant
4	TPAN	Pancreas	T590000	M800030	Pancreas, NOS (Exocrine Pancreas), Neoplasm, malignant
3	TPANA	Pancreatic adenoma ???	T590000	M814000	Pancreas, NOS (Exocrine Pancreas), Adenoma, benign
2	TPANC	Pancreatic carcinoma ???	T5~0000	M801030	Pancreas, NOS (Exocrine Pancreas), Carcinoma,
140	TPIT	Pituary	T910000	M800030	Pituitary gland, NOS, Neoplasm, malignant
15	TSAL	Salivary	T550000	M800030	Salivary gland, NOS, Neoplasm, malignant
627	TSAR	Sarcoma	T000010	M800030	Topography unknown, Neoplasm, malignant
0	TSKI	Skin	T010000	M800030	Skin, NOS, Neoplasm, malignant
0	TSPL	Spleen	T070000	M800030	Spleen, NOS, Neoplasm, malignant
86	TSQC	Squamous ca. gum, stom, skin	T000901	M807030	Gum, stomach, skin (ORNL), Squamous cell carcinoma,
1	TSQV	Squamous carcinoma of viscera ???	T500000	M807030	Digestive system, NOS, Squamous cell carcinoma,
1	TSTO	Stomach tumor ???	T630000	M800030	Stomach, NOS, Neoplasm, malignant
1	TSTOMA	Stomach adenoma ???	T630000	M814000	Stomach, NOS, Adenoma, benign
0	TTAI	Tail	TY66000	M800030	Tail, Neoplasm, malignant
0	TTES	Testis	T780000	M800030	Testis, NOS, Neoplasm, malignant
20	TTHRY	Thyroid tumor ???	T960000	M800030	Thyroid gland, NOS, Neoplasm, malignant
0	TURE	Urethra	T750000	M800030	Urethra, NOS, Neoplasm, malignant
36	TUT	Uterus (carcinoma & oma)	T820000	M801030	Uterus, NOS, Carcinoma,
32	TUTE	Uterine tumor ???	T820000	M800030	Uterus, NOS, Neoplasm, malignant
48	TVAS	Hemangio, angio, H E, sarcoma & om	T0X0000	M912030	Blood, NOS, Hemangiosarcoma (Angiosarcoma)
48	TVASH	Hemangio ???	T0X0000	M912000	Blood, NOS, Hemangioma
153	TVASS	Hemangio sarcoma ???	T0X0000	M912030	Blood, NOS, Hemangiosarcoma (Angiosarcoma)
0	WS	Wrong sex	T000100	M950001	Body as a whole, TISSUE NOT EXAMINED

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