To the Graduate Council:

I am submitting herewith a thesis written by Cathy N. Jedrek entitled "English Output of the Physical Examination in the Computerized Medical Record." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Computer Science.

Sara R. Jordan
Sara Jordan, Major Professor

We have read this thesis
and recommend its acceptance:

W E Slaughter

Henry S. Christman M.D.

A L Kretschmer

Accepted for the Council:

Hilton A. Smith
Vice Chancellor
Graduate Studies and Research

ENGLISH OUTPUT OF THE PHYSICAL EXAMINATION IN THE COMPUTERIZED MEDICAL RECORD

A Thesis

Presented for the

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Cathy N. Jedrek

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ABSTRACT

This thesis project is concerned with an approach to outputting the physical examination portion of the computerized medical record. The objective of this work is computer generation of the physical examination in readable, natural English with descriptive richness.

The approach to this objective was:

(1) To impose a structure on the strings which hold the physical examination findings.

(2) To modify existing output programs and the physical abnormality data base to eliminate existing problems.

(3) To test output methods on hypothetical and actual physical examination findings.

All these were undertaken to produce readable physical examination output using a fixed vocabulary data base. The output programs were written in the MUMPS (Massachusetts General Hospital Utility Multi-Programming System) programming language and run on the University of Tennessee Memorial Research Center and Hospital's PDP-15 computer system. The resulting physical examination output was readable English phrases and satisfied the above objective.

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CHAPTER I

INTRODUCTION

The medical record has been used through the ages by physicians to assist the delivery of health care. Yet through the ages, the medical record has changed little; while its role in health care has increased drastically.

To more effectively meet today's requirements, there are efforts to change the medical record. Extensive effort is presently being made to computerize the medical record. Chapter II discusses problems, requirements and approaches to computerized medical records.

Since the complete medical record of a patient is a collection of many diverse examinations and observations, the task of computerizing the medical record usually concentrates on parts of it. Work at University of Tennessee Memorial Research Center and Hospital (UTMRCH) centers around the physical examination section of the medical record. This thesis discusses outputting the findings of the computerized physical examination in natural English.

The last part of Chapter II discusses outputting the physical examination. Chapter III discusses output problems and output methods to solve these problems. Chapter IV presents the results of the output methods developed. Chapter V presents the summary and conclusions. Also included are three appendices. Appendix A contains the physical examination output programs. Appendix B presents the data base used to record and output physical findings. Appendix C is the collection of outputs from the physical examination case studies.

CHAPTER II

COMPUTERIZATION OF MEDICAL INFORMATION

Information is often vitally important; but most people would agree no information is as vital as information which pertains to, and often determines, life and death. Such is the role of medical information.

Because of the importance of medical information, the idea of applying information science to medicine is generally accepted. This general acceptability of information science is based on future promises of delivering better health care in such diverse areas as medical diagnosis, clinical laboratory data, patient monitoring and medical records. Yet, in general, the past realities of information science in medicine do not justify these otpimistic expectations.

As G. Octo Barnett of Massachusetts General Hospital points out:

> In most areas of medical care, adaptions in practice have kept pace with advances in knowledge about diseases and therapeutic procedures. However, one vital area of medical practice, information processing, has been badly neglected, and little progress has been made. The technology of data processing in dozens of other fields has been revolutionized by the computer in the last two or three decades. Yet few of these changes have made their way into the medical world, in particular into the hospital. Early interest in bringing computer technology to bear on medical practice was plagued with over-enthusiasm, naivete, and unrealistic expectations. (1, p. 1321)

I. MEDICAL INFORMATION SYSTEMS

While the goal of information science in medicine is clearly a total hospital information system, the reasons for the dichotomy between what is desirable versus what is realistic are numerous and complex. The computerization of medical information has inherent difficulties because of the breadth and depth of the medical information problem.

A hospital information system involves many types of information which require different processing techniques. Also medical information emanates from various sources and communicates to multiple users, all of whom require individualized information handling. The large quantities of medical information and these diversities contribute to the complexity of medical information processing.

This complexity and its problems are not unique to medical computing. Similar frustrations and failures have been felt (or are still felt) in other areas of computer applications. However, where other areas have overcome at least some of the difficulties, the medical field, for the most part, is still struggling to overcome them.

Total Systems Approach

Past difficulties in the medical information science area result partially from the approach to the information problem. In the past, the vogue has been a total systems approach to the hospital information problem. This involves a comprehensive study of all

information processing tasks and their interrelations, followed by relatively simultaneous implementation of the total system to meet the diverse hospital information requirements.

This approach has produced numerous, lengthy feasibility studies enunciating the virtues and vices of computerized information processing as related to medicine. These studies have initiated many futile attempts to realize such proposals by simultaneously implementing all parts of a total hospital information system. The total systems approach has suffered from many pitfalls, ranging from trying to gain organization agreement and cooperation, to staggering costs; from lack of qualified personnel who can implement the system at any cost, to failure to successfully process all types of medical information on the computer.

Modular Systems Approach

But lessons have been learned from past experiences in medical computing and in other areas. Presently, much work is still being done in the medical field toward a computerized hospital information system. Now the approach to attaining this goal is not the total systems approach, but the modular approach. This approach involves identifying functional information processing units within medical activity and in the framework of current information processing problems.

The modular approach focuses on some part of the hospital information system. After understanding the objectives, the procedures and the standards of this specific information processing

task, a computerized module is designed and implemented to perform the task. After implementation is achieved, emphasis is on successful operation, expansion and eventual linkage of several modular systems into a total system.

Although the long range objectives of the two approaches are identical, the methods of implementation and the intermediate goals are very different. These differences make the modular approach preferable over the total systems approach even though the problems that must be solved are the same.

Problems encountered in medical information processing. Medical information processing activities, like most large information systems, are diverse and involve many different individuals and many different processing units. It is difficult, if not impossible to achieve conceptual understanding and/or concensus on what should be done and how it should be done. Even if acceptance is achieved, the hospital environment cannot cope with the shutdown or disruption caused by the installation and debugging of a totally new information system. While the total systems approach gets tangled in the above problems, the modular approach attempts to avoid them.

Advantages in the modular approach. The modular approach gains understanding and cooperation easily at a department level where modules are implemented. Also, the modular approach is supported by current computer technology where the minicomputer is the ideal answer to computerizing one information processing module

at a time without interrupting or interfering with other modules and activities and without requiring huge capital outlays for a large time-sharing computer system. Another advantage of the modular approach is its flexibility. This is important because it is impossible to specify beforehand every unique and specific demand the system will eventually encounter. The modular approach allows continual specification and modification:

(1) as better understanding is attained;

(2) as other areas of applications are discovered; and

(3) as new areas of application evolve.

The most interesting advantage of the modular approach could be termed the "domino effect". This effect results from a small core of personnel who successfully implement a small working information module and who use their experience to evolve a larger information system. The successful, continuously reliable module is accepted by the hospital community, and encourages implementation of new modules. Also when failure occurs, it is not as noticeable, or as costly, as in the case of a failure in a total system. This "domino effect", the idea of success breeding success, is the most far-reaching effect of the modular approach because of its aid to achievement of a total information system; which is the prime objective. (2)

With the aid of the modular approach, the dichotomy between future promises and present performance is being resolved. Its application extends into many areas of medical information including medical diagnosis, patient monitoring and medical records.

II. CONVENTIONAL MEDICAL RECORDS

One major application of the modular approach has been the area of medical records. The medical record is important to the individual patient and also has a central role in the delivery of health care. The medical record facilitates the implementation of orders and requests for services, as well as the presentation of results and observations for further decision making. This vital role of the medical record is emphasized by Robert A. Greenes of Massachusetts General Hospital who states:

> The medical record is the primary document available for the review of clinical information for patient care, quality control and auditing of the medical care process, clinical investigation and administrative data management. (3, p. 307)

Given such a key role in health care delivery, the medical record would be imagined as the most efficient, well-organized standardized entity in the hospital. In fact, the present form of the medical record, despite changing functions and increased demand on it, has changed little in the last century.

The present form of the medical record evolved from a single physician - single patient relationship. A physician would enter information into the patient's record as he gathered it. He had first-hand knowledge of all observations and tests because he had made them. Today, the form of the medical record still reflects this type of acquisition and storage, even though the number of users and contributors to the medical record has increased and the role of the medical record has grown. Since there is no organization by diagnostic or therapeutic problems, information may be obtained only by searching

the entire record. A search is further hindered by non-standard terminology, unformated data organization, and often illegible contents. Since the conventional "scrapbook" format of the medical record is extremely unsatisfactory, the idea of computerizing the acquisition, storage and retrieval of medical record information is gaining impetus. (4)

III. COMPUTERIZED MEDICAL RECORDS

Justification

The virtues of the computerized medical record make it a viable alternative to the conventional form. The computerized medical record would have a favorable effect on the physician. The less time the physician spends collecting, organizing, recording and retrieving data, the more time would be available for delivering health care. The computerized record would also have improved storage and retrieval. The problems presently associated with storing and accessing the conventional record make improvements not only practical but necessary. The usefulness of medical information would be extended by computerization: instead of using medical record information solely for current patient care, further retrospective evaluation and most importantly, predictive medical care could be undertaken. For these reasons, the computerized medical record would improve the quality of health care.

Requirements for Computerized Medical Records

The above are sound, strong reasons to implement a computerized medical record. If implementation occurs, the basic objectives of a computerized medical record system would be improved day-to-day patient care and expanded clinical research.

The requirements to meet these objectives are rigorous. A medical information system or computerized medical records should allow:

(1) storage and retrieval of all information;

(2) presentation of all information in noncoded form; and

(3) access times to all information within clinically reasonable limits.

Problems of Computerization

These rigorous requirements hinder computer applications in medicine. Applications of information science to medical information have thus far been in conventional areas of administration data processing (billing, bookkeeping, inventory control, admission routines, statistics); and in some areas of service units (such as automated chemistry lab tests and automated analysis of tests). People have proposed a variety of reasons why little effort has been made to process other medical information. Among them are the following: the computer was built for data processing and not for information handling; or computer personnel are unaware of the need and/or are incapable of handling conventional medical information; or a computer medical record project (hospital information system) usually appears

to be a straightforward computer application but in reality is more difficult than anticipated. (5)

The position based on these points may be somewhat justified, but successful application of information science to areas other than medicine indicates there must be additional reasons for computerized medical records' slow advance. These reasons include natural language versus codified information, storage requirements, retrieval problems, equipment questions, manpower availability, output considerations, cost factors, system reliability and acceptability.

Use of free text. Much of the medical record includes free text or narrative portions. Computer processing of narrative material presents the problems of capturing the information and then storing and retrieving it. Considering the capturing of narrative information, there are two basic approaches: acceptance of free text (natural language); or codification (imposition of a fixed vocabulary and a limited structure). Advantages and disadvantages exist in both approaches. The major disadvantage with the narrative language approach is the inherent ambiguity of the English language.

Storage and retrieval of medical data. Similar to the problems of capturing medical data are the problems of storing and retrieving this data. Whatever type of data is decided upon, it needs to be stored. This requires large storage capacity which can potentially be accessed at anytime. Regardless of the method of capturing data, difficulties of space may be present. This is a

particular problem with storing natural language information and often eliminates the use of this type of data. Rapid retrieval (or simply retrieval) may be difficult. Yet, rapid retrieval by multiple users is a requirement of an acceptable system.

Choice of equipment. Additional problems associated with the computerization of the medical record include computer equipment and personnel. Related to these problems are the issues of reliability and acceptability. An improper decision on computer equipment can spell the failure of a projected medical information system. If a large system is chosen which will supposedly be used to implement a total information system, the cost may be prohibitive. Also, the commitments to equipment and techniques which a large system usually imposes on the overall medical information system may guarantee failure. Therefore, the reasonably-priced special-purpose minicomputers should be used to attain flexibility. Another consideration concerning equipment is reliability. Unlike businesses or universities or governments, hospitals cannot shut down for weeks or months while a system is installed and debugged. Hardware and software continuity, stability and reliability are not only desirable objectives but absolute necessities.

Personnel requirements. Personnel problems are another reason for slow developments in medical applications. At present, finding qualified computer people who have enough knowledge to implement complex medical information systems is not easy. Thanks

to new programs in medical information science, such as the graduate program at the University of California, San Francisco, this will be less of a problem in the future. Other personnel problems center around the user. Once a system is implemented, if it is not "user friendly" it will not be used. Particularly in a profession like medicine, where the professionals are accustomed to traditional procedures, there will be reluctance to abandon traditional methods and considerable criticism of untried techniques. To overcome these obstacles and to gain acceptability, it will take much time and effort and plenty of persuasion.

Importance of output. Part of this acceptability depends on the system's output results. If medical information users receive the information they want and need in an easily assimulated form, they will be little concerned with how this information is processed. This is particularly true if a new method of handling the medical record achieves better, more efficient results without requiring additional time and effort from the users.

Approaches to Computerizing the Medical Record.

In an effort to solve these problems concerning the medical record, many approaches have been taken. (1,5-11) Each of these approaches tackle some portion of the medical record problem.

MGH approach. At Massachusetts General Hospital, computerization of the medical record concentrates on the concept of data management which includes collection, communication, coordination and presentation of information. Data management is addressed rather than data processing because the prime concerns are the data management functions mentioned above rather than calculations or interpretations which are often the prime concerns of data processing.

Initial work at MGH examined the computer requirements for data management as presently fulfilled by the medical record. The study focused on users' requirements, computer characteristics, information structure, program development, and economic justification. This investigation produced criteria for design and implementation of a data management system. These criteria include: (4)

(1) interface requirements

(2) variable length text handling capabilities

(3) hierarchical data base organization

(4) multi-user access to central data base

(5) large storage capacity

(6) low central processor usage

(7) high-level language

(8) I/Ø flexibility

A brief explanation of these criteria is included here. A system must be able to accept information from various sources. Interfacing human and machine needs must be flexibily handled.

Since most information in the medical record is input in the form of text strings of variable length, input must undergo syntax or limit checking. This is accomplished with the use of string operators, algebraic operators, and boolean operators. Medical data management also requires the ability to update and to retrieve information on various levels. This is achieved via a tree structured file organization. Also, information must be stored so it is accessible to a variety of users concurrently and data base manipulation must occur without time-sharing conflicts. The time-sharing conversational environment of such a system requires little processing time but much data transmission traffic that often has users in an input/output status. Finally, costs have forced medical information systems to small machines where high-level languages are usually not available. Without a high-level language, programming expense and inefficiencies seriously burden research and development. Yet, if a large machine is used, the increased cost and unused central processing powers overshadow the availability of a higher-level language.

To meet the criteria established above, MGH has developed a special high-level language and computer system called MUMPS (Massachusetts General Hospital Utility Multi-Programming System) that can manipulate numerical and textual data in an efficient and rapid fashion in a time-sharing environment. MUMPS is an interpretive programming language whose form resembles English. Its advantages over machine language or other present high-level languages are that it is program oriented (ease of programming, ease of debugging and

compact code) and problem oriented (storage and input/output flexibility). The language also facilitates time-sharing in a multi-user environment. The MUMPS system is implemented on a medium-sized computer and includes the time sharing system, the interpreter, the language, and the data management system. The data management system dynamically allocates and symbollicly references a tree structured array. Since MUMPS is an interpretive language with very compact code, core storage is shared by many users and time sharing involves passing control from one in-core resident user to another rather than disk/core swapping. Both the data management and the time sharing features make MUMPS an ideal system for medical applications.

UTMRCH approach. Another effort using the modular approach is underway at the University of Tennessee Memorial Research Center and Hospital (UTMRCH). Here the goal of one effort is to develop a computerized patient record. Since it is a tremendous task to automate the entire medical record, the initial work at UTMRCH concentrates on the physical examination portion of the medical record. The initial system will be implemented in connection with the Intensive Care Nursery with eventual expansion to all pediatric patients and finally to all UTMRCH patients.

Using the MUMPS programming language and the PDP-15-mini-computer with sizable disk storage, software has been developed to computerize the physical examination portion of the medical record.

The MUMPS system was chosen because of its orientation to medical problems and because of its flexible string manipulation and data management capabilities. The system also offers multi-user time-sharing suitable to the UTMRCH environment. The efficient time-sharing system will allow the physicians' findings to be entered into the record and will allow later users access to this information.

The software package used to record and retrieve the physical examination findings in the computer was developed by Dr. Arthur Kretchmar. The present package allows physical examination findings to be input via a questionnaire at a computer terminal. The questionnaire is part of the software which uses the physical examination data base (a thesaurus of body top sites and abnormalities) which was also developed by Dr. Kretchmar.

The questionnaire approach was chosen because it allows unambiguous recording of physical examination findings by presenting top sites, abnormalities and modifiers to the physician and allowing the physician to choose from this fixed vocabulary. An example of part of the questionnaire is shown in Figure 1. The program presents a list of 20 possible top sites. After a choice is made, the abnormalities and the modifiers for the top site chosen, in this case "chest", are presented.

If this questionnaire approach was not used, unfavorable difficulties would be experienced. One of these difficulties is spelling errors. Long medical terms, prone to misspelling, such as bronchovesicular, bring havoc to output and searching routines.

```
CHOOSE PE CATEGORIES : 1. GENERAL 2. SKIN        3. EYES
 4. EARS               5. NOSE                   6. MOUTH
 7. THROAT             8. NECK                   9. LYMPH NODES
 10. CHEST             11. BREAST                12. HEART
 13. BLOOD VESSELS     14. ABDOMEN               15. GENITALIA
 16. RECTAL            17. BONES-JOINTS-MUSCLES 18. EXTREMITIES
 19. NEUROLOGICAL      20. ALL
-> 10,
CHEST :NORMAL(ALT)
-> N
CHEST : 1. GENERALIZED  2. NOT GENERALIZED
-> 2,
CHEST :  NOT GENERALIZED
 1. SIDE               2. AXILLA                 3. LUNG FIELD
 4. LUNG BASE          5. BRONCHIAL TREE
-> 1,
CHEST :  SIDE
 1. BOTH               2. RIGHT                  3. LEFT

-> 1,
CHEST :  BOTH

CHEST :  1
 1. SKIP               2. TENDERNESS             3. CREPITUS
 4. EDEMA              5. THRILL                 6. VOCAL FREMITUS
 7. TUMOR
-> 2,
CHEST :  2
 1. SKIP               2. DULLNESS               3. FLATNESS
 4. HYPERRESONANCE     5. TYMPANY
-> 2,
CHEST :  3
 1. SKIP               2. BREATH SOUNDS          3. VOICE SOUNDS
 4. RALES              5. RONCHI                 6. WHEEZES
 7. FRICTION RUB       8. SUCCUSSION SOUNDS      9. FLUID
 10. MUCOUS
-> 2,
CHEST :  BREATH SOUNDS
 1. INTENSIFIED        2. COARSE                 3. BRONCHOVESICULAR
 4. BRONCHIAL          5. DIMINISHED             6. ABSENT
 7. LENGTHENED INSPIRATION 8. LENGTHENED EXPIRATION
-> 1,


CHEST : TENDERNESS, DULLNESS, AND INTENSIFIED BREATH SOUNDS BOTH
 SIDES.


ZA(10) = 1/2(1(1(1(2)2(2)3(2(1)))))/
```

Figure 1. Input Questionnaire.

Another difficulty is words with multiple meanings. To the system, words like tear (meaning the damage from being torn and also meaning the clear drop of fluid in the eye) are identical. Although the differences in the meanings are important, they would not be detected via free text entry. However, the questionnaire programs solve these problems by presenting fixed vocabulary in an established order where spelling is correct and meaning is clear.

The combination of the programs and the data base facilitates the unambiguous recording of abnormal physical findings. This is accomplished by storing the information from the physical examination in compressed form in alphanumeric strings known as ZAs. The strings serve as an effective medium for storing, searching, and retrieving textual physcial examination information. The unambiguous ZA strings contain a one to one correspondence for physical examination findings. Since MUMPS has dynamic assignments for disk space, neither a maximum matrix for each patient nor a mandatory length string for each ZA need be established. Thus only pertinent information is contained in each ZA.

IV. THESIS OBJECTIVES

Output of Physical Examination

The aim of this thesis is to generate readable output from these ZA strings which reflect a richness of modifiers and multiple levels of descriptors. This descriptive output must meet the physicians requirements of clarity, conciseness and convenience. To achieve this, the ZA string structure, the data base, and the output

programs were modified. The results of these modifications are illustrated in 20 physical examination case histories.

Output Fundamentals

String structure. Originally, the ZA structure fluctuated for the various topographic sites of the body. For example, the ZAs formed concerning the heart had structure based on the method used to detect the abnormality such as palpation, inspection, percussion and ausculation. The ZAs formed concerning the skin had structure based on properties that are characteristic of the skin such as color, pigment, texture, temperature and moisture. As a result of this variation, ZAs had no standard structure and ZA output was haphazard and unpredictable. Now, the ZAs share a standard structure.

Figure 2 represents the generalized structure of a patient's physical abnormality. Basically, it represents a topographic site with one or more abnormalities. Depending on the top site and the abnormalities, either the top site, or the abnormalities or both may be supplemented by any number of modifiers which add detail to the description of the abnormality.

The basic ZA contains one or more top sites, each having one or more abnormalities. More complex ZAs contain a basic ZA with unlimited levels of modifiers for both the top sites and the abnormalities. Regardless of the ZAs complexity, every ZA has the basic structure of Figure 2. This structure is reflected in the actual ZAs with top sites in the leftmost portion of the string

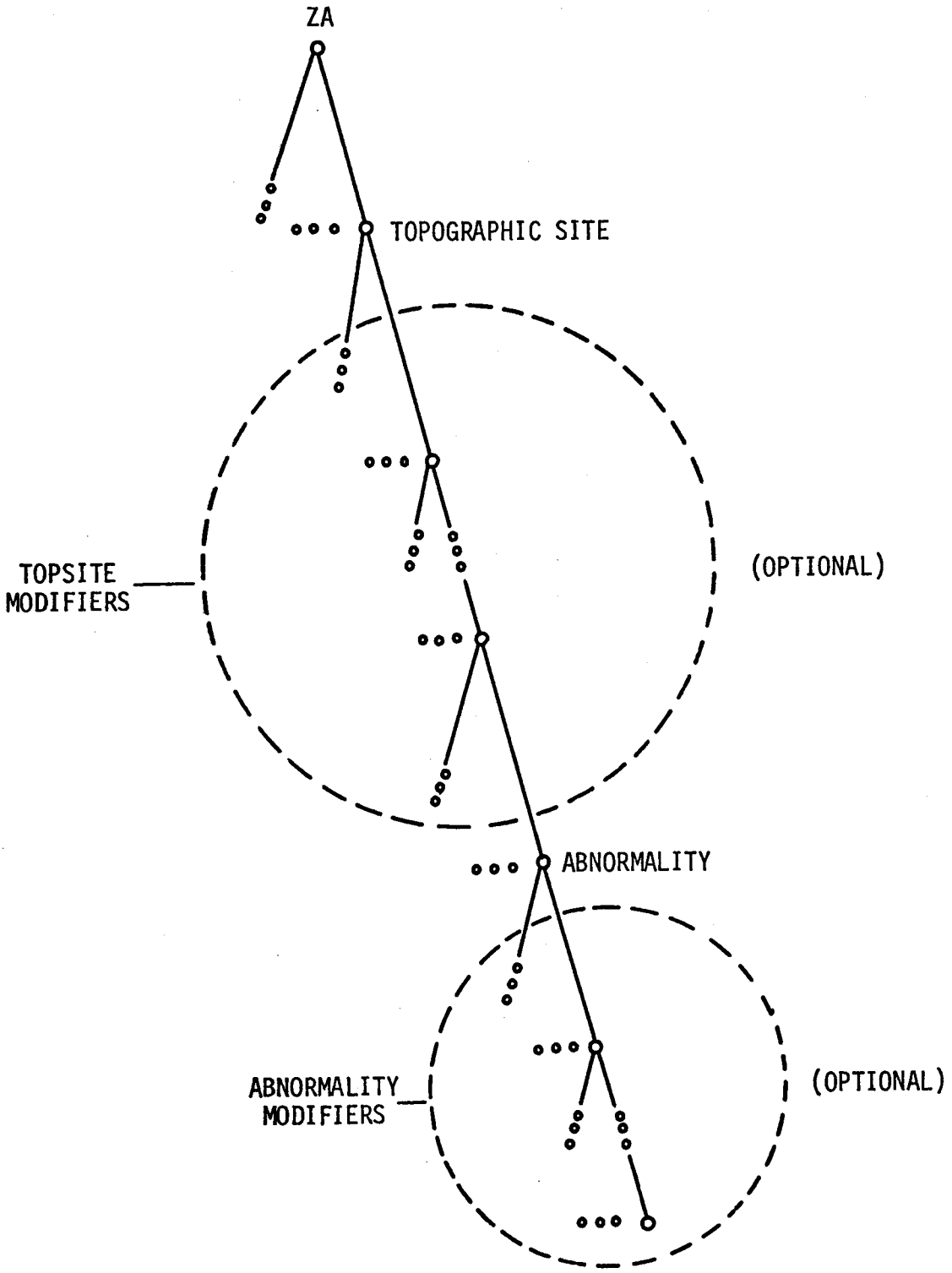


Figure 2. ZA Structure.

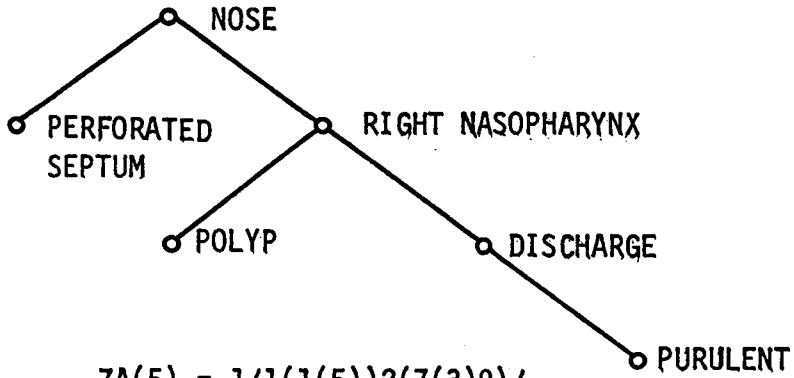
followed by optional top site modifiers, then by abnormalities and finally by optional abnormality modifiers. Some examples of ZAs and their tree structures to various physical examination findings are illustrated in Figure 3.

Date base. The structure of the data base for the physical examination questionnaire is shown in Figure 4. The physical examination questionnaire is comprised of question blocks as shown in Figure 4. Each question category is an area of the body and is found at an integer subscript, C. Each category contains question blocks, identified by another subscript, Q, which has questions applicable to that area of the body.

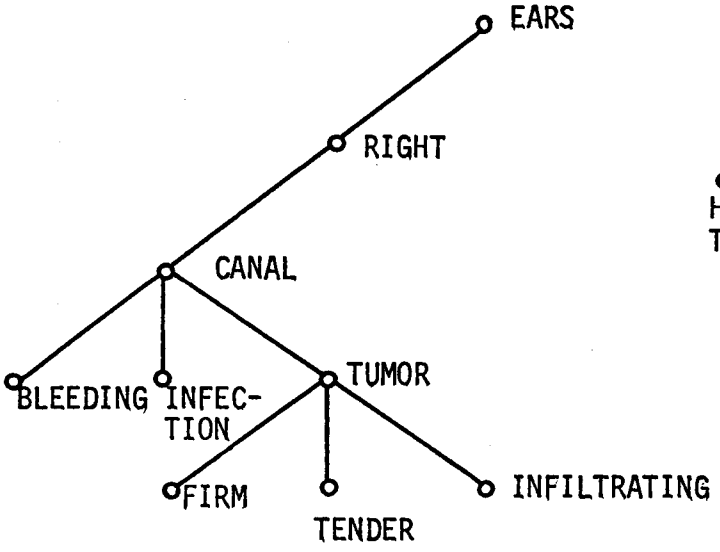
In each question block, the integer subscript Q has information concerning the question. This information is contained in a string of the form:

$$T_1 \uparrow T_2 \uparrow T_3 \uparrow N$$

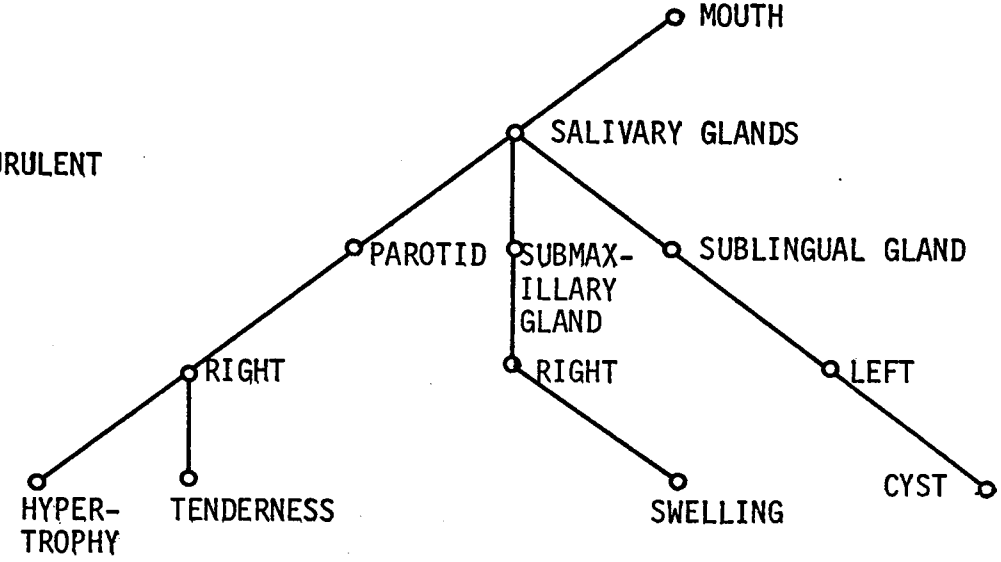
where T_1 represents the type of question this block contains. The question may be (a) type B which indicates a boolean question which requires a true/false, yes/no, answer; (b) type T, TM, A, or AM which indicates a list of top sites, top site modifiers, abnormalities and abnormality modifiers, respectively, and requires an answer from the list provided; or (c) type I which indicates an input question which requires an input for the answer.



ZA(5) = 1/1(1(5))2(7(3)9)/



ZA(4) = 1/2(2(2(1(1,4,8)2,7)))/



ZA(6) = 1/6(1(2(1,4))2(2(3))3(3(7)))/

Figure 3. Example ZAs.

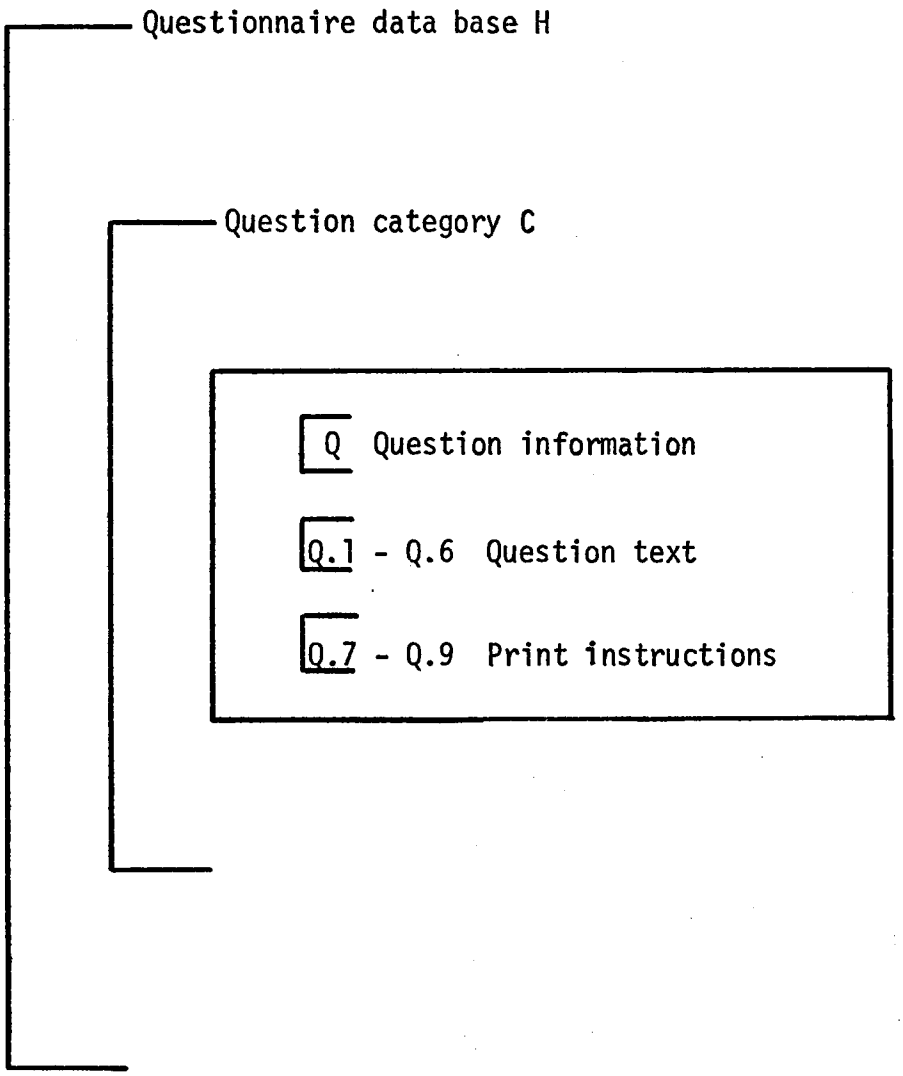


Figure 4. Question Block Format.

T_2 represents the next question location where transfer will be made when the question is completed.

T_3 represents the conditional transfer locations which are transferred to depending on the question response.

N represents the number of lines of question text.

↑ represents the up arrow and functions as a delimeter to the string's segments.

Within each Q block, from Q.1 to Q.6, by .1 increments, is the text of the question. Also at .1 increments, from Q.7 to Q.9 are the print instructions for the question.

The data base was modified to reflect the ZAs structure. Further details of this modification are discussed under the output methods section.

Output programs. The software to control the output of the ZAs in readable form are written in the MUMPS programming language. The flow of these programs is shown in Figure 5. The techniques used to output the ZAs will also be discussed later.

Justification of Objective

The choice of computerizing the physical examination portion of the medical record was based on its relatively fixed vocabulary and its rather standardized observations and output. There are several reasons why generating readable output is a reasonable goal.

Since the body topography and its possible physical abnormalities are finite in size and representable in a data base, output may depend on this fixed word vocabulary. This dependency eliminates many difficulties faced with free narrative. Also, for each part of

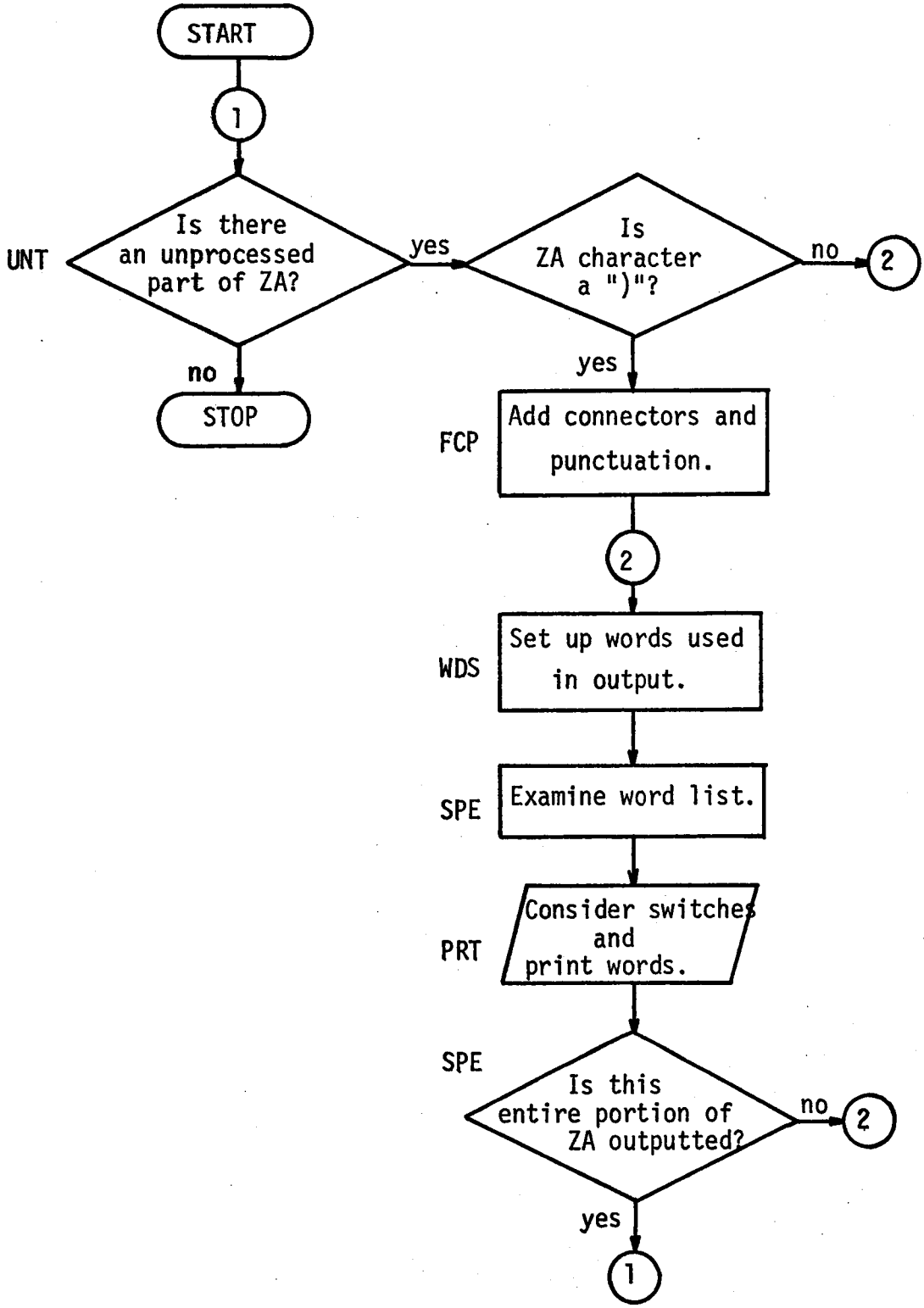


Figure 5. Flowchart of Output Programs.

the physical examination, one structure may be imposed, namely the topsite, topsite modifier, abnormality, abnormality modifier structure of Figure 2. This structure enables a standard output algorithm.

This algorithm could not be used to output any English sentence in any form of speech, such as active or passive voice or various verb tenses; but the algorithm functions satisfactorily when the desired output is in the physical examination form of topsite followed by phrases about abnormalities of this topsite. English phrases are output instead of full sentences, not only to avoid semantic and syntactic difficulties but also because this output is sufficient to completely relate the physical examination findings and is more suitable to quick scanning by busy physicians.

Despite the helpful standardization of the physical examination portion of the medical record, producing readable output is still a tremendous task which is plagued by many problems. The next chapter discusses these output problems and their solutions.

CHAPTER III

OUTPUTTING THE PHYSICAL EXAMINATION

I. OUTPUT PROBLEMS

Even with a fairly standardized data structure, outputting the physical examination has many problems such as no output produced, singular/plural problems, absent connectors, incorrect printing and unnatural language.

No Output

After entering all topsite/abnormality information via the questionnaire program and after formulating the ZA string containing this information, the original output programs sometimes produced no output. For example, the questionnaire was used to input these findings about heart:

A systolic grade III murmur in the 6th ICS on the left side. The programs stored this information in a ZA string with the following structure: 1/5(3(4(5(2(1(1(2(1(5))))))))/ But the only output produced was:

HEART:

This output is obviously deficient in describing the heart abnormality and the output should have read:

HEART:

LEFT SIDE: SYSTOLIC GRADE III MURMUR IN 6TH ICS.

Word Connectors

Some outputs lacked necessary word connectors and punctuation to improve readability. A ZA string pertaining to the eye, for example: 1/2(2(2(9,10)))/ produced the output:

EYES:

OCULAR ORBIT: PENETRATION UPPER FOREIGN BODY UPPER OUTER QUADRANT RIGHT ORBIT.

Here the "AND" connector was missing as well as prepositions which make the reading smoother and the meaning clearer. The desired output with connectors is:

EYES:

OCULAR ORBIT: PENETRATION OF AND FOREIGN BODY IN UPPER OUTER QUADRANT RIGHT ORBIT.

This problem of connectors became more complex when ZA strings contained nested lists of abnormalities or modifiers such as this ZA which contains the above ZA:

1/2(1(2(2(2(9,10))))2(2(7))4(2)6(3(13,14)7(1)))/

This ZA contains a list of abnormality modifiers, (2(2(2(9,10)))) nested within one element, 1, of a list of topsite modifiers (the 1, 2, 4, and 6). Yet the output did not reflect the correct connectors within the nested list:

EYES:

PENETRATION UPPER AND FOREIGN BODY UPPER OUTER QUADRANT OCULAR ORBITS PENETRATION UPPER EYE LID ABNORMAL ACUITY COMMOTIO RETINAE AND TEARS RETINA HEMMORHAGE VITREOUS.

Where the desired output is:

EYES:

RIGHT EYE: PENETRATION OF AND FOREIGN BODY IN UPPER OUTER QUADRANT OCULAR ORBITS, PENETRATION OF UPPER EYE LID, ABNORMAL ACUITY, COMMOTIO RETINAE AND TEARS IN RETINA, AND HEMMORHAGE IN VITREOUS.

Verb Tense

Output of the wrong verb tense either in simple lists or in nested lists was another physical examination output problem. The ZA: 1/3(3(1(2(3)4(2(2)6(2))8(0)11(0))/ produced the following output

SKIN:

TEXTURE: LARYNGEAL AREA, RIGHT SCAPULAR AREA, RIGHT BUTTOCKS WAS ROUGH, GLOSSY AND LICHENIFIED.

This output fails to reflect the multiple element list which requires a connector "AND" as well as a plural verb. Thus, the output should read:

SKIN:

TEXTURE: LARYNGEAL AREA, RIGHT SCAPULAR AREA, AND RIGHT BUTTOCKS WERE ROUGH, GLOSSY AND LICHENIFIED.

Incorrect Printing and Suppression

Incorrect printing or incorrect suppression of printing were other output bugs. Sometimes abnormalities were incorrectly output as separate headings rather than descriptors of topsite headings. For example, the output produced by the ZA 1/4/(1(6,8(3))/ was:

NOSE:

PERFORATED SEPTUM:

RIGHT NASOPHARYNX: PURULENT DISCHARGE AND POLYP.

which should have been output as:

NOSE:

PURLUENT DISCHARGE AND POLYP IN RIGHT NASOPHARYNX AND PERFORATED SEPTUM.

Incorrect word suppression caused inaccurate or repetitive output like the output from ZA 1/2(2(2(1,2,7(1,4,8)))/

EARS:

CANALS: INFILTRATING, TENDER AND FIRM TUMOR, INFLAMMATION RIGHT CANAL AND BLEEDING RIGHT CANAL.

With proper word suppression, this output would be:

EARS:

RIGHT CANAL: INFILTRATING, TENDER AND FIRM TUMOR, INFLAMMATION AND BLEEDING.

Inconsistencies

Besides the above errors in output, the outputs were not consistent. Sometimes the headings were abnormalities such as the ZA 1/1/5(1(2,3)2(2)3(2)4(1(1(8(1))))/ which was output as:

ERUPTION: WITH SECONDARY INFECTION, DISCRETE, DARK RED, PAPULAR RASH WERE PRESENT OVER BOTH EARS WERE.

And which should have read:

BOTH EARS: DISCRETE DARK RED, PAPULAR ERUPTION WITH SECONDARY INFECTION.

Other ZAs were output with top sites as headings like ZA /1(1(13,14)/

THROAT:

TONSILS: SCARRED AND FIBROTIC BOTH TONSILS.

Which could be improved to read:

THROAT:

TONSILS: SCARRED AND FIBROTIC.

However, even when ZAs maintained topsites as headings, the output varied because of the changing topsite, topsite modifier, abnormality and abnormality modifier order. In contrast to the above ZA, ZA 1/2(3(11))/ produced the wrong ordered output:

ARM: OSTEOCHONDROMA BOTH.

Rather than the correct:

BOTH ARMS: OSTEOCHRONDOMA.

II. NARRATIVE OUTPUT

The output problems which occurred for the physical examination are common to the many other applications which have tried to output narrative text, usually in English. The difficulty of outputting narrative data is widely recognized. Direct translation into machine language from natural language is nonexistent and apparently will be so for some time.

Thus, at present, indirect rather than direct translation approaches are used to process narrative information. The concept of tree structures have been previously used. Work by Simmons in the field of question answering in natural English has included tree

structures with the use of word relations and inference rules. This, however, has only been applied to very small data bases and these methods would face severe limitations of processing efficiency if they were applied to larger data bases in any practical application. (13,14)

Another approach to general language processors has been to use semantic networks rather than trees. Use of this approach is eliminated by the large system necessary for implementation and by its limited experimentation. (15)

The goal of the above approaches is generation of English sentences by general language processors. Similar goals are sought by other computer systems which use thesauruses, (16, 17, 18) syntactic analysis, (16) semantic analysis, (19) or some type of translation. (16) Still other approaches simply store free text narrative via coding (3) or variable length format. (6) These methods encounter a number of problems including ambiguity, awkwardness, slow processing, and high costs, and most of these approaches are still developmental. Even if their problems with natural language were resolved, many are not directly applicable to medicine. Factors like hardware reliability or the other requirements mentioned in Chapter II would not be met by some of these systems. Others would perform the information processing but would not produce satisfactory output.

Given the state of the art of general purpose English language processors, it is realistic to approach the computerization of the physical examination using tree structures and a thesarus as used

at UTMRCH. It is also reasonable to use this approach because of the motivating factors developed in Chapter II.

III. OUTPUT METHODS

Output methods at UTMRCH use a tree structured thesarus of physical examination findings and a series of output programs, named UNT, FCP, WDS, SPE and PRT. The flow of the output programs is shown in Figure 5 (p. 25) and the program listings are in Appendix A.

The UNT program examines each individual character of a ZA string. Depending on the character examined, various actions are taken. For example, UNT detects a number, the program recognizes a physical examination finding and initiates the process to output that finding. When other criteria are met, appropriate actions are taken, including calling the other programs.

Program FCP is called when UNT has found closing parentheses. The role of this program will be more fully explained under the word list method. Program WDS sets up the output words. It uses the numbers in the ZA and selects the output words from the data base. After a complete section of the ZA string has been processed, the SPE program is called to examine the word list and invoke program PRT. PRT considers the output switches and prints the words. These processes are repeated until an entire ZA is outputted.

The output methods used to produce readable output are the formulation of entire word list, setting of output switches and reorganization of data base.

Word List Method

Word list formulation uses the ZA string and the data base to form the list of exact words output. For example, consider ZA(7) /1/1(1(13,14)))/ which produces this output:

TONSILS:

THROAT: SCARRED AND FIBROTIC BOTH TONSILS.

Using this ZA and the throat section of the data base (see Appendix B), the procedure to produce this output would be:

The first "1" in the ZA indicates there were positive findings in the throat. The data base in line ↑DQ (2,70,1.70) of Appendix B indicates no output for this finding because of the null string after the up arrow, ↑. From ↑DQ(2,70,1), the UNT program picks up the transfer to ↑DQ(2,70,2), where the next "1" of the ZA indicates the word "tonsils" from line ↑DQ(2,70,2.1) in the data base.

Since the next character in the ZA is a "(" the UNT program calls program WDS which looks at section ↑DQ(2,7,2.7) in order to formulate the word of output. Since the last physical finding was "TONSILS", represented by a 1, the associated output instruction is the first portion of ↑DQ(2,7,2.7) deliminated by a slash, in this case " *". This indicates a space should be followed by the word "TONSILS". Thus, the first word in the word list is "TONSILS ↑↑". The two "↑ ↑" are auxiliary information concerning switches which will be discussed later.

Now, the 1 is used again to indicate the first of the list of transfers in DQ(2,70,2), namely 11 should be used. So, transfer

is made to question block 11 of this throat section. Here the modifier "both" was picked. Again the next character of the ZA string was a "(", so UNT called WDS which formed the second word of the word list based on the output instructions in ↑DQ(2,70,11.7). The transfer from this question block is to ↑DQ(2,70,21) which concerns abnormalities of tonsils.

The "13,14" of the ZA indicate the 13th and 14th elements of the list in ↑DQ(2,70,21.1) were chosen; "SCARRED" and "FIBROTIC". Each of these abnormalities results in another word in the word list. The only difference is the "," between them in the ZA. This "," causes the word",↑↑" to be placed between the two words in the list and a variable CP to be set = 1.

The next character in the ZA was ")" and FCP tests the CP variable. If CP equals 1, FCP replaces the first ",↑↑" in the word list with an "AND ↑↑" and sets CP = 0. Here the single comma is replaced. In longer lists, all list elements have commas between them except the last two which have an "AND ↑↑" between them.

The next characters in the ZA are ")"s which the FCP program examines for nested lists. More complex ZAs with nested lists require more processing to generate punctuation and connectors between various levels of nesting. To determine the levels of nesting, the parentheses delimeters are used. An opening parenthesis increases the level and a closing parenthesis decreases the level. A level is assigned to each output word depending on its position between parentheses delimeters. As words occur on each level, comma indicators are set and/or checked. The status of these comma indicators determine the punctuation and connectors to be added to output for nested lists.

In this case, there were no nested lists, so the UNT program just examined the final ZA character, a "/". The slash terminated this examination and called program SPE, which was entered with the word list:

WD(5) = SCARRED↑↑

WD(4) = AND↑↑

WD(3) = FIBROTIC↑↑

WD(2) = BOTH TONSILS↑↑

WD(1) = TONSILS↑↑

Using the MUMPS function known as $HIGH or $H, the SPE program examined this word list. $HIGH returns the lowest subscript of the array which is numerically greater than the argument. In SPE, the following compact MUMPS code finds the highest element in the WD array:

F I = 1:1 U L = 0 S L = $H(WD(L)) (the code says for I equal to 1 and incremented by 1 until L is undefined, set L equal to the $HIGH value of the Lth word).

After this examination, the entire word list is accessible from the top word down. The print program is called to print word one of the word list as a heading; (here, "TONSILS:"). Then, starting at the top of the word list, PRT prints the physical examination findings. The top to bottom printing order depends on the ZA structure of Figure 2 (p. 20), which recognizes the English convention to write modifiers first, then the modified word, and to write most specific information first, followed by the more general information.

This word list formulation method forms all words which should be printed. This approach is satisfactory in some cases, but it is unsatisfactory in others. For example, in the case of the following ZA and word list 1/2(3(2(6,7)))/

WD(6) = LACERATION OF↑↑

WD(5) = AND↑↑

WD(4) = FOREIGN BODY IN↑↑

WD(3) = CONJUCTIVA↑↑

WD(2) = GLOBES↑↑

WD(1) = RIGHT EYE↑↑

The desired output is a subset of the entire word list:

RIGHT EYE: LACERATION OF AND FOREIGN BODY IN CONJUCTIVA.

Here, the entire word list would produce repetition of location, (conjuctiva and globes). Knowledge of the data base could indicate a location such as globes may never need to be printed. To accomodate mandatory suppression, a "*%*" output instruction is used which indicates a null word with null switch indicators should be added to the word list.

Although mandatory suppression works well in some cases, it may hinder meaning. For example, consider two skin abnormalities. In one, the description of an abnormality of the dorsal surface of all the fingers is desired. In the other, the same abnormality located on the surface of the little finger needs to be described. The following results if there is mandatory suppression of the word finger. When the abnormality is a rough texture of the skin of both little

fingers the ZA is 1/9(9(6(1(1(1(2(3)))))))/ the word list is:

WD(8) = ROUGH↑↑

WD(7) = TEXTURE↑↑

WD(6) = ALL SURFACES↑↑

WD(5) = ALL PHALANGES OF↑↑

WD(4) = BOTH↑1↑

WD(3) = LITTLE FINGER↑↑1

WD(2) = ↑↑

WD(1) = EXTREMITIES↑↑

The output produced is:

SKIN:

EXTREMITIES: ROUGH TEXTURE ALL SURFACES ALL PHALANGES OF BOTH LITTLE FINGERS.

All fingers having a rough texture is recorded as:

1/9(9(1(1(1(1(2(3)))))))/ its word list is:

WD(8) = ROUGH↑↑

WD(7) = TEXTURE↑↑

WD(6) = ALL SURFACES↑↑

WD(5) = ALL PHALANGES OF↑↑

WD(4) = BOTH↑1↑

WD(3) = ALL↑↑

WD(2) = ↑↑

WD(1) = EXTREMITIES↑↑

The output is:

SKIN:

EXTREMITIES: ROUGH TEXTURE ALL SURFACES ALL PHALANGES OF BOTH ALL.

As seen from this example, mandatory suppression is not always correct.

Switch Method

To handle this frustrating type of situation, a series of switches have been set up. Depending on the status of these switches, output is altered. The switches are set up on a binary, on/off (1/0) basis. They are set and checked in the output processing and they may be part of any word in the word list.

The established switches are:

Switch	Print Function
1	prints: S
2	AND
3	BUT
4	THERE WAS
5	WAS FELT
6	WAS HEARD
7	OF
8	WAS
9	WERE
10	PRESENT OVER THE
11	E
12	ES
14	SUPPRESSES "," IF SWITCH (10)=1
15, 16	non-print
17	ADDS "," IN ADJECTIVE LISTS
18	CONDITIONAL NON-PRINT

In the data base, in the .7 sections of the question blocks, the switches are set or checked and this information is carried along with the words in the word list. If in a .7-line of the data base, the output instructions include a number or list of numbers after asterisks, switches are used in the output of the word. After the second asterisk, the numbers, if any, indicate switches which are set. After the third asterisk, the numbers indicate switches which are checked.

When a word is being formed in the WDS program, the switch output instructions are included in the word. The switches which are set follow an up arrow and switches which are checked follow a second up arrow. Words with no switch indicators include two adjacent up arrows like "FINGER ↑↑".

For example, a word which wants to conditionally print "FINGER" would be "FINGER ↑↑ 15" which indicates switch 15 would be checked when "FINGER" should be suppressed. A higher level word, like "LITTLE FINGER", sets switch 15 as follows: "LITTLE FINGER ↑ 15." Suppose "FINGER" is about to be printed; if switch 15 is set, then when switch 15 is checked in this word, the entire word is suppressed.

The two previous examples concerning rough texture of the fingers can use switches rather than mandatory inclusion or suppression. Then, the correct output is always produced.

For the little finger abnormality switch 15 for conditional print is set in WD(3) and checked in WD(2).

WD(8) = ROUGH↑↑

WD(7) = TEXTURE↑↑

WD(6) = ALL SURFACES↑↑

WD(5) = ALL PHALANGES OF↑↑

WD(4) = BOTH↑1↑

WD(3) = LITTLE FINGER ↑↑ 15

WD(2) = FINGER ↑15 ↑ 1

WD(1) = EXTREMITIES↑↑

This word list produces this correct output:

SKIN:

EXTREMITIES: ROUGH TEXTURE ALL SURFACES ALL PHALANGES OF BOTH LITTLE FINGERS.

For the rough texture of all fingers the same word list is formed except for WD(3) which is "HAND ↑↑ 1". Here switch 15 is not set, so the output is:

SKIN:

EXTREMITIES: ROUGH TEXTURE ALL SURFACES ALL PHALANGES OF BOTH HANDS FINGERS.

In these examples, and in general, the switches are important for the flexibility and versatility they add to output performance. Various other functions of these switches are illustrated in the case histories in Appendix C. They allow various outputs to be produced from the same segments of the data base without imposing unnecessary verbiage. This factor alone can win acceptance of the system.

To illustrate this point, imagine the physician who received this output:

SKIN: RASH ON RIGHT LITTLE FINGER OF HAND OF ARM OF EXTREMETIES.

The actual abnormality, a rash on the right little finger, is presented but the additional, unnecessary words would make a busy physician reluctant to use the system again.

More than winning acceptance, human life might be at stake. If plural and singular forms of words were not indicated by switches, the subsequent outputs could cause slight aggravations or serious problems in reading and understanding the physical examination. For example, consider an abnormality of the blood vessels. Omission of plurals could alter the meaning or scope of the problem and initiate improper action. Of course, when dealing with human life, incorrect or insufficient information may be deadly. The ouptut switches help to relate correct and complete information.

Data Base Reorganization

The last method to output the physical examination is data base reorganization. This reorganization involved the top site, top site modifiers, abnormality, abnormality modifiers shown in Figure 2 (p. 20). Data base reorganization also included addition of switches and modifiers.

This reorganization is exemplified by the heart section of the data base. In the old data base, the heart section had the structure

shown in Figure 6. The present data base has the structure shown in Figure 2. This section of the data base is listed in Appendix B at ↑DQ(2,120) and resulting satisfactory outputs are presented in Appendix C.

All these output methods use the inescapable hierarchial structure of Figure 2. In fact, the production of readable output depended on this ZA structure. The next chapter discusses output results.

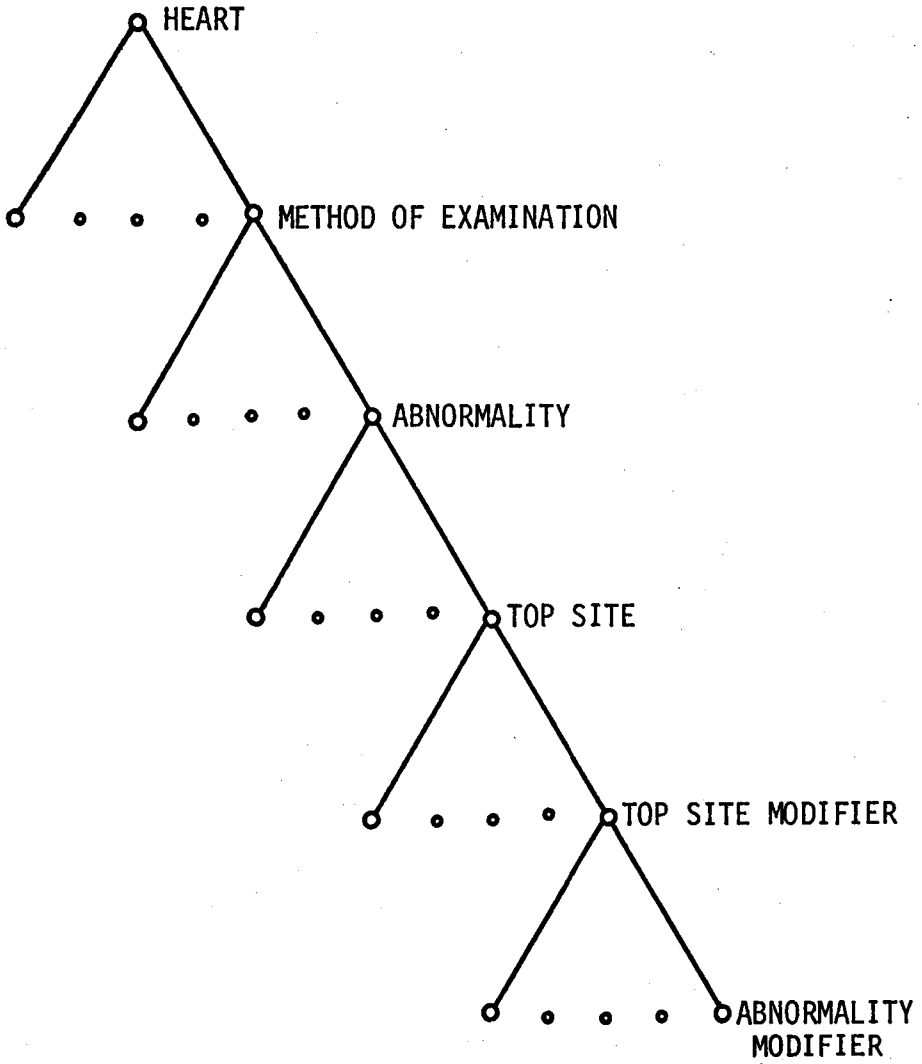


Figure 6. Structure of HEART Section in Old Data Base.

CHAPTER IV

OUTPUT RESULTS

I. SOLUTION OF OUTPUT PROBLEMS

This chapter and Appendix C present output results which show the solution of the output problems presented in the beginning of Chapter III and which use the methods described in the end of Chapter III.

Application of word list formulation, output switches, and data base reorganization produced readable output which reflected the richness and fullness of modifiers and unambiguous recording of physical examination findings. These methods resolved the no output, singular/plural, word connector, incorrect printing and unnatural English problems that previously occurred.

Guaranteed Output

The decision to structure all ZAs according to the model in Figure 2 assures output. This standardization in the data base allows the output algorithm to successfully process all ZAs. The data base is physically set up according to Figure 2, with topsites sections first, followed by top modifiers, abnormalities and abnormality modifiers, respectively. An example of this is in the eye section of the data base at ↑DQ(2,30) in Appendix B. Otherwise, the data base may be set up so the transfers within the section preserve the structure of Figure 2. In this case, although the various parts of the data base are not physically in the order of Figure 2, the

transfers within the sections maintain the established structure. An example of this form of the data base is the chest section at ↑DQ(2,100). Both of these methods of data base organization insure output.

Proper Singular and Plural Outputs

Output programs now accommodate singular and plural outputs by means of output switches. It could have been achieved by broadening the data base to include all singular and plural forms of topsites, top modifiers, abnormalities and abnormality modifiers. This would have greatly expanded the data base and significantly increased the time required to record and output physical findings.

Instead of the above method, conventional plural suffixes "S", "E", and "ES" are used as switches. When a plural form of a modifier is chosen, this modifier's output instructions set the plural switch. The modified word interrogates the appropriate plural switch and adds the plural suffix if the switch is set.

Examples of singular and plural output from the chest are shown below.

For the singular case, the ZA is: 1/2(1(2(1(2)2(2)3(2(1)))))/ the output produced is:

CHEST: TENDERNESS, DULLNESS, AND INTENSIFIED BREATH SOUNDS RIGHT SIDE.

The plural case has the ZA: 1/2(1(1(1(2)2(2)3(2(1)))))/. Using output switches, the output reflects the plural findings:

CHEST: TENDERNESS, DULLNESS, AND INTENSIFIED BREATH SOUNDS BOTH SIDES.

Correct Connectors

Chapter III presented examples where proper word connectors and punctuation were absent. The application of output methods described in the last chapter, especially program FCP, added necessary conjunctions, prepositions and punctuation to make the reading smoother and the meaning clearer. Although the old output methods added some of these word connectors, no provision was made for nested lists and word connectors were not always correct. Present output methods handle nested lists. An example is shown below.

The ZA: 1/2(1(2(1,4,7))2(1(1,9))3(1(6))4(1(2)))/ generated this correct output:

> EARS: INFECTION, ULCER AND DEFORMED RIGHT AURICLE, FOREIGN BODY AND BLEEDING BOTH CANALS, PERFORMATION BOTH DRUMS, AND DEAF BOTH SIDES.

Correct Printing

Former outputs, as illustrated in Chapter III, often printed superfluous words, suppressed required words, or produced inconsistencies and unnatural language. These problems no longer occur. The output words adapt to each ZA and different words of the list are printed and suppressed at various times. Despite these variations, each ZA and its output reflect the standardization of Figure 2 while inconsistencies and unnatural English are avoided. Chapter III presented examples of this correct printing.

II. IMPORTANCE OF STANDARDIZED STRUCTURE

Throughout this thesis, the role of the structure shown in Figure 2 in outputting ZAs has been mentioned repeatedly. The importance of this role cannot be overemphasized. The hierarchial structure possessed by each ZA should be regarded as the foundation for successfully outputting the physical examination findings.

Work by Wortman, Greenburg, Miller and Mandler proposes that all human thinking is accomplished with a similar hierarchial mental structure.(24, 25, 26) Thus, this structure could be considered a natural adaption of human thought processes to medical information processing. But Mandler emphasizes the implications of hierarchial structure on computing when he points out that the computing time to present and choose items in a hierarchial organization increases linearally while retrieval capacity increases exponentially. This increased computing power is contrasted to a matrix structure which requires computer processing time that increases exponentially as the data base matrix increases. (26, 27)

The hierarchial structure of ZAs shown in Figure 2 shares these computing advantages. The output of physical findings depends on this structure and without it, these results would not be possible.

III. ILLUSTRATIVE OUTPUTS

The outputs shown in this section were produced from ZAs of hypothetical physical examination findings and from ZAs of actual abnormalities shown in medical records. Hypothetical ZAs were used

to test the output algorithm for possible, although unlikely, output conditions. For example, very complex levels of nested lists are possible but were not present in the ZAs of actual physical findings. To test the output capabilities in handling such outputs, hypothetical ZAs were formed and tested.

Hypothetical Physical Findings

The following hypothetical ZA which contained multi levels of nested lists 1/5(3)6(5(2,8,9,10))7(8(7(5))9(5(3))10)8(10)/ produced this correct output:

HEART:

RHYTHM: GALLOP

HEART SOUNDS: SPLIT, SNAPPING, A2 >P2 AND ACCENTUATED S4.

ANTERIOR FONTANEL: WHISTLING, RASPING CLICK, LOW PITCHED HOLLOW RUB AND ENLARGED.

EPIGASTRIUM: ENLARGED.

Actual Physical Findings

The actual physical examination findings from medical records tested the computerized output methods against conventional output. To do this, all positive physical examination findings (all physical abnormalities) were recorded in ZAs via the questionnaire software. These ZAs were processed by the output programs.

Each of these cases of actual physical examination findings is shown in Appendix C. Each case study presents the narrative text concerning the positive physical findings given in the medical record, the ZA which records these physical findings and the computer output produced.

An example case study concerns abnormalities of the eye. The medical record contained this descriptive narrative:

> Visual acuity right eye 20/25, best corrected left eye 20/20. EOM, pupils and position are normal. Ophthalmoscopic exam normal except for papilledema of the optic disc of about 3 diopters in right eye and 1 to 2 diopters in left eye. There is a hemorrhage in the upper temporal quadrant at approximately 10:30 to 11 o'clock in right eye with dilation of the veins and some questionable small flamed and punctate hemorrhages in the periphery and margin of the nerve heads.

The ZA to record these physical findings is:

1/2(1(2(1(2(6))))4(2)6(2(1)))3(6(2(1)))/. The word lists formed to output the portions of this ZA are: for 2(1(2(1(2(6))))),

WD(6) = HEMORRHAGE ↑↑

WD(5) = UPPER ↑↑

WD(4) = ↑↑

WD(3) = QUADRANT ↑↑

WD(2) = OCULAR ORBIT ↑ 1 ↑

WD(1) = RIGHT EYE ↑ 15 ↑

For 4(2),

WD(3) = ABNORMAL ACUITY ↑ 17 ↑

WD(2) = ↑↑

WD(1) = RIGHT EYE ↑ 15 ↑

For 6(2(1))),

WD(4) = PAPILLEDEMA ↑ 15 ↑

WD(3) = OPTIC DISC ↑ 15 ↑

WD(2) = ↑↑

WD(1) = RIGHT EYE ↑ 15 ↑

And for 3(6(2(1)))/,

WD(4) = PAPILLEDEMA ↑15↑

WD(3) = OPTIC DISC ↑15↑

WD(2) = ↑↑

WD(1) = LEFT EYE ↑ 15↑

The output software produces:

EYES:

RIGHT EYE: HEMORRHAGE UPPER QUADRANT OCULAR ORBITS, ABNORMAL ACUITY, AND PAPILLEDEMA OPTIC DISC.

LEFT EYE: PAPILLEDEMA OPTIC DISC.

The resulting output clearly presents the physical findings held in the ZA. In this case, and many others, the ZA did not contain some of the original modifiers. This deficiency could be remedied by expansion of the data base. Such expansion would not effect output techniques; indeed, the structure in Figure 2 (p. 20) is based on optional and multiple levels of description.

CHAPTER V

SUMMARY AND CONCLUSIONS

In view of the inadequacies of conventional medical records, it is advantageous to computerize the medical record. Part of this computerization is the physical examination portion of the medical record. The question investigated was whether physical examination findings stored in ZA strings could be output with a richness of descriptors in readable English.

In order to achieve the desired output, a common structure was imposed on all physical examination findings and existing output programs and the data base were modified. These output methods were tested on hypothetical and actual physical examination findings. The resulting outputs met the stated objectives of readability and completeness.

Although these output methods are satisfactory, certain considerations should be made concerning future developments in computerizing the medical record.

First, the structure imposed on the physical examination findings is satisfactory for the description of physical findings in the present data base. But as the data base expands, the topsite, top modifier, abnormality, abnormality modifier structure may be limiting. Further research for a more general structure is needed.

Second, further levels of description are needed in the data base. At present, some physical findings are not recordable in ZA strings because the data base is not sufficiently developed. For the

same reason other physical findings cannot be described with the desired richness of description. The structure shown in Figure 2 (p. 20) allows for such expansion and subsequent output could be handled using present methods. Future research could investigate implementing an adaptive learning system which would add new physical abnormalities as it encountered them. This type of artificial intelligence application could inspire much future research.

Further developments are needed to handle recording and outputting a patient's changing physical abnormalities. Also, some method is needed to record and output implied physical findings of medical records. This occurs when only diagnosis, not observations, are recorded. These problems plague the conventional medical record and also need to be considered in the computerized record.

Finally, the computerized physical examination is presently too slow to warrant general acceptance. The time required to input the physical examination findings is prohibitive. To solve this problem, work on a dictation, rather than questionnaire, input procedure is underway. This work needs to be finished and implemented because faster input would make the computerization of the physical examination clinically acceptable.

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APPENDICES

APPENDIX A

PHYSICAL EXAMINATION OUTPUT PROGRAMS

Program UNT

```
0.01 HSC:UNT SETS UP UNITS OF Z

1.05 S CTY=^(C),Q=$H(^(C,0)),%Y="",U="",LVL=1,L=1,%LZ="" D 20 T $P(CTY^1)
1.06 S CP=0 S IC=0
1.10 S U=$P(Z/1),Z=$P(Z/2,99),LL=0,IZ=1 I U="" G 1.98
1.15 S TYP=^(Q),X=$P(TYP^4),TO=$P(TYP^2),TFR=$P(TYP^3),TYP=$P(TYP^1)
1.17 S QL(LVL)=Q
1.19 S PVL=LVL
1.20 S %Y="" I TYP="B"&L=1 G 6
1.22 D 4 I TYP="I" C TYP D 2 G 1.8
1.25 S %Z=$E(U,1),U=$E(U,2,73)
1.27 I '%Z="" I %Z:N S %Y=%Y.%Z S %LZ=%Z G 1.25
1.30 I $F(",(",%Z) G 5
1.35 I %Z=")" G 5.15
1.80 I Q>0 I $I(Q)<C+10 G 1.1
1.98 K U,TR,Y,%Y,%V,%U,%Z,I,X,LL,LVL,QL,IZ S L=0
1.99 K TO,TFR,QTN,A,B,TYP,%G R !!"TO CONTINUE, HIT 'G'",A I 'A="G" H

2.10 I TR="" S Q=($V(TO)-C)*10 G 2.2
2.12 I TR["(" S TR=$E(TR,2,73),Q=$V(TR) B G 2.2
2.15 S Q=$V(TR)
2.20 I Q>0 I $I(Q)<C+10 K QTN,TYP,TO,TFR

4.01 K QTN
4.10 S QZ=Q,X=$V(X) F I=Q+.1:.1:Q+X/10 S QTN(I)=^(I)
4.20 F X=.7:.1 U $D(^(Q+X))=0 S QTN(Q+X)=^(Q+X)
4.30 S Y=QTN(Q+.7),Q=Q+.1

5.10 C WDS I B="SKIP" D 2 G 1.1
5.15 I %Z=")" I '%Y="" D 5.10
5.16 I %Z=")" S LL=LL+1 C FCP
5.17 I %Z=")" S %LZ=%Z D 1.25 G $B(%Z=")",5.15;1,5.41)
5.41 I %Z="(" S LVL=LVL+1 S PVL=PVL+1 S %LZ=%Z K %Z D 2 G 1.15
5.43 I %Z="," S CP=1 S WD(L)=",^^" D 9 S %LZ=%Z G 1.25
5.45 I '%Z=""&'%Z:1N D 2 S %LZ=%Z G 1.8
5.50 I %Z:1N S SW(2)=0
5.60 K QTN C SPE I %Z:1N D 10 S %LZ=%Z G 1.15
5.75 D 10 S TYP=^(Q),TO=$P(TYP^2),TR="" D 2 S %LZ=%Z G 1.8

6.20 C TYP I Q K QTN,TYP,TO,TFR G 1.1
6.25 G 1.98

9.10 S LV(L)=LVL,L=L+1,Q=Q/100*100+.1,Y=QTN(Q+.6)

10.10 S LVL=LVL-LL F I=LVL+1:1:LVL+LL K QL(I)
10.15 S Q=QL(LVL) K TYP,TO,TFR S LL=0
10.20 I LVL=1 S IZ=1

20.05 I DEV:"T"U T !# Q
20.10 P .29,.24,.08,.24,.08,.31

99.65 D ^K(99)
99.80 E 99.1
```

Program FCP

```
0.01 HSC:FCP HANDLES PARENTHESES

1.35 I CP=1 S CP=0 G 1.40
1.37 I %LZ=")" I $D(CI(PVL)) I '$PVL=1 I CI(PVL)=1 G 1.42
1.38 G 2
1.40 S K=LV(L-1) S J=L-1
1.41 F PI=L-1:-1:1 I 'LV(PI)=K Q G 8
1.42 F I=L-1:-1:1 I LV(I)=PVL I WD(I)="",^^" Q  G 1.44
1.44 I 'I=1 S WD(I)=" AND^^" G 2
1.46 I I=1 S WAL=1 G 2

2.10 I '$PVL=1 S PVL=PVL-1 I PVL=1 I $D(CI(2)) I CI(2)=1 S CI(2)=0,WAL=1
2.20 S NZ=$E(U,1) I NZ:N I '$PVL=1 S WCL=1 S CI(PVL)=1 Q
2.30 Q

8.10 F M=PI+1:1:J I WD(M)="",^^" S WD(M)=" AND^^" Q G 2

9.10 S LV(L)=LVL,L=L+1

99.65 D ^K(99)
99.80 E 99.1
```

Program WDS

```
0.01 HSC:WDS SETS UP WORD ARRAY

1.10 G 5

5.10 I TYP="B" G 6
5.15 I '$P(Y^1)="" S WD(L)=$P(Y^1)
5.20 S Y=$P(Y^2,99),%Y=$V(%Y),II=1,IQ=1
5.25 F I=1:1 U $P(QTN(Q),I)="" D 9 S II=II+1,IQ=IQ+1 I I=%Y Q G 5.3
5.27 S %Y=%Y-I+1,Q=Q+.1 G 5.25
5.30 K IQ,II,K I B="SKIP" I L=1 K %Z,Y S %Y="" Q
5.31 I B="SKIP" S B=""
5.32 S AA=$P(A*1) I $D(WD(L)) S WD(L)=WD(L).AA.B G 5.4
5.35 S WD(L)=AA.B
5.40 I '$P(A*2)="%" S AA=$P(A*2),WD(L)=WD(L).AA
5.42 D 10 S LV(L)=LVL,L=L+1 K A,AA,Y,%S S %Y=""

6.10 I %Y="0" S WD(L)=$P(Y/1),TO=$P(TO/1) G 6.2
6.15 S WD(L)=$P(Y/2),TO=$P(TO/2)
6.20 S LV(L)=LVL,L=L+1,TR="" K Y,%Y

9.05 I $P(Y/IQ)="" S X=Q/100*100,IQ=1 D 9.2
9.10 S A=$P(Y/IQ),TR=$P(TFR/II),B=$P(QTN(Q),I)
9.15 I $P(A*2)="%" S B=""
9.16 I $P(A*3)="2" S KG=1
9.17 Q
9.20 F K=.8,.9 I $D(QTN(X+K)) S Y=QTN(X+K) K QTN(X+K) Q

10.10 S AA=$P(A*3) S WD(L)=WD(L)."^".AA
10.15 S AA=$P(A*4) S WD(L)=WD(L)."^".AA

99.65 D ^K(99)
99.80 E 99.1
```

Program SPE

```
0.01 HSC:SPE WRITES PE

1.10 S L=$H(WD(.01)) I %Z:1N S U=%Z.U
1.15 F I=1:1 U L=0 S L=$H(WD(L))
1.16 I '$D(KG) I WD(I-1)="^^" I WD(I-2)="^^" G 4
1.17 I $D(WAL) K WAL I 'IZ=1 T " AND"
1.20 S L=I-1,IL=LV(L) I L>1&IZ=1 S %L=1 C PRT S IZ=0
1.22 I L=1 S %L=L C PRT K WD(1),LV(1),%L Q
1.30 S %L=L C PRT
1.37 I LV(L)=LVL-LL&%Z:1N G 2
1.40 K WD(L),LV(L) S L=L-1 K %U,%V I L>1 G 1.30
1.42 I L=1 I $D(WCL) K WCL T "," K WD(L),LV(L),%L Q
1.45 I PVL=1 T "." K SW,WD(1),LV(1),%L,K

2.10 I 'PVL=1 I $D(WCL) K WCL T ","
2.15 I PVL=1 T "." K SW,WD(1),LV(1),%L,K
2.20 K WD(L),LV(L),%L Q

3.10 S L=I-1 K WD(L),LV(L) I 'L=2 S L=L-1 K WD(L),LV(L) Q

4.10 S CI(LV(I-2))=0 K WCL,WAL G 3

99.65 D ^K(99)
99.80 E 99.1
```

Program PRT

```
0.01 HSC:PRT PRINTS WORD LIST

1.05 S Y=$S(10.1) I WD(%L)="^^" Q
1.07 I %L=1&'C=10 G 3
1.09 I %L=1&C=10 G 4
1.10 I $P(WD(%L)^3)["15" I $D(SW(15)) I SW(15) S SW(15)=0 G 2
1.15 I $P(WD(%L)^3)["16" I $D(SW(16)) I SW(16) S SW(16)=0 G 2
1.16 I $P(WD(L)^3)["18" D 5 S %S=$V(%S) B I $D(SW(%S)) I SW(%S) Q
1.20 I $X+$L(WD(%L))>69 T !
1.22 S SW(2)=0 I SW(2)&%Z="" I '$D(SW(10)) T $P(Y,2) S SW(2)=0
1.25 T $P(WD(%L)^1) G 2

2.05 S %U=$P(WD(%L)^2),%V=$P(WD(%L)^3) I %U="" G 2.1
2.07 S %S=$P(%U,1),%U=$P(%U,2,99),%S=$V(%S),SW(%S)=1 I '%U="" G $L
2.10 I %V="" K %V,%U Q
2.12 S %S=$P(%V,1),%V=$P(%V,2,99),%S=$V(%S) I '$D(SW(%S)) G 2.3
2.15 I 'SW(%S)!%S=15!%S=16 G 2.3
2.18 I %S=8 D 7 I '$D(SW(8)) G 2.3
2.22 I $P(Y,",",%S)="" S Y=$S(10.2),%S=%S-9
2.23 S Y=$P(Y,",",%S) I $X+$L(Y)>70 T !
2.25 T Y S SW(%S)=0,Y=$S(10.1) K %S
2.30 I '%V="" G 2.12

3.15 T !"      ",$P(WD(1)^1)," : " G 2

4.10 I $X+$L(WD(%L))>69 T !
4.15 G 1.25

5.10 S %S=$P(WD(L)^3),%S=$E(%S,1,$F(%S,"18")-3)
5.20 I '$P(%S,2)="" S %S=$P(%S,2,99) G $L

7.10 I SW(8) I $D(SW(9)) I SW(9) K SW(8)

10.10 S, AND, BUT, THERE WAS, WAS FELT, WAS HEARD, OF, WAS, WERE
10.20  PRESENT OVER THE,E,ES,

99.65 D ^K(99)
99.80 E 99.1
```

APPENDIX B

PHYSICAL EXAMINATION DATA BASE

```
^DQ(2)= A
^DQ(2,5)= CHOOSE PE CATEGORIES :
^DQ(2,5,1)= L^10^^3
^DQ(2,5,1.10)=
GENERAL,SKIN,EYES,EARS,NOSE,MOUTH,THROAT,NECK,LYMPH NODES,CHEST,BREAST
^DQ(2,5,1.20)=
HEART,BLOOD VESSELS,ABDOMEN,GENITALIA,RECTAL,BONES-JOINTS-MUSCLES
^DQ(2,5,1.30)= EXTREMITIES,NEUROLOGICAL,ALL
^DQ(2,10)= GENERAL :^^1
^DQ(2,10,1)= L^10.2^////////^1
^DQ(2,10,1.10)=
WELL NOURISHED,OVERWEIGHT,OBESE,UNDERWEIGHT,EMACIATED,MALNOURISHED
^DQ(2,10,1.70)= THIS^ */ */ */ */ */ */
^DQ(2,10,2)= L^10.3^////^1
^DQ(2,10,2.10)=
WELL DEVELOPED,DELAYED DEVELOPMENT,ACCELERATED DEVELOPMENT
^DQ(2,10,2.70)=
^ PATIENT IS *,/ PATIENT EXHIBITS *,/ PATIENT EXHIBITS *,/
^DQ(2,10,3)= L^10.4^/////////^1
^DQ(2,10,3.10)=
ALERT,SLEEPING,IRRITABLE,SPASTIC,CONVULSING,SOMNOLENT,COMATOSE
^DQ(2,10,3.70)=
^ IS *,/ IS * QUIETLY,/ IS *,/ IS *,/ WAS *,/ WAS *,/ WAS *,/
^DQ(2,10,4)= L^10.5^////^1
^DQ(2,10,4.10)= HEALTHY,ACUTELY ILL,CHRONICALLY ILL
^DQ(2,10,4.70)=
^ AND APPEARS *./ AND APPEARS *./ AND APPEARS *./
^DQ(2,10,5)= I^20^/////////^2
^DQ(2,10,5.10)=
AGE,TEMPERATURE,PULSE,RESPIRATION,BLOOD PRESSURE: SYSTOLIC,DIASTOLIC
^DQ(2,10,5.20)= WEIGHT
^DQ(2,10,5.70)= ^^
^DQ(2,20)= SKIN :^^^1
^DQ(2,20,1)= B^30/20.3^^1
^DQ(2,20,1.10)= NORMAL(ALT)
^DQ(2,20,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,20,2)= B^/20.3^^1
^DQ(2,20,2.10)= GENERALIZED(ALT)
^DQ(2,20,2.70)= /^^8,9,16
^DQ(2,20,3)= T^30^4/11/12/13/14/15/16/16/17/6^2
^DQ(2,20,3.10)=
GENERALIZED,FACE,NECK,CHEST,BACK,ABDOMEN,BUTTOCKS,HIP,EXTREMITIES
^DQ(2,20,3.20)= APPENDAGES
^DQ(2,20,3.70)= ^ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,20,4)=
A^^21/22/23/24/26///132/56/52///54///57//^3
^DQ(2,20,4.10)=
COLOR,TEXTURE,MOISTURE,TEMPERATURE,PIGMENT,TRAUMA,INFECTION
^DQ(2,20,4.20)=
MASS,ERUPTION,LESIONS,TELANGIECTASIS,CAPILLARY PULSATION
^DQ(2,20,4.30)=
HEMORRHAGE,DERMOGRAPHIA,CONGENITAL,BURN,LACERATION
```

```
^DQ(2,20,4.70)=
^*%*/*%*/*%*/*%*/*%*/*%*/ */ */ */*%*/ */ */ */ */ */ */ */ */
^DQ(2,20,6)= TM^30^18/19/25^1
^DQ(2,20,6.10)= SCALP,HAIR,NAILS
^DQ(2,20,6.70)= ^ */ */ */
^DQ(2,20,11)= TM^^4/4/4/4/18/4/16/16/16/^1
^DQ(2,20,11.10)=
GENERALIZED,FOREHEAD,NOSE,LIP,CHIN,CHEEK,SIDE,EAR
^DQ(2,20,11.70)= ^*%*/ */ */ */ */ */ */ */
^DQ(2,20,12)= TM^^4/4/4/4/4/4/16/4/^2
^DQ(2,20,12.10)=
GENERALIZED,SUBMANDIBULAR AREA,LARYNGEAL AREA,THYROID AREA
^DQ(2,20,12.20)= SUPRASTERNAL AREA, CERVICAL AREA,BACK
^DQ(2,20,12.70)= ^*%*/ */ */ */ */ */ */
^DQ(2,20,13)= TM^^4/16/4/4/4/4/4/16/16/16/16^2
^DQ(2,20,13.10)=
GENERALIZED,BREAST,STERNAL,PRECORDIAL,UPPER,LOWER,SIDE
^DQ(2,20,13.20)=
SUPRACLAVICULAR AREA,INFRACLAVICULAR AREA,AXILLA
^DQ(2,20,13.70)= ^*%*/ */ */ */ */ */ */ */ */ */
^DQ(2,20,13.80)=  **15*1/ **15*1/ **15*11/
^DQ(2,20,14)= TM^^4/16/4/4/4/4/16/^2
^DQ(2,20,14.10)=
GENERALIZED,SCAPULAR,INTERSCAPULAR,UPPER,LOWER,SIDE
^DQ(2,20,14.70)= ^*%*/ */ */ */ */ */
^DQ(2,20,15)= TM^^4/4/16/18/18/4/^2
^DQ(2,20,15.10)=
GENERALIZED,EPIGASTRIC,INFRACOSTAL, QUADRANT
^DQ(2,20,15.20)= PERIUMBILICAL,SUPRAPUBIC
^DQ(2,20,15.70)= ^*%*/ */ */ */ */ */
^DQ(2,20,16)= TM^^4/4/4/^1
^DQ(2,20,16.10)= BOTH,RIGHT,LEFT
^DQ(2,20,16.70)= ^ **1/ */ */
^DQ(2,20,17)= TM^^4/34/34/37/38/34/34/34/34/32/33/^1
^DQ(2,20,17.10)=
ALL,ARM,LEG,HAND,FOOT,FORE ARM,CALF,UPPER ARM,THIGH,FINGERS,TOES
^DQ(2,20,17.70)=
^*%*/ **15*1/ **15*1/ ***1,15/ ***1,15/ **15*1/ **15*1/
^DQ(2,20,17.80)=  **15*1/ **15*1/ **16*15/ **16*15/
^DQ(2,20,18)= TM^^4/4/4/^1
^DQ(2,20,18.10)= BOTH,UPPER,LOWER
^DQ(2,20,18.70)= ^ **1/ */ */
^DQ(2,20,19)= A^^^2
^DQ(2,20,19.10)=
BRITTLE,WIRY,BROKEN,DRY,OILY,FALLING OUT,THIN,ABSENT,ALOPECIA,BALD
^DQ(2,20,19.20)= MOUSE-COLORED,TROPHIC CHANGES
^DQ(2,20,19.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,20,21)= AM^^^2
^DQ(2,20,21.10)=
PALE,FLUSHED,HYPEREMIC,ERYTHEMATOUS,CYANOTIC,JAUNDICED,COPPERY
^DQ(2,20,21.20)=
CAFE-AU-LAIT,GREYISH,BROWNISH,BLACKENED,SILVERY
^DQ(2,20,21.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,20,22)= AM^^^2
^DQ(2,20,22.10)=
SMOOTH,COARSE,ROUGH,ATROPHIC,THICKENED,DIMPLED,ORANGE PEEL,GLOSSY
^DQ(2,20,22.20)= INELASTIC,NUTMEG-GRATER,LICHENIFIED,SCALEY
^DQ(2,20,22.70)=
^ */ */ */ */ */ */ * LIKE/ */ */ * LIKE/ */ */
^DQ(2,20,23)= A^^^1
^DQ(2,20,23.10)= DRY,MOIST,HYPERIDROSIS,SWEATY
^DQ(2,20,23.70)= ^ */ */ HYPERIDROTIC*%*/ */
^DQ(2,20,24)= AM^^^1
^DQ(2,20,24.10)= COOL,COLD,WARM,HOT
^DQ(2,20,24.70)= ^ */ */ */ */
^DQ(2,20,25)= A^^^4
```

```
^DQ(2,20,25.10)=
DEFORMED,DISCOLORED,FURROWED,RIDGED,THICKENED,THINNED,CONCAVE,DULL
^DQ(2,20,25.20)=
PITTING,SPLITTING,TROPHIC CHANGES,LOSS,ABSENT,AVULSION,TRAUMA,HEMATOMA
^DQ(2,20,25.30)=
WHITE SPOTS,WHITE BANDS,BEAU'S LINES,SPOON-NAILS,EGG SHELL NAILS,ONYCHIA
^DQ(2,20,25.40)= PARONYCHIA
^DQ(2,20,25.70)=
^ */ */ */ */ */ */ */ */ * OF/ * OF/ * OF/ * OF/ */ * OF/ * OF/ * UNDER/
^DQ(2,20,25.80)=
 * IN/ * IN/ * IN/ **15,16/ **15,16/ * OF/ * AROUND/
^DQ(2,20,26)= AM^^^5
^DQ(2,20,26.10)=
PIGMENT DEPOSITS,HYPERPIGMENTED,LEUCODERMIA,LEUCOMELANODERMIA
^DQ(2,20,26.20)=
VITILIGO,MORPHEA,MACULAE CAERULEAE,WHITE SPOTS,BRONZED,DEEP BROWN
^DQ(2,20,26.30)=
REDDISH-BROWN,PLUM-COLORED,BLUISH-GREY,SLATE-COLORED,MONGOLIAN BLUE SPOTS
^DQ(2,20,26.40)=
BLUE-BLACK SPOTS,BROWNISH SPOTS,DAPPLED PATCHES,YELLOWISH-BROWN PATCHES
^DQ(2,20,26.50)=
DIFFUSED BROWNISH HUE,SALLOW TINT,EARTHY TINT
^DQ(2,20,26.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,20,31)= TM^^4/4/4/4/4/4/4/4/4/4/4/4/4/4/^4
^DQ(2,20,31.10)=
ALL SURFACES,FLEXOR SURFACE,EXTENSOR SURFACE,PALMAR SURFACE
^DQ(2,20,31.20)=
PLANTAR SURFACE,MEDIAL SURFACE,LATERAL SURFACE,ANTERIOR SURFACE
^DQ(2,20,31.30)=
POSTERIOR SURFACE,DORSAL SURFACE,VENTRAL SURFACE,ANTICUBITAL FOSSA
^DQ(2,20,31.40)= POPLITEAL FOSSA
^DQ(2,20,31.70)=
^ * OF/ * OF/ * OF/ * OF/ * OF/ * OF/ * OF/ * OF/ * OF/ * OF/ * OF/ * OF
^DQ(2,20,32)= TM^^35/35/35/35/35/35/^1
^DQ(2,20,32.10)=
ALL,THUMB,INDEX FINGER,SECOND FINGER,RING FINGER,LITTLE FINGER
^DQ(2,20,32.70)=
^ */ **15*1/ **15*1/ **15*1/ **15*1/ **15*1/
^DQ(2,20,33)= TM^^35/35/35/35/35/35/^1
^DQ(2,20,33.10)=
ALL,GREAT TOE,SECOND TOE,THIRD TOE,FOURTH TOE,LITTLE TOE
^DQ(2,20,33.70)= ^ */ ***1/ ***1/ ***1/ ***1/ ***1/
^DQ(2,20,34)= TM^^31/31/31/^1
^DQ(2,20,34.10)= BOTH,RIGHT,LEFT
^DQ(2,20,34.70)= ^ **1/ */ */
^DQ(2,20,35)= TM^^41/41/41/^1
^DQ(2,20,35.10)= BOTH,RIGHT,LEFT
^DQ(2,20,35.70)= ^**1/ */ */
^DQ(2,20,37)= TM^^34/34/^1
^DQ(2,20,37.10)= ENTIRE,WRIST
^DQ(2,20,37.70)= ^*%*/ **15*1/
^DQ(2,20,38)= TM^^34/34/^1
^DQ(2,20,38.10)= ENTIRE,ANKLE
^DQ(2,20,38.70)= ^*%*/ **15*1/
^DQ(2,20,41)= TM^^31/31/31/31/^1
^DQ(2,20,41.10)=
ALL,PROXIMAL PHALANX,MIDDLE PHALANX,DISTAL PHALANX
^DQ(2,20,41.70)= ^ * PHALANGES OF/ * OF/ * OF/ * OF/
^DQ(2,20,42)= TM^^^2
^DQ(2,20,42.10)=
2-4MM,5-7MM,8-10MM,1-2CM,3-5CM,6-10CM,GRAPE,PLUM,ORANGE,GRAPEFRUIT,MORE
^DQ(2,20,42.20)= BASKETBALL,SMALL,MEDIUM,LARGE
^DQ(2,20,42.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,20,51)= L^^^2
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^DQ(2,20,51.10)=
MACULAR,PAPULAR,MACULO-PAPULAR,PUSTULAR,VESICULAR,MORBILLIFORM
^DQ(2,20,51.20)= SCARLATINIFORM,BULLAE,WHEALS,PETECHIAE
^DQ(2,20,51.70)=
^ * RASH/ * RASH/ * RASH/ * RASH/ * RASH/ * RASH/ * RASH/
^DQ(2,20,51.80)=  */ */ */
^DQ(2,20,52)= AM^^^1
^DQ(2,20,52.10)= SINGLE,MULTIPLE
^DQ(2,20,52.70)= ^ */ **1*1/
^DQ(2,20,54)= AM^^^1
^DQ(2,20,54.10)= HEMATOMA,ECCHYMOSIS,PETECHIAL
^DQ(2,20,54.70)= ^ **15*/ **15*/ **1*/
^DQ(2,20,56)= TT^^71/72/51/^1
^DQ(2,20,56.10)= 1,2,3
^DQ(2,20,56.70)= ^*%*/*%*/*%*10,14,16*8,9,10/
^DQ(2,20,57)= AM^^^1
^DQ(2,20,57.10)= 1ST DEGREE,2ND DEGREE,3RD DEGREE
^DQ(2,20,57.70)= ^ */ */ */
^DQ(2,20,61)= A^^2/2/2/^1
^DQ(2,20,61.10)= SCALEY,CONFLUENT,DISCRETE
^DQ(2,20,61.70)= ^ */ */ */
^DQ(2,20,71)= AM^^^1
^DQ(2,20,71.10)=
WITH SECONDARY INFECTION,CONFLUENT,DISCRETE
^DQ(2,20,71.70)= ^ */ */ */
^DQ(2,20,72)= AM^^/////// ^1
^DQ(2,20,72.10)=
RED,DARK RED,RASBERRY RED,LIGHT RED,PINK,BLUISH
^DQ(2,20,72.70)= ^ */ */ */ */ */ */
^DQ(2,20,132)= AM^^/////////////////42/^3
^DQ(2,20,132.10)=
FIRM,SOFT,HARD,TENDER,NON-TENDER,PAINFUL,CIRCUMSCRIBED,INFILTRATING
^DQ(2,20,132.20)=
INDEFINITE BORDER,SPHERICAL,IRREGULAR,LOBULATED,MOVEABLE,FIXED,FLUCTUANT
^DQ(2,20,132.30)= PULSATILE,SIZE
^DQ(2,20,132.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */D/
^DQ(2,30)= EYES
^DQ(2,30,1)= B^40/30.2^^1
^DQ(2,30,1.10)= NORMAL(ALT)
^DQ(2,30,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,30,2)= T^40^3/3/3/^1
^DQ(2,30,2.10)= BOTH EYES,RIGHT EYE,LEFT EYE
^DQ(2,30,2.70)= ^ **1/ **15/ **15/
^DQ(2,30,3)= TM^^17/12/13/14/15/22^1
^DQ(2,30,3.10)=
OCULAR ORBIT,LIDS,GLOBES,VISION,MOVEMENTS,OPHTHALMOSCOPIC
^DQ(2,30,3.70)= ^ **1/*%*/*%*/*%*/*%*/*%*/
^DQ(2,30,12)= TM^^43/43/43/^1
^DQ(2,30,12.10)= BOTH,UPPER,LOWER
^DQ(2,30,12.70)= ^ * EYE LIDS/ * EYE LID/ * EYE LID/
^DQ(2,30,13)= TM^^35/36/37/38/39/^1
^DQ(2,30,13.10)= SCLERA,CONJUNCTIVA,IRIS,PUPIL,CORNEA
^DQ(2,30,13.70)= ^ ***11/ ***11/ ***12/ ***1,16/ ***11/
^DQ(2,30,14)= A^^//24/^1
^DQ(2,30,14.10)=
NORMAL ACUITY,ABNORMAL ACUITY,VISUAL FIELDS
^DQ(2,30,14.70)= ^ **17/ **17/ **17/
^DQ(2,30,15)= A^^^1
^DQ(2,30,15.10)=
NYSTAGMUS,LID LAG,PARALYSIS,SQUINT,STRABISMUS
^DQ(2,30,15.70)= ^ **17/ **17/ **17/ **17/ **17/
^DQ(2,30,17)= TM^^19/19/19/19/^1
^DQ(2,30,17.10)= SKIP,QUADRANT,HALF,SECTOR
^DQ(2,30,17.70)= ^*%*/ */ */ */
^DQ(2,30,18)= TM^^21/21/21/^1
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^DQ(2,30,18.10)= SKIP,UPPER,LOWER
^DQ(2,30,18.70)= ^*%*/ */ */
^DQ(2,30,19)= TM^^18/18/18/^1
^DQ(2,30,19.10)= SKIP,OUTER,INNER
^DQ(2,30,19.70)= ^*%*/ */ */
^DQ(2,30,21)= A^^31/32//32/32//41/42///^2
^DQ(2,30,21.10)=
ABSCESS,ANEURYSM,CELLULITIS,CYST,MASS,HEMORRHAGE,DISCHARGE,ANOMALIES
^DQ(2,30,21.20)= FOREIGN BODY,PENETRATION
^DQ(2,30,21.70)= ^ */ */ */ */ */ */ */ */ * IN/ * OF/
^DQ(2,30,22)= TM^^33/34/45/46/47/48/49/^1
^DQ(2,30,22.10)=
VESSELS,OPTIC DISC,RETINA,MACULA,LENS,CHAMBERS,VITREOUS
^DQ(2,30,22.70)= ^*%*/ **15/ **15/ */ */ */ */
^DQ(2,30,24)= AM^^^2
^DQ(2,30,24.10)=
LATERALLY RESTRICTED,MEDIALLY RESTRICTED,SUPERIORLY RESTRICTED
^DQ(2,30,24.20)= INFERIORLY RESTRICTED
^DQ(2,30,24.70)= ^ */ */ */ */
^DQ(2,30,31)= AM^^///42/^1
^DQ(2,30,31.10)= FLUCTUANT,TENDER,INSENSITIVE,SIZE
^DQ(2,30,31.70)= ^ **17/ **17/ **17/ *D*17/
^DQ(2,30,32)= AM^^/////////////////////42/^3
^DQ(2,30,32.10)=
FIRM,SOFT,HARD,TENDER,NON-TENDER,PAINFUL,CIRCUMSCRIBED,INFILTRATING
^DQ(2,30,32.20)=
INDEFINITE BORDER,SPHERICAL,IRREGULAR,LOBULATED,MOVEABLE,FIXED,FLUCTUANT
^DQ(2,30,32.30)= PULSATILE,SIZE
^DQ(2,30,32.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,30,32.80)=  **17/ **17/ **17/ **17/ *D*17/
^DQ(2,30,33)= A^^^3
^DQ(2,30,33.10)=
ARTERIAL TORTUOSITY,ARTERIAL DEGENERATION,ARTERIAL SPASM,ANEURYSM
^DQ(2,30,33.20)=
VEIN MASKING,NEW VESSEL FORMATION,A-V NICKING,VENOUS DILATATION
^DQ(2,30,33.30)= VENOUS OBSTRUCTION
^DQ(2,30,33.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,30,34)= A^^^1
^DQ(2,30,34.10)=
PAPILLEDEMA,INFLAMMATION,CUPPING,GLAUCOMA,ELEVATION,CHOKED
^DQ(2,30,34.70)= ^ **15/ * OF/ * OF/ **15/ * OF/ */
^DQ(2,30,35)= A^^^1
^DQ(2,30,35.10)=
BLUE,JAUNDICED,ULCERATION,FOREIGN BODY,EDEMA,INFLAMMATION
^DQ(2,30,35.70)= ^ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,30,36)= A^^^2
^DQ(2,30,36.10)=
TRACHOMA,HEMORRHAGE,OPHTHALMIA NEONATORUM,CONJUNCTIVITIS,HYPEREMIA
^DQ(2,30,36.20)= FOREIGN BODY,LACERATION
^DQ(2,30,36.70)=
^ **17/ **17/ **17/ **17/ **17/ * IN*17/ * OF*17/
^DQ(2,30,37)= A^^^1
^DQ(2,30,37.10)= INJECTED,SWOLLEN,ADHERENT TO LENS,TORN
^DQ(2,30,37.70)= ^ **17/ **17/ **17/ **17/
^DQ(2,30,38)= A^^^2
^DQ(2,30,38.10)=
ASYMMETRIC,FIXED,DILATED,CONTRACTED,NO REACTION TO LIGHT,IRREGULAR
^DQ(2,30,38.20)= NO REACTION ON CONVERGENCE
^DQ(2,30,38.70)=
^ **17/ **17/ **17/ **17/ **15,16/ **17/ **15,16/
^DQ(2,30,39)= A^^^1
^DQ(2,30,39.10)=
HAZY,INSENSITIVE,ULCERATION,SCRATCH,FOREIGN BODY,HEMORRHAGE,SCAR
^DQ(2,30,39.70)=
^ **15,17/ **15,17/ **17/ **17/ **17/ **17/ **17/
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^DQ(2,30,41)= AM^^^2
^DQ(2,30,41.10)=
BLOODY,WATERY,PURULENT,MILKY,SEROUS,YELLOWISH,MUCOID,MUCOPURULENT
^DQ(2,30,41.20)= SEROPURULENT,
^DQ(2,30,41.70)= ^ */ */ */ */ */ */ */ */ */
^DQ(2,30,42)= AM^^^2
^DQ(2,30,42.10)=
2-4MM,5-7MM,8-10MM,1-2CM,3-5CM,6-10CM,GRAPE,PLUM,ORANGE,GRAPEFRUIT,MORE
^DQ(2,30,42.20)= BASKETBALL,SMALL,MEDIUM,LARGE
^DQ(2,30,42.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,30,43)= A^^^3
^DQ(2,30,43.10)=
PTOSIS,ECTROPION,ENTROPION,TRICHIASIS,EPICANTHUS,COLOBOMA,PENETRATION
^DQ(2,30,43.20)=
ANKYLOBLEPHARON,SYMBLEPHARON,EPICANTHUS,STYE,BLEPHARITIS,CHALAZION
^DQ(2,30,43.30)=
CYST,NAEVUS,HEMANGIOMA,PAPILLOMA,EPITHELIOMA,MASS,XANTHELASMA
^DQ(2,30,43.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ * OF*17/ **17/ **17/ **17/
^DQ(2,30,43.80)=
 **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,30,45)= A^^^3
^DQ(2,30,45.10)=
DISCOLORATION,INFLAMMATION,DETACHMENT,EDEMA,EXUDATES,FLUFFY PATCHES
^DQ(2,30,45.20)=
HARD WHITE SPOTS,HEMORRHAGES,PUNCTATE HEMORRHAGES,LINEAR HEMORRHAGES
^DQ(2,30,45.30)=
FLAME-SHAPED HEMORRHAGES,SCARS,TEARS,COMMOTIO RETINAE
^DQ(2,30,45.70)=
^ */ */ */ **15/ **15/ **15/ **15/ **15/ **15/ **15/
^DQ(2,30,45.80)=  * IN/ * IN/ */
^DQ(2,30,48)= TM^^49/49/^1
^DQ(2,30,48.10)= ANTERIOR,POSTERIOR
^DQ(2,30,48.70)= ^ */ */
^DQ(2,30,49)= A^^^1
^DQ(2,30,49.10)= HEMORRHAGE,FOREIGN BODY
^DQ(2,30,49.70)= ^ * IN/ */
^DQ(2,40)= EARS :
^DQ(2,40,1)= B^50/40.2^^1
^DQ(2,40,1.10)= NORMAL(ALT)
^DQ(2,40,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,40,2)= T^50^3/3/^1
^DQ(2,40,2.10)= GENERALIZED,NOT GENERALIZED
^DQ(2,40,2.70)= ^*%*/*%*/
^DQ(2,40,3)= TM^^20/12/13/24/^1
^DQ(2,40,3.10)= AURICLE,CANAL,DRUM,HEARING
^DQ(2,40,3.70)= ^ ***1,15/ ***1/ ***1/*%*/
^DQ(2,40,10)= TM^^20/20/20/^1
^DQ(2,40,10.10)= BOTH,RIGHT,LEFT
^DQ(2,40,10.70)= ^ **1/ */ */
^DQ(2,40,11)= TM^^21/21/21/^1
^DQ(2,40,11.10)= BOTH,RIGHT,LEFT
^DQ(2,40,11.70)= ^ **1/ */ */
^DQ(2,40,12)= TM^^22/22/22/^1
^DQ(2,40,12.10)= BOTH,RIGHT,LEFT
^DQ(2,40,12.70)= ^ **1/ */ */
^DQ(2,40,13)= TM^^23/23/23/^1
^DQ(2,40,13.10)= BOTH,RIGHT,LEFT
^DQ(2,40,13.70)= ^ **1/ */ */
^DQ(2,40,14)= A^^^1
^DQ(2,40,14.10)= IMPAIRED HEARING,DEAF
^DQ(2,40,14.70)= ^ */ */
^DQ(2,40,20)= TM^^11/11/11/^1
^DQ(2,40,20.10)= SKIP,LOBE,PINNA
^DQ(2,40,20.70)= ^*%*/ **15*1/ **15*1/
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^DQ(2,40,21)= A^^^2
^DQ(2,40,21.10)=
DEFORMED,ABSENT,PERICHONDRITIS,ULCER,TUMOR,NODULE,INFECTION
^DQ(2,40,21.20)= LACERATION
^DQ(2,40,21.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,40,22)= A^^///34//32/32//^2
^DQ(2,40,22.10)=
BLEEDING,INFLAMMATION,SWELLING,DISCHARGE,WAX PLUG,CYST,TUMOR,ULCERATION
^DQ(2,40,22.20)= FOREIGN BODY
^DQ(2,40,22.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,40,23)= A^^^2
^DQ(2,40,23.10)=
INFLAMMATION,SWELLING,THICKENING,BULDGING,HEMORRHAGE
^DQ(2,40,23.20)= PERFORATION
^DQ(2,40,23.70)= ^ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,40,24)= TM^^14/14/14/^1
^DQ(2,40,24.10)= BOTH SIDES,RIGHT SIDE,LEFT SIDE
^DQ(2,40,24.70)= ^ */ */ */
^DQ(2,40,32)= AM^^/////////////////42/^3
^DQ(2,40,32.10)=
FIRM,SOFT,HARD,TENDER,NON-TENDER,PAINFUL,CIRCUMSCRIBED,INFILTRATING
^DQ(2,40,32.20)=
INDEFINITE BORDER,SPHERICAL,IRREGULAR,LOBULATED,MOVEABLE,FIXED,FLUCTUANT
^DQ(2,40,32.30)= PULSATILE,SIZE
^DQ(2,40,32.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,40,32.80)=  **17/ **17/ **17/ **17/ *D*17/
^DQ(2,40,34)= AM^^^2
^DQ(2,40,34.10)=
BLOODY,WATERY,PURULENT,MILKY,SEROUS,YELLOWISH,MUCOID,MUCOPURULENT
^DQ(2,40,34.20)= SEROPURULENT,
^DQ(2,40,34.70)= ^ */ */ */ */ */ */ */ */ */
^DQ(2,40,42)= AM^^^1
^DQ(2,40,42.10)= 2-4MM,5-7MM,8-10MM,1-2CM,3-5CM,6-10CM
^DQ(2,40,42.70)= ^ */ */ */ */ */ */
^DQ(2,50)= NOSE :
^DQ(2,50,1)= B^60/50.3^^1
^DQ(2,50,1.10)= NORMAL(ALT)
^DQ(2,50,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,50,2)= A^^^1
^DQ(2,50,2.10)=
SKIP,ABSENT,DEFORMED,FRACTURE,PERFORATED SEPTUM
^DQ(2,50,2.70)= ^*%*/ */ */ */ */
^DQ(2,50,3)= T^60^2/13/13/14/^1
^DQ(2,50,3.10)=
GENERALIZED,RIGHT NASOPHARYNX,LEFT NASOPHARYNX,TURBINATES
^DQ(2,50,3.70)= ^ */ */ */ */
^DQ(2,50,4)= TM^^/14^1
^DQ(2,50,4.10)= SKIP,TURBINATES
^DQ(2,50,4.70)= ^*%*/ */
^DQ(2,50,10)= TT^^13/4^1
^DQ(2,50,10.10)= 1,2
^DQ(2,50,10.50)= ^*%*/*%*/
^DQ(2,50,10.70)= ^*%*/*%*/
^DQ(2,50,12)= TM^^13/13/14/^1
^DQ(2,50,12.10)=
RIGHT NASOPHARYNX,LEFT NASOPHARYNX,TURBINATES
^DQ(2,50,12.70)= ^ */ */*%*/
^DQ(2,50,13)= A^^/////32//32/41/^1
^DQ(2,50,13.10)=
SKIP,ASYMMETRY,BLEEDING,INFECTION,ULCERATION,CYST,POLYP,TUMOR
^DQ(2,50,13.20)= DISCHARGE
^DQ(2,50,13.70)=
^*%*/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
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^DQ(2,50,14)= A^^^1
^DQ(2,50,14.10)=
SWELLING,HYPEREMIA,HEMORRHAGE,INFECTION,ULCERATION
^DQ(2,50,14.70)= ^ **17/ **17/ **17/ **17/ **17/
^DQ(2,50,32)= AM^^/////////////////42/^3
^DQ(2,50,32.10)=
FIRM,SOFT,HARD,TENDER,NON-TENDER,PAINFUL,CIRCUMSCRIBED,INFILTRATING
^DQ(2,50,32.20)=
INDEFINITE BORDER,SPHERICAL,IRREGULAR,LOBULATED,MOVEABLE,FIXED,FLUCTUANT
^DQ(2,50,32.30)= PULSATILE,SIZE
^DQ(2,50,32.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,50,32.80)=  **17/ **17/ **17/ **17/ *D*17/
^DQ(2,50,41)= AM^^^2
^DQ(2,50,41.10)=
BLOODY,WATERY,PURULENT,MILKY,SEROUS,YELLOWISH,MUCOID,MUCOPURULENT
^DQ(2,50,41.20)= SEROPURULENT,
^DQ(2,50,41.70)= ^ */ */ */ */ */ */ */ */ */
^DQ(2,50,42)= AM^^^1
^DQ(2,50,42.10)= 2-4MM,5-7MM,8-10MM,1-2CM,3-5CM,6-10CM
^DQ(2,50,42.70)= ^ */ */ */ */ */ */
^DQ(2,60)= MOUTH :
^DQ(2,60,1)= B^70/60.2^^1
^DQ(2,60,1.10)= NORMAL(ALT)
^DQ(2,60,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,60,2)= TM^70^12/14/13/15/16/17/^1
^DQ(2,60,2.10)=
ROOF OF MOUTH,FLOOR OF MOUTH,TONGUE,TEETH,BUCCAL MUCOSA,SALIVARY GLANDS
^DQ(2,60,2.70)= ^ */ */ */ */ */ */
^DQ(2,60,3)= T^^2/2^1
^DQ(2,60,3.10)= GENERALIZED,NOT GENERALIZED
^DQ(2,60,3.70)= ^*%*/*%*/
^DQ(2,60,12)= A^^^2
^DQ(2,60,12.10)=
ASYMMETRY,CLEFT PALATE,INFECTION,ULCERATION,CYST,POLYP,TUMOR
^DQ(2,60,12.20)= BLEEDING,LACERATION,TRAUMA
^DQ(2,60,12.70)= ^ */ */ */ */ */ */ */ */ */ */
^DQ(2,60,13)= A^^^2
^DQ(2,60,13.10)=
ASYMMETRY,DEVIATION RIGHT,DEVIATION LEFT,ATROPHY,CYST,TUMOR,ULCERATION
^DQ(2,60,13.20)= LACERATION
^DQ(2,60,13.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,60,14)= A^^^2
^DQ(2,60,14.10)=
ASYMMETRY,SALIVARY DUCT CALCULUS,INFECTION,BLEEDING,CYST,TUMOR,ULCERATION
^DQ(2,60,14.20)= LACERATION
^DQ(2,60,14.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,60,15)= A^^/////^1
^DQ(2,60,15.10)=
DEFORMED,CARIES,PARTIAL BRIDGE,FULL DENTURES,ABSENT
^DQ(2,60,15.70)= ^ **17/ **17/ **17/ **17/ **17/
^DQ(2,60,16)= A^^/////32/32//^2
^DQ(2,60,16.10)=
KOPLIK'S SPOTS,CALCULUS STENSON'S DUCT,RASH,LACERATION,ULCERATION
^DQ(2,60,16.20)= CYST,TUMOR,BLEEDING
^DQ(2,60,16.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,60,17)= TM^^27/27/27/^1
^DQ(2,60,17.10)=
PAROTID,SUBMAXILLARY GLAND,SUBLINGUAL GLAND
^DQ(2,60,17.70)= ^ ***1/ ***1/ ***1/
^DQ(2,60,27)= TM^^37/37/37/^1
^DQ(2,60,27.10)= BOTH,RIGHT,LEFT
^DQ(2,60,27.70)= ^ **1/ */ */
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^DQ(2,60,37)= AM^^^1
^DQ(2,60,37.10)=
HYPERTROPHY,INFLAMMATION,SWELLING,TENDERNESS,FISTULA,TUMOR,CYST
^DQ(2,60,37.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,70)= THROAT :
^DQ(2,70,1)= B^80/70.2^^1
^DQ(2,70,1.10)= NORMAL(ALT)
^DQ(2,70,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,70,2)= T^80^11/12/3/14/15/16/^1
^DQ(2,70,2.10)=
TONSILS,UVULA,LARYNX,PHARYNGEAL MUCOSA,FAUCES,PHARYNX
^DQ(2,70,2.70)= ^ */ */ */ */ */ */
^DQ(2,70,3)= TM^^13/22/^1
^DQ(2,70,3.10)= SKIP,VOCAL CORD
^DQ(2,70,3.70)= ^*%*/ ***1/
^DQ(2,70,11)= TM^^21/21/21/^1
^DQ(2,70,11.10)= BOTH,RIGHT,LEFT
^DQ(2,70,11.70)= ^ * TONSILS/ * TONSIL/ * TONSIL/
^DQ(2,70,12)= A^^/////////////32//32////^3
^DQ(2,70,12.10)=
EDEMATOUS,INFLAMMED,DEVIATED RIGHT,DEVIATED LEFT,MEMBRANOUS EXUDATE
^DQ(2,70,12.20)=
INFLAMMATORY EXUDATE,ENLARGED,ABSENT,DEFORMED,HEMORRHAGIC,CYST,POLYP
^DQ(2,70,12.30)= TUMOR,LACERATION,TRAUMA,RASH
^DQ(2,70,12.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,70,12.80)=  **17/ **17/ **17/ **17/
^DQ(2,70,13)= A^^/////32//32//^2
^DQ(2,70,13.10)=
SKIP,ASYMMETRY,BLEEDING,INFLAMMATION,ULCERATION,CYST,POLYP,TUMOR
^DQ(2,70,13.20)= FOREIGN BODY,TRAUMA
^DQ(2,70,13.70)=
^*%*/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,70,14)= A^^^1
^DQ(2,70,14.10)=
INFLAMMATORY EXUDATE,MEMBRANOUS EXUDATE,INFLAMMATION,RASH,HEMORRHAGE
^DQ(2,70,14.70)= ^ **17/ **17/ **17/ **17/ **17/
^DQ(2,70,15)= TM^^25/25/25^1
^DQ(2,70,15.10)= BOTH SIDES,RIGHT SIDE,LEFT SIDE
^DQ(2,70,15.70)= ^ */ */ */
^DQ(2,70,16)= A^^/////32//32/^1
^DQ(2,70,16.10)=
INFLAMMATION,ULCERATION,HEMORRHAGE,FOREIGN BODY,CYST,POLYP,TUMOR
^DQ(2,70,16.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,70,21)= A^^/////////32//32////^2
^DQ(2,70,21.10)=
HYPERTROPHY,ATROPHY,EXUDATE IN CRYPTS,INFECTION,MEMBRANE,REMANENT
^DQ(2,70,21.20)=
ACUTE INFLAMMATION,ABSCESS,TUMOR,POLYP,CYST,HEMORRHAGE,FIBROTIC,SCARRED
^DQ(2,70,21.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,70,21.80)=  **17/ **17/
^DQ(2,70,22)= TM^^31/31/31^1
^DQ(2,70,22.10)= BOTH,RIGHT,LEFT
^DQ(2,70,22.70)= ^ **1/ */ */
^DQ(2,70,25)= A^^//32//32////^1
^DQ(2,70,25.10)=
ABSCESS,INFLAMMATION,CYST,POLYP,TUMOR,TRAUMA,HEMORRHAGE,FOREIGN BODY
^DQ(2,70,25.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,70,31)= A^^^2
^DQ(2,70,31.10)=
COMPLETE PARALYSIS,PARTIAL PARALYSIS,ULCERATION,HEMORRHAGE,FOREIGN BODY
^DQ(2,70,31.20)= CYST,POLYP,TUMOR,TRAUMA
^DQ(2,70,31.70)=
```

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^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,70,32)= A^^/////////////////42/^3
^DQ(2,70,32.10)=
FIRM,SOFT,HARD,TENDER,NON-TENDER,PAINFUL,CIRCUMSCRIBED,INFILTRATING
^DQ(2,70,32.20)=
INDEFINITE BORDER,SPHERICAL,IRREGULAR,LOBULATED,MOVEABLE,FIXED,FLUCTUANT
^DQ(2,70,32.30)= PULSATILE,SIZE
^DQ(2,70,32.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,70,32.80)=  **17/ **17/ **17/ **17/ *D*17/
^DQ(2,70,42)= A^^^1
^DQ(2,70,42.10)= 1-2MM,3-4MM,5-7MM,8-10MM,1-2CM,3-5CM
^DQ(2,70,42.70)= ^ */ */ */ */ */ */
^DQ(2,80)= NECK :
^DQ(2,80,1)= B^90/80.2^^1
^DQ(2,80,1.10)= NORMAL(ALT)
^DQ(2,80,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,80,2)= T^90^13/11/11/12/12/^1
^DQ(2,80,2.10)=
THYROID,RIGHT SIDE,LEFT SIDE,SUBMANDIBULAR REGION,SUPRACLAVICULAR REGION
^DQ(2,80,2.70)= ^ ***1,18/ */ */ */ */
^DQ(2,80,11)= A^^//////////32/32/32/^2
^DQ(2,80,11.10)=
TRAUMA,LACERATION,HEMORRHAGE,TENDERNESS,INFLAMMATION,ABSCESS,DISCHARGE
^DQ(2,80,11.20)= ENLARGEMENT,SWELLING,CYST,NODULE,TUMOR
^DQ(2,80,11.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,80,11.80)=  **17/
^DQ(2,80,12)= TM^^11/11/11^1
^DQ(2,80,12.10)= BOTH,RIGHT,LEFT
^DQ(2,80,12.70)= ^ * RIGHT & LEFT*1/ */ */
^DQ(2,80,13)= TM^^11/11/11/11/11/^1
^DQ(2,80,13.10)=
ENTIRE GLAND,ISTHMUS,RIGHT LOBE,LEFT LOBE,THYROGLOSSAL DUCT
^DQ(2,80,13.70)= ^ */ */ */ */
^DQ(2,80,32)= AM^^/////////////////42/^3
^DQ(2,80,32.10)=
FIRM,SOFT,HARD,TENDER,NON-TENDER,PAINFUL,CIRCUMSCRIBED,INFILTRATING
^DQ(2,80,32.20)=
INDEFINITE BORDER,SPHERICAL,IRREGULAR,LOBULATED,MOVEABLE,FIXED,FLUCTUANT
^DQ(2,80,32.30)= PULSATILE,SIZE
^DQ(2,80,32.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,80,32.80)=  **17/ **17/ **17/ **17/ *D*17/
^DQ(2,80,42)= AM^^^2
^DQ(2,80,42.10)=
2-4MM,5-7MM,8-10MM,1-2CM,3-5CM,6-10CM,GRAPE,PLUM,ORANGE,GRAPEFRUIT,MORE
^DQ(2,80,42.20)= BASKETBALL,SMALL,MEDIUM,LARGE
^DQ(2,80,42.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,90)= LYMPH NODES :
^DQ(2,90,1)= B^100/90.2^^1
^DQ(2,90,1.10)= NORMAL(ALT)
^DQ(2,90,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,90,2)=
T^100^11/11/12/12/12/12/12/12/12/12/12/12/11/11/12/12/12/12/^3
^DQ(2,90,2.10)=
GENERALIZED,OCCIPITAL,POSTERIOR AURICULAR,PRE-AURICULAR,ANTERIOR CERVICAL
^DQ(2,90,2.20)=
POSTERIOR CERVICAL,CERVICAL,SUBMAXILLARY,SUPRACLAVICULAR,SCALENE
^DQ(2,90,2.30)=
AXILLARY,EPITROCHLEAR,ABDOMINAL,PELVIC,ILIAC,INGUINAL,FEMORAL,POPLITEAL
^DQ(2,90,2.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,90,11)= A^^/32//31/41/42/42/^1
^DQ(2,90,11.10)=
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ADENOPATHY, ENLARGED, MATTED, ABSCESS, DISCHARGE, CYST, TUMOR
^DQ(2,90,11.70)= ^ */ */ */ */ */ */ */
^DQ(2,90,12)= TM^^11/11/11/^1
^DQ(2,90,12.10)= BOTH SIDES, RIGHT, LEFT
^DQ(2,90,12.70)= ^ */ * SIDE/ * SIDE/
^DQ(2,90,31)= AM^^///42/^1
^DQ(2,90,31.10)= FLUCTUANT, TENDER, INSENSITIVE, SIZE
^DQ(2,90,31.70)= ^ **17/ **17/ **17/ *D*17/
^DQ(2,90,32)= AM^^////////////////42/^3
^DQ(2,90,32.10)=
FIRM, SOFT, HARD, TENDER, NON-TENDER, PAINFUL, CIRCUMSCRIBED, INFILTRATING
^DQ(2,90,32.20)=
INDEFINITE BORDER, SPHERICAL, IRREGULAR, LOBULATED, MOVEABLE, FIXED, FLUCTUANT
^DQ(2,90,32.30)= PULSATILE, SIZE
^DQ(2,90,32.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,90,32.80)=  **17/ **17/ **17/ **17/ *D*17/
^DQ(2,90,41)= AM^^^2
^DQ(2,90,41.10)=
BLOODY, WATERY, PURULENT, MILKY, SEROUS, YELLOWISH, MUCOID, MUCOPURULENT
^DQ(2,90,41.20)= SEROPURULENT,
^DQ(2,90,41.70)= ^ */ */ */ */ */ */ */ */ */
^DQ(2,90,42)= AM^^^1
^DQ(2,90,42.10)=
1-2MM, 3-4MM, 5-7MM, 8-10MM, 1-2CM, 3-4CM, 5-7CM, 7-10CM, 11-15CM, 16-20CM
^DQ(2,90,42.70)= ^ */ */ */ */ */ */ */ */ */ */
^DQ(2,100)= CHEST :
^DQ(2,100,1)= B^110/100.2^^1
^DQ(2,100,1.10)= NORMAL(ALT)
^DQ(2,100,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,100,2)= T^110^10/9^1
^DQ(2,100,2.10)= GENERALIZED, NOT GENERALIZED
^DQ(2,100,2.70)= ^*%*/*%*/
^DQ(2,100,3)= TM^^10/10/10/^1
^DQ(2,100,3.10)= BOTH, RIGHT, LEFT
^DQ(2,100,3.70)= ^ **1/ */ */
^DQ(2,100,4)= TM^^5/5/5/5/^1
^DQ(2,100,4.10)= SKIP, UPPER, MIDDLE, LOWER
^DQ(2,100,4.70)= ^*%*/ */ */ */
^DQ(2,100,5)= TM^^3/3/3/^1
^DQ(2,100,5.10)= SKIP, ANTERIOR, POSTERIOR
^DQ(2,100,5.70)= ^*%*/ */ */
^DQ(2,100,6)= A^^//////132/^1
^DQ(2,100,6.10)=
SKIP, TENDERNESS, CREPITUS, EDEMA, THRILL, VOCAL FREMITUS, TUMOR
^DQ(2,100,6.70)= ^*%*/ */ */ */ */ */ */
^DQ(2,100,7)= A^^//////^1
^DQ(2,100,7.10)=
SKIP, DULLNESS, FLATNESS, HYPERRESONANCE, TYMPANY
^DQ(2,100,7.70)= ^*%*/ */ */ */ */
^DQ(2,100,8)= A^^/52/53/54/55//////^2
^DQ(2,100,8.10)=
SKIP, BREATH SOUNDS, VOICE SOUNDS, RALES, RONCHI, WHEEZES, FRICTION RUB
^DQ(2,100,8.20)= SUCCUSSION SOUNDS, FLUID, MUCOUS
^DQ(2,100,8.70)= ^*%*/ */ */ */ */ */ */ */ */ */
^DQ(2,100,9)= TM^^3/3/4/3/4/^1
^DQ(2,100,9.10)=
SIDE, AXILLA, LUNG FIELD, LUNG BASE, BRONCHIAL TREE
^DQ(2,100,9.70)= ^ ***1/ */ ***1/ ***1/ ***1/
^DQ(2,100,10)= TT^^6/7/8/^1
^DQ(2,100,10.10)= 1, 2, 3
^DQ(2,100,10.70)= ^*%*/*%*/*%*/
^DQ(2,100,42)= AM^^^2
^DQ(2,100,42.10)=
2-4MM, 5-7MM, 8-10MM, 1-2CM, 3-5CM, 6-10CM, GRAPE, PLUM, ORANGE, GRAPEFRUIT
^DQ(2,100,42.20)= MORE, BASKETBALL, SMALL, MEDIUM, LARGE
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^DQ(2,100,42.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,100,52)= AM^^^2
^DQ(2,100,52.10)=
INTENSIFIED,COARSE,BRONCHOVESICULAR,BRONCHIAL,DIMINISHED,ABSENT
^DQ(2,100,52.20)=
LENGTHENED INSPIRATION,LENGTHENED EXPIRATION
^DQ(2,100,52.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,100,53)= AM^^^1
^DQ(2,100,53.10)=
ACCENTUATED,DIMINISHED,ABSENT,DISTANT,EGOPHONY,PECTORILOQUY
^DQ(2,100,53.70)= ^ */ */ */ */ */ */
^DQ(2,100,54)= AM^^^2
^DQ(2,100,54.10)=
COARSE,FINE,CRACKLING,MUSICAL,CREPITANT,SCATTERED,INSPIRATORY
^DQ(2,100,54.20)= EXPIRATORY
^DQ(2,100,54.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,100,55)= AM^^^1
^DQ(2,100,55.10)= COARSE,CRACKLING,HARSH
^DQ(2,100,55.70)= ^ */ */ */
^DQ(2,100,132)= AM^^////////////////////42/^3
^DQ(2,100,132.10)=
FIRM,SOFT,HARD,TENDER,NON-TENDER,PAINFUL,CIRCUMSCRIBED,INFILTRATING
^DQ(2,100,132.20)=
INDEFINITE BORDER,SPHERICAL,IRREGULAR,LOBULATED,MOVEABLE,FIXED
^DQ(2,100,132.30)= FLUCTUANT,PULSATILE,SIZE
^DQ(2,100,132.70)=
^ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/ **17/
^DQ(2,100,132.80)=  **17/ **17/ **17/ **17/ **17/ *D*17/
^DQ(2,110)= BREAST :
^DQ(2,110,1)= B^120/110.23^^1
^DQ(2,110,1.10)= NORMAL(ALT)
^DQ(2,110,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,110,2)= L^120^/21/23/^1
^DQ(2,110,2.10)= SKIP,INSPECTION,PALPATION
^DQ(2,110,2.70)= ^NO POSITIVE FINDINGS*%*/ */ */
^DQ(2,110,10)= TT^^21/22^1
^DQ(2,110,10.10)= 1,2
^DQ(2,110,10.70)= ^*%*/*%*/
^DQ(2,110,21)= A^^121/////////////^3
^DQ(2,110,21.10)=
ASYMMETRY,PARTIAL MASTECTOMY,RADICAL MASTECTOMY,PENDULUS
^DQ(2,110,21.20)=
ULCERATED,REDDENED,DIMPLING,ORANGE PEEL SKIN,PROMINENT VEINS
^DQ(2,110,21.30)= DRAINING SINUS
^DQ(2,110,21.70)= ^ */ */ */ */ */ */ */ */ */ */
^DQ(2,110,22)= A^^//124////^2
^DQ(2,110,22.10)=
PALPABLE CORDS,PALPABLE NODULES,MASS,INCREASED TEMPERATURE,TENDERNESS
^DQ(2,110,22.20)= EDEMA
^DQ(2,110,22.70)= ^ */ */ */ */ */ */
^DQ(2,110,23)= T^^24/24/24/^1
^DQ(2,110,23.10)= RIGHT BREAST,LEFT BREAST,BOTH BREASTS
^DQ(2,110,23.70)= ^ */ */ */
^DQ(2,110,24)= TM^^10/25/^1
^DQ(2,110,24.10)= GENERALIZED,NOT GENERALIZED
^DQ(2,110,24.70)= ^*%*/*%*/
^DQ(2,110,25)= TM^^10/131/^1
^DQ(2,110,25.10)= SKIP,NIPPLE
^DQ(2,110,25.70)= ^*%*/ */
^DQ(2,110,121)= AM^^^2
^DQ(2,110,121.10)=
RIGHT BREAST LARGER,LEFT BREAST LARGER,RIGHT BREAST ELEVATED
^DQ(2,110,121.20)= LEFT BREAST ELEVATED
^DQ(2,110,121.70)= ^ */ */ */ */
^DQ(2,110,122)= L^^^1
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^DQ(2,110,122.10)= RIGHT,LEFT,BOTH BREASTS
^DQ(2,110,122.70)= ^ */ */ */
^DQ(2,110,123)= L^^131/131/131/^1
^DQ(2,110,123.10)= RIGHT,LEFT,BOTH
^DQ(2,110,123.70)= ^ */ */ **1/
^DQ(2,110,124)= AM^^/////////////125/^2
^DQ(2,110,124.10)=
ROUND,IRREGULAR,FLUCTUANT,TENDER,PAINLESS,FIRM,SOFT,HARD,FIXED TO SKIN
^DQ(2,110,124.20)=
FIXED TO CHEST WALL,FIXED TO SKIN & CHEST,FREELY MOVABLE,SIZE
^DQ(2,110,124.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */ */*%*/
^DQ(2,110,125)= AM^^^1
^DQ(2,110,125.10)=
5 MM,1-2 CM,3-4 CM,5-7 CM,8-10 CM,11-15 CM,16-20 CM,>20 CM
^DQ(2,110,125.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,110,131)= AM^^^1
^DQ(2,110,131.10)=
RETRACTED,ULCERATED,BLEEDING,BLOODY DISCHARGE,NON-BLOODY DISCHARGE
^DQ(2,110,131.70)= ^ */ */ */ */ */
^DQ(2,120)=  HEART :
^DQ(2,120,1)= B^130/120.2^^1
^DQ(2,120,1.10)= NORMAL(ALT)
^DQ(2,120,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,120,2)= T^130^6/6/6/83/63/5/6/6/^2
^DQ(2,120,2.10)=
BASE,PARASTERNAL,APEX,CARDIAC BORDER,RHYTHM,HEART SOUNDS
^DQ(2,120,2.20)= ANTERIOR FONTANEL,EPIGASTRIUM
^DQ(2,120,2.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,120,5)= TM^^7/7/7/7/7/^1
^DQ(2,120,5.10)= SKIP,S1,S2,S3,S4
^DQ(2,120,5.70)= ^*%*/ */ */ */ */
^DQ(2,120,6)= A^^/84///86/90/86/86/86//^1
^DQ(2,120,6.10)=
SKIP,IMPULSE,LIFT,HEAVE,PULSATION,MURMUR,THRILL,CLICK,RUB,ENLARGED
^DQ(2,120,6.70)= ^*%*/ */ */ */ */ */ */ */ */ */ */
^DQ(2,120,7)= A^^^2
^DQ(2,120,7.10)=
NORMAL,ACCENTUATED,LOUD,MUFFLED,DISTANT,INAUDIBLE,P2>A2,A2>P2
^DQ(2,120,7.20)= SNAPPING,SPLIT
^DQ(2,120,7.70)= ^ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,120,50)= I^120.6^^1
^DQ(2,120,50.10)=
2ND ICS,3RD ICS,4TH ICS,5TH ICS,6TH ICS,7TH ICS
^DQ(2,120,50.70)= ^ */ */ */ */ */ */
^DQ(2,120,63)= A^^^2
^DQ(2,120,63.10)=
NORMAL SINUS,IRREGULAR,GALLOP,RAPID,NOT RESPONSIVE TO
^DQ(2,120,63.20)= CAROTID PRESSURE
^DQ(2,120,63.70)= ^ */ */ */ */ */
^DQ(2,120,83)= TM^^50/50/50/^1
^DQ(2,120,83.10)= SKIP,RIGHT,LEFT
^DQ(2,120,83.70)= ^ */ */ */
^DQ(2,120,84)= TM^^^1
^DQ(2,120,84.10)=
SKIP,NORMAL,HEAVING,DOUBLE(SYSTOLIC),DOUBLE(DIASTOLIC),SNAPPING
^DQ(2,120,84.70)= ^*%*/ */ */ */ */ */ */
^DQ(2,120,85)= AM^^^2
^DQ(2,120,85.10)=
SKIP TRANSMITTED,TO APEX,TO CAROTIDS,TO ANGLE OF SCAPULA,TO AXILLA
^DQ(2,120,85.20)= TO LUNG BASES,TO INFRACLAVICULAR AREA
^DQ(2,120,85.70)= TRANSMITTED^ *%*/ */ */ */ */ */ */ */
^DQ(2,120,86)= AM^^^2
^DQ(2,120,86.10)=
SKIP,SYSTOLIC,DIASTOLIC,PROTODIASTOLIC,MIDDIASTOLIC
^DQ(2,120,86.20)= PRESYSTOLIC,CONTINUOUS
^DQ(2,120,86.70)= ^*%*/ */ */ */ */ */ */ */
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^DQ(2,120,87)= AM^^88/88/88/88/88/88/88/88/^1
^DQ(2,120,87.10)=
SKIP,BLOWING,ROLLING,RUMBLING,HOLLOW,CAVERNOUS,RASPING,HARSH
^DQ(2,120,87.70)= ^*%*2*/ */ */ */ */ */ */ */
^DQ(2,120,88)= AM^^^1
^DQ(2,120,88.10)=
SKIP,HIGH PITCHED,LOW PITCHED,MUSICAL,WHISTLING
^DQ(2,120,88.70)= ^*%*2*/ */ */ */ */
^DQ(2,120,89)= AM^^87/87/87/87/87/87/87/87/87/87/^2
^DQ(2,120,89.10)=
SKIP,FAINT,SOFT,LOUD,GRADE I,GRADE II,GRADE III,GRADE IV,GRADE V
^DQ(2,120,89.20)= GRADE VI
^DQ(2,120,89.70)= ^ *%*/ */ */ */ */ */ */ */ */ */
^DQ(2,120,90)= AM^^89/89/89/89/89/89/89/^2
^DQ(2,120,90.10)=
SKIP,SYSTOLIC,DIASTOLIC,PROTODIASTOLIC,MIDDIASTOLIC
^DQ(2,120,90.20)= PRESYSTOLIC,CONTINUOUS
^DQ(2,120,90.70)= ^*%*/ */ */ */ */ */ */ */
^DQ(2,130)= BLOOD VESSELS :
^DQ(2,130,1)= B^140/130.2^^1
^DQ(2,130,1.10)= NORMAL(ALT)
^DQ(2,130,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,130,2)= T^140^/21/21/24/^1
^DQ(2,130,2.10)= SKIP,ARTERIES,PULSES,VEINS
^DQ(2,130,2.70)= ^ NO POSITIVE FINDINGS*%*/ */ */ */
^DQ(2,130,21)=
TM^^22/22/22/22/22/22/22/22/22/22/22/23/23/^2
^DQ(2,130,21.10)=
TEMPORAL,CAROTID,AXILLARY,ANTECUBITAL,RADIAL,ULNAR,FEMORAL,POPLITEAL
^DQ(2,130,21.20)=
POSTERIOR TIBIAL,ANTERIOR TIBIAL,DORSALIS PEDIS,AORTA,ALL
^DQ(2,130,21.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */ */*%*/
^DQ(2,130,22)= TM^^23/23/23/^1
^DQ(2,130,22.10)= RIGHT,LEFT,BOTH
^DQ(2,130,22.70)= ^ */ */ */
^DQ(2,130,23)= A^^^3
^DQ(2,130,23.10)=
THICKENED,BEADING,TORTUOUS,SCLEROTIC,ANEURYSM,BRUIT,PULSUS ALTERNANS
^DQ(2,130,23.20)=
PULSUS PARADOXICUS,CORRIGAN (WATER-HAMMER),PLATEAU,DICROTIC,IRREGULAR
^DQ(2,130,23.30)=
INTERMITTENT,DIMINISHED,ABSENT,FEEBLE,BIGEMINAL,TRIGEMINAL,EXTRASYSTOLES
^DQ(2,130,23.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,130,24)=
TM^^25/25/25/25/25/25/25/25/25/25/25/25/25/25/^2
^DQ(2,130,24.10)=
EXTERNAL JUGULAR,BRACHIAL,COSTAL,AXILLARY,UMBILICAL,ABDOMINAL,INGUINAL
^DQ(2,130,24.20)=
GREATER SAPHENOUS,LESSER SAPHENOUS,HAND,ARM,LEG,FOOT,ALL
^DQ(2,130,24.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */*%*/
^DQ(2,130,25)= TM^^26/26/26/^1
^DQ(2,130,25.10)= RIGHT,LEFT,BOTH
^DQ(2,130,25.70)= ^ */ */ */
^DQ(2,130,26)= A^^^2
^DQ(2,130,26.10)=
DILATED,VARICOSED,COLLAPSED,PULSATING,DISTENDED,VALVES INCOMPETENT
^DQ(2,130,26.20)= TENDER,THROMBOSED
^DQ(2,130,26.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,140)= ABDOMEN :
^DQ(2,140,1)= B^150/140.2^^1
^DQ(2,140,1.10)= NORMAL(ALT)
^DQ(2,140,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,140,2)= T^150^7/31^1
^DQ(2,140,2.10)= GENERALIZED,NOT GENERALIZED
```

```
^DQ(2,140,2.70)= ^*%*/*%*/
^DQ(2,140,3)= A^^/////////////^3
^DQ(2,140,3.10)=
SKIP,ASYMMETRY,SCAPHOID,PROTUBERANT,DISTENDED,FLANK BULGE
^DQ(2,140,3.20)=
VISIBLE PERISTALSIS,SCAR,INFLAMMATION,DISCOLORATION,HERNIA
^DQ(2,140,3.30)= THIGH FLEXION,THORACIC BREATHING
^DQ(2,140,3.70)= ^*%*/ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,140,4)= A^^/41/41/////42/43/44/45/^2
^DQ(2,140,4.10)=
SKIP,HYPERESTHESIA,HYPESTHESIA,TENDERNESS,INVOLUNTARY GUARDING
^DQ(2,140,4.20)=
REBOUND PAIN,FLUID WAVE,LIVER-SPLEEN BORDER,PANCREAS,KIDNEY,MASS
^DQ(2,140,4.70)= ^*%*/ */ */ */ */ */ */*%*/ */ */ */
^DQ(2,140,5)= A^^/////^1
^DQ(2,140,5.10)=
SKIP,STATIC DULLNESS,SHIFTING DULLNESS,TYMPANY
^DQ(2,140,5.70)= ^*%*/ */ */ */
^DQ(2,140,6)= A^^/////////^2
^DQ(2,140,6.10)=
SKIP,ABSENT BOWEL SOUNDS,INCREASED BOWEL SOUNDS,TINKLING BOWEL SOUNDS
^DQ(2,140,6.20)=
PAINFUL BORBORYGMI,PERISTALTIC RUSHES,BRUIT,FRICTION RUB
^DQ(2,140,6.70)= ^*%*/ */ */ */ */ */ */ */
^DQ(2,140,7)= TT^^5/6/3/4/^1
^DQ(2,140,7.10)= 1,2,3,4
^DQ(2,140,7.70)= ^*%*/*%*/*%*/*%*/
^DQ(2,140,8)= TM^^9/9/9/9/^1
^DQ(2,140,8.10)= SKIP,UPPER & LOWER,UPPER,LOWER
^DQ(2,140,8.70)= ^*%*/ **1/ */ */
^DQ(2,140,9)= TM^^7/7/7/7/^1
^DQ(2,140,9.10)= SKIP,BOTH,RIGHT,LEFT
^DQ(2,140,9.70)= ^*%*/ **1/ */ */
^DQ(2,140,31)= TM^^7/8/7/7/9/^1
^DQ(2,140,31.10)=
EPIGASTRIC,QUADRANT,PERI-UMBILICAL,SUPRAPUBIC,FLANK
^DQ(2,140,31.70)= ^ */ ***1/ */ */ ***1/
^DQ(2,140,32)= AM^^^1
^DQ(2,140,32.10)= RIGHT,LEFT,BILATERAL
^DQ(2,140,32.70)= ^ */ */ */
^DQ(2,140,41)= AM^^^1
^DQ(2,140,41.10)= D6,D7,D8,D9,D10,D11,D12
^DQ(2,140,41.70)= ^ */ */ */ */ */ */ */
^DQ(2,140,42)= I^^^1
^DQ(2,140,42.10)= LIVER EDGE,SPLEEN EDGE
^DQ(2,140,42.70)= ^^
^DQ(2,140,43)= AM^^^1
^DQ(2,140,43.10)= ENLARGED,TUMOR,IRREGULAR,NODULAR,TENDER
^DQ(2,140,43.70)= ^ */ */ */ */ */
^DQ(2,140,44)= AM^^^1
^DQ(2,140,44.10)= ENLARGED,TUMOR,CYST,NODULAR,TENDER
^DQ(2,140,44.70)= ^ */ */ */ */ */
^DQ(2,140,45)= AM^^/////////149/^2
^DQ(2,140,45.10)=
ROUND,IRREGULAR,MOVEABLE,FIXED,INFILTRATING,PAINLESS,TENDER,FLUCTUANT
^DQ(2,140,45.20)= SIZE
^DQ(2,140,45.70)= ^ */ */ */ */ */ */ */ */*%*/
^DQ(2,140,149)= I^^^1
^DQ(2,140,149.10)= MAXIMUM DIAMETER,MINIMUM DIAMETER
^DQ(2,140,149.70)= ^^
^DQ(2,150)= GENITALIA :
^DQ(2,150,1)= B^160/150.2^^1
^DQ(2,150,1.10)= NORMAL(ALT)
^DQ(2,150,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,150,2)= T^160^10/21/22/^1
^DQ(2,150,2.10)= SKIP,MALE,FEMALE
```

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^DQ(2,150,2.70)= ^*%*/ */ */
^DQ(2,150,10)= A^^^1
^DQ(2,150,10.10)= SKIP,ABSENT,DEFORMED
^DQ(2,150,10.70)= ^ NO POSITIVE FINDINGS*%*/ */ */
^DQ(2,150,21)= TM^^23/24/25/27/29/31/^1
^DQ(2,150,21.10)=
PERINEUM,SCROTUM,TESTIS,TESTICULAR CORDS,EPIDIDYMIS,PENIS
^DQ(2,150,21.70)= ^ */ */ ***15/ */ */ */
^DQ(2,150,22)= TM^^23/24/26/28/30/32/33//^1
^DQ(2,150,22.10)=
PERINEUM,VULVA,VAGINA,CERVIX,OVARY,TUBE,CORPUS UTERI,HYSTERECTOMY
^DQ(2,150,22.70)= ^ */ */ */ */ ***15/ ***1/ */ */
^DQ(2,150,23)= A^^/123/////////////^2
^DQ(2,150,23.10)=
DERMATITIS,ABSCESS,SCAR,BLEEDING,EDEMA,HEMATOMA,ECCHYMOSIS
^DQ(2,150,23.20)=
PILONIDAL CYST,PAINFULL COCCYX,ULCER,CYST,TUMOR
^DQ(2,150,23.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,150,24)= A^^^1
^DQ(2,150,24.10)=
ANOMALY,DERMATITIS,EDEMA,INFECTION,ULCER,CYST,TUMOR
^DQ(2,150,24.70)= ^ */ */ */ */ */ */ */
^DQ(2,150,25)= TM^^40/40/40/^1
^DQ(2,150,25.10)= RIGHT,LEFT,BOTH
^DQ(2,150,25.70)= ^ */ */ TESTES*%*15/
^DQ(2,150,26)= A^^^2
^DQ(2,150,26.10)=
VESICO-VAGINAL FISTULA,RECTO-VAGINAL FISTULA,BLEEDING,DISCHARGE,INFECTION
^DQ(2,150,26.20)= ULCER,ABSCESS,TUMOR,ANOMALY
^DQ(2,150,26.70)= ^ */ */ */ */ */ */ */ */ */
^DQ(2,150,27)= TM^^127/127/127/^1
^DQ(2,150,27.10)= RIGHT,LEFT,BOTH
^DQ(2,150,27.70)= ^ */ */ */
^DQ(2,150,28)= A^^^1
^DQ(2,150,28.10)=
SCAR,EROSION,BLEEDING,CRUST,DISCHARGE,FIXATION,ULCER,TUMOR,ANOMALY
^DQ(2,150,28.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,150,29)= TM^^129/129/129/^1
^DQ(2,150,29.10)= RIGHT,LEFT,BOTH
^DQ(2,150,29.70)= ^ */ */ */
^DQ(2,150,30)= L^^130/130/130/^1
^DQ(2,150,30.10)= RIGHT,LEFT,BOTH
^DQ(2,150,30.70)= ^ */ */ OVARIES**15/
^DQ(2,150,31)= A^^^2
^DQ(2,150,31.10)=
ABSENT,ATROPHY,HYPERTROPHY,ANOMALY,SCAR,ULCER,GANGRENE,INFLAMMATION
^DQ(2,150,31.20)=
CYST,TUMOR,BLEEDING,DISCOLORATION,EDEMA,DISCHARGE
^DQ(2,150,31.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,150,32)= TM^^130/130/130/^1
^DQ(2,150,32.10)= RIGHT,LEFT,BOTH
^DQ(2,150,32.70)= ^ */ */ */
^DQ(2,150,33)= A^^^1
^DQ(2,150,33.10)=
ABSENT,MALPOSITION,FIXED,ATROPHIC,ENLARGED,TENDER,CYST,TUMOR,ANOMALY
^DQ(2,150,33.70)= ^ */ */ */ */ */ */ */ */ */ */
^DQ(2,150,40)= A^^^1
^DQ(2,150,40.10)=
NOT DESCENDED,ATROPHY,ABSENT,INFECTION,CYST,TUMOR,TRAUMA,HYPERTROPHY
^DQ(2,150,40.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,150,123)= TM^^/223^1
^DQ(2,150,123.10)= SKIP,PERIRECTAL,ANAL
^DQ(2,150,123.70)= ^*%*/ */ */
^DQ(2,150,127)= A^^^1
^DQ(2,150,127.10)=
```

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VARICOCELE, NODULARITY, ABSENT, TENDER, INFECTION, TUMOR, ANOMALY
^DQ(2,150,127.70)= ^ */ */ */ */ */ */ */
^DQ(2,150,129)= A^^^1
^DQ(2,150,129.10)=
INFECTION, ATROPHY, ABSENT, HYPERTROPHY, ENLARGED, CYST, TUMOR, ANOMALY
^DQ(2,150,129.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,150,130)= A^^^1
^DQ(2,150,130.10)=
MALPOSITION, ATROPHY, ABSENT, ENLARGED, TENDER, FIXED, CYST, TUMOR, ANOMALY
^DQ(2,150,130.70)= ^ */ */ */ */ */ */ */ */ */
^DQ(2,150,132)= A^^^1
^DQ(2,150,132.10)=
ABSENT, FIXED, MALPOSITION, ANOMALY, INFECTION, TENDER, CYST, TUMOR
^DQ(2,150,132.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,150,223)= TM^^^1
^DQ(2,150,223.10)= SKIP, RIGHT, LEFT, BOTH
^DQ(2,150,223.70)= ^*%*/ */ */ **1/
^DQ(2,160)= RECTAL :
^DQ(2,160,1)= B^170/160.6^^1
^DQ(2,160,1.10)= NORMAL(ALT)
^DQ(2,160,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,160,2)= A^^////////////////3/^2
^DQ(2,160,2.10)=
SKIP, FISSURE, FISTULA, HEMORRHOIDS, SCAR, ULCER, CONDYLOMA, ABSCESS, INFECTION
^DQ(2,160,2.20)= DERMATITIS, RASH, CYST, TUMOR, ANOMALY, FECES
^DQ(2,160,2.70)=
^*%*/ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,160,3)= AM^^^1
^DQ(2,160,3.10)=
BROWN, CLAY-COLORED, BLACK, GREENISH, BLOODY, MUCOUS, UNDIGESTED FOOD
^DQ(2,160,3.70)= ^ */ */ */ */ */ */ */
^DQ(2,160,4)= AM^^^1
^DQ(2,160,4.10)=
TENDER, ENLARGED, ATROPHIC, NODULAR, TUMOR, ANOMALY
^DQ(2,160,4.70)= ^ */ */ */ */ */ */
^DQ(2,160,5)= TM^^2/2/^1
^DQ(2,160,5.10)= SKIP, PROSTATE
^DQ(2,160,5.70)= ^*%*/ */
^DQ(2,160,6)= T^170^2/5/^1
^DQ(2,160,6.10)= GENERALIZED, NOT GENERALIZED
^DQ(2,160,6.70)= ^*%*/*%*/
^DQ(2,170)= BONES-JOINTS-MUSCLES :
^DQ(2,170,1)= B^180/170.2^^1
^DQ(2,170,1.10)= NORMAL(ALT)
^DQ(2,170,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,170,2)= T^180^/3/4/5/^1
^DQ(2,170,2.10)= SKIP, BONES, JOINTS, MUSCLES
^DQ(2,170,2.70)= ^ NO POSITIVE FINDINGS*%*/ */ */ */
^DQ(2,170,3)=
TM^^/30/30/31/30/32/32/31/31/31/31/31/31/31/31/31/31/31/31/^2
^DQ(2,170,3.10)=
SKIP, SKULL, NOSE, CHEEK, MANDIBLE, VERTEBRA, RIB, CLAVICLE, SCAPULA, HUMERUS
^DQ(2,170,3.20)=
RADIUS, ULNA, HAND, FINGER, ILEUM, FEMUR, TIBIA, FIBULA, FOOT, TOE
^DQ(2,170,3.70)=
^*%*/ */ */ ***1/ */ ***15/ ***1/ ***1/ ***1/ ***1/ ***1/ ***1/ ***1/
^DQ(2,170,3.80)=  ***1/ ***1/ ***1/ ***1/ ***1/ ***1/ ***1
^DQ(2,170,4)= TM^^/40/41/42/^1
^DQ(2,170,4.10)=
SKIP, SPINAL ARTICULATION, UPPER EXTREMITY, LOWER EXTREMITY
^DQ(2,170,4.70)= ^ NORMAL*%*/ ***1/ JOINT*%**1/ JOINT*%**1/
^DQ(2,170,5)=
TM^^50/50/50/50/51/51/51/50/50/51/51/51/52/^1
^DQ(2,170,5.10)=
SKIP, FACE, NECK, BACK, SHOULDER, ARM, HAND, CHEST, ABDOMEN, HIP, LEG, FOOT, SPECIFY
^DQ(2,170,5.70)=
```

```
^*%*/ */ */ */ ***1/ ***1/ ***1/ */ */ ***1/ ***1/ ***1/*%*/
^DQ(2,170,30)= A^^^2
^DQ(2,170,30.10)=
SWELLING,TENDERNESS,CREPITANCE,DISTORTION,DISLOCATION,FRACTURE,TUMOR
^DQ(2,170,30.20)=
INFECTION,SUPPURATION,OSTEITIS,OSTEOMYELITIS,ANOMALY
^DQ(2,170,30.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,170,31)= TM^^30/30/30/^1
^DQ(2,170,31.10)= RIGHT,LEFT,BOTH
^DQ(2,170,31.70)= ^ */ */ **1/
^DQ(2,170,32)= TM^^132/133/134/30/^1
^DQ(2,170,32.10)= CERVICAL,DORSAL,LUMBAR,SACRUM
^DQ(2,170,32.70)= ^ */ */ */ **15
^DQ(2,170,33)=
TM^^30/31/31/31/31/31/31/31/31/31/31/31/^1
^DQ(2,170,33.10)=
SKIP,1ST,2ND,3RD,4TH,5TH,6TH,7TH,8TH,9TH,10TH,11TH,12TH
^DQ(2,170,33.70)= ^*%*/ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,170,40)= TM^^43/140/141/142/^1
^DQ(2,170,40.10)= SKIP,CERVICAL,DORSAL,LUMBAR
^DQ(2,170,40.70)= ^*%*1/ */ */ */
^DQ(2,170,41)= TM^^143/143/143/143/143/^1
^DQ(2,170,41.10)= SHOULDER,ELBOW,WRIST,HAND,FINGER
^DQ(2,170,41.70)= ^ */ */ */ */ */
^DQ(2,170,42)= TM^^143/143/143/143/143/^1
^DQ(2,170,42.10)= HIP,KNEE,ANKLE,FOOT,TOE
^DQ(2,170,42.70)= ^ */ */ */ */ */
^DQ(2,170,43)= A^^^2
^DQ(2,170,43.10)=
RIGHT SCOLIOSIS,LEFT SCOLIOSIS,KYPHOSIS,LORDOSIS,MALROTATION
^DQ(2,170,43.20)= LIMITED MOTION,IMMOBILE,RIGID
^DQ(2,170,43.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,170,50)= A^^^1
^DQ(2,170,50.10)=
TENDER,SWOLLEN,ATROPHIC,HYPERTROPHIC,TRAUMA,TUMOR,ABSCESS,SPASTIC
^DQ(2,170,50.70)= ^ */ */ */ */ */ */ */ */
^DQ(2,170,51)= TM^^50/50/50/^1
^DQ(2,170,51.10)= RIGHT,LEFT,BOTH
^DQ(2,170,51.70)= ^ */ */ **1/
^DQ(2,170,52)= TM^^50/51/50/51/51/51/51/51/51/51/51/51/^2
^DQ(2,170,52.10)=
ERECTOR SPINAE,PECTORAL,INTERCOSTAL,RECTUS,DELTOID,BICEPS,TRICEPS
^DQ(2,170,52.20)=
HAMSTRING,QUADRICEPS,GLUTEUS,GASTROCNEMIUS,ANTERIOR TIBIAL
^DQ(2,170,52.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,170,132)= TM^^30/30/30/30/30/30/30/30/30/^1
^DQ(2,170,132.10)= SKIP,1ST,2ND,3RD,4TH,5TH,6TH,7TH,8TH
^DQ(2,170,132.70)= ^*%*/ */ */ */ */ */ */ */ */
^DQ(2,170,133)=
TM^^30/30/30/30/30/30/30/30/30/30/30/30/30/^1
^DQ(2,170,133.10)=
SKIP,1ST,2ND,3RD,4TH,5TH,6TH,7TH,8TH,9TH,10TH,11TH,12TH
^DQ(2,170,133.70)= ^*%*/ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,170,134)= TM^^30/30/30/30/30/30/^1
^DQ(2,170,134.10)= SKIP,1ST,2ND,3RD,4TH,5TH
^DQ(2,170,134.70)= ^*%*/ */ */ */ */ */
^DQ(2,170,140)= TM^^43/43/43/43/43/43/43/43/43/^1
^DQ(2,170,140.10)= SKIP,1ST,2ND,3RD,4TH,5TH,6TH,7TH,8TH
^DQ(2,170,140.70)= ^*%*1/ */ */ */ */ */ */ */ */
^DQ(2,170,141)=
TM^^43/43/43/43/43/43/43/43/43/43/43/43/43/^1
^DQ(2,170,141.10)=
SKIP,1ST,2ND,3RD,4TH,5TH,6TH,7TH,8TH,9TH,10TH,11TH,12TH
^DQ(2,170,141.70)= ^*%*1/ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,170,142)= TM^^43/43/43/43/43/4/^1
^DQ(2,170,142.10)= SKIP,1ST,2ND,3RD,4TH,5TH
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^DQ(2,170,142.70)= ^*%*1/ */ */ */ */ */
^DQ(2,170,143)= TM^^144/144/144/^1
^DQ(2,170,143.10)= RIGHT,LEFT,BOTH
^DQ(2,170,143.70)= ^ */ */*%*1/
^DQ(2,170,144)= A^^^3
^DQ(2,170,144.10)=
SWOLLEN,TENDER,HOT,ABDUCTION LIMITED,ADDUCTION LIMITED,FLEXION LIMITED
^DQ(2,170,144.20)=
EXTENSION LIMITED,INT.  ROTATION LIM'D,EXT.  ROTATION LIM'D,
^DQ(2,170,144.30)=
PRONATION LIM'D,SUPPINATION LIM'D,ANKYLOSIS,TUMOR,ANOMALY,DISLOCATION
^DQ(2,170,144.70)=
^ */ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,180)= EXTREMITIES :
^DQ(2,180,1)= B^190/180.2^^1
^DQ(2,180,1.10)= NORMAL(ALT)
^DQ(2,180,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,180,2)= T^190^10/3/3/^1
^DQ(2,180,2.10)= GENERALIZED,NOT GENERALIZED
^DQ(2,180,2.70)= ^*%*/*%*/
^DQ(2,180,3)= TM^^20/21/^1
^DQ(2,180,3.10)= ARM,LEG
^DQ(2,180,3.70)= ^*%*/*%*/
^DQ(2,180,10)= TM^^/22/22/^1
^DQ(2,180,10.10)= SKIP,GAIT,STANCE
^DQ(2,180,10.70)= ^ NO POSITIVE FINDINGS*%*/ */ */
^DQ(2,180,20)= TM^^30/30/30/^1
^DQ(2,180,20.10)= RIGHT,LEFT,BOTH
^DQ(2,180,20.70)= ^ * ARM/ * ARM/ * ARMS/
^DQ(2,180,21)= TM^^30/30/30/^1
^DQ(2,180,21.10)= RIGHT,LEFT,BOTH
^DQ(2,180,21.70)= ^ * LEG/ * LEG/ * LEGS/
^DQ(2,180,22)= A^^^1
^DQ(2,180,22.10)= NORMAL,ABNORMAL
^DQ(2,180,22.70)= ^ */ */
^DQ(2,180,30)= A^^130//////////^2
^DQ(2,180,30.10)=
PITTING EDEMA,ASYMMETRY,SCAR,TUMOR,ABSCESS,HEMORRHAGE,INFECTION,ANOMALY
^DQ(2,180,30.20)= SHORT,AMPUTATED,OSTEOCHONDROMA
^DQ(2,180,30.70)= ^ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,180,122)= AM^^^1
^DQ(2,180,122.10)=
DUE TO PAIN,SHORT LEG,CONTRACTURE,MOTOR DEFECT,SPASM
^DQ(2,180,122.70)=  ABNORMAL DUE TO^ PAIN*%*/ */ */ */ */
^DQ(2,180,130)= AM^^^1
^DQ(2,180,130.10)= 1+,2+,3+,4+
^DQ(2,180,130.70)= ^ */ */ */ */
^DQ(2,190)= NEUROLOGICAL :
^DQ(2,190,1)= B^200/190.2^^1
^DQ(2,190,1.10)= NORMAL(ALT)
^DQ(2,190,1.70)= NO POSITIVE FINDINGS.^
^DQ(2,190,2)= T^200^/3/4/5/6/7/7/7/8/^2
^DQ(2,190,2.10)=
SKIP,CRANIAL NERVES,SPINAL NERVES,BRAIN LOBES,REFLEXES,MEMORY,SPEECH
^DQ(2,190,2.20)= WRITING,MOTOR FUNCTION
^DQ(2,190,2.70)=
^ NO POSITIVE FINDINGS*%*/ */ */ */ */ */ */ */ */ */
^DQ(2,190,3)=
TM^^30/30/30/30/30/30/30/30/30/30/30/30/30/^1
^DQ(2,190,3.10)= SKIP,I,II,III,IV,V,VI,VII,VIII,IX,X,XI,XII
^DQ(2,190,3.70)= ^*%*1/ */ */ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,190,4)= TM^^40/41/42/41/44/40/40/40^1
^DQ(2,190,4.10)=
SKIP,CERVICAL,THORACIC,LUMBAR,SACRAL,ARM,HAND,LEG
^DQ(2,190,4.70)= ^*%*/ */ */ */ */ */ */ */ */
^DQ(2,190,5)= TM^^150/50/50/50/50/50/50/50/^2
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^DQ(2,190,5.10)=
SKIP,FRONTAL,PARIETAL,OCCIPITAL,TEMPORAL,HIPPOCAMUS,CEREBELLUM
^DQ(2,190,5.20)= HYPOPHYSIS
^DQ(2,190,5.70)= ^*%*/ */ */ */ */ */ */ */
^DQ(2,190,6)= TM^^160/60/60/60/60/60/60/60/60/^1
^DQ(2,190,6.10)=
SKIP,TRICEPS,BICEPS,RADIUS,ABDOMINAL,CREMASTER,KNEE,ANKLE,PLANTAR
^DQ(2,190,6.70)= ^*%*/ */ */ */ */ */ */ */ */
^DQ(2,190,7)= A^^^1
^DQ(2,190,7.10)= NORMAL,ABNORMAL
^DQ(2,190,7.70)= ^ */ */
^DQ(2,190,8)= TM^^80/80/80/80///^1
^DQ(2,190,8.10)= ARM,HAND,LEG,FOOT,RIGHT SIDE,LEFT SIDE
^DQ(2,190,8.70)= ^ ***1/ ***1/ ***1/ ***1/ */ */
^DQ(2,190,30)= TM^^130/130/130/^1
^DQ(2,190,30.10)= RIGHT,LEFT,BOTH
^DQ(2,190,30.70)= ^ */ */ */
^DQ(2,190,40)= A^^/140/^1
^DQ(2,190,40.10)= NORMAL,ABNORMAL
^DQ(2,190,40.70)= ^ */ **15/
^DQ(2,190,41)= TM^^40/45/45/45/45/45/45/45/45/^1
^DQ(2,190,41.10)= SKIP,1ST,2ND,3RD,4TH,5TH,6TH,7TH,8TH
^DQ(2,190,41.70)= ^*%*/ */ */ */ */ */ */ */ */
^DQ(2,190,42)=
TM^^40/45/45/45/45/45/45/45/45/45/45/45/45/^1
^DQ(2,190,42.10)=
SKIP,1ST,2ND,3RD,4TH,5TH,6TH,7TH,8TH,9TH,10TH,11TH,12TH
^DQ(2,190,42.70)= ^*%*/ */ */ */ */ */ */ */ */ */ */ */ */
^DQ(2,190,44)= TM^^40/45/45/45/45/45/^1
^DQ(2,190,44.10)= SKIP,1ST,2ND,3RD,4TH,5TH
^DQ(2,190,44.70)= ^*%*/ */ */ */ */ */
^DQ(2,190,45)= TM^^40/40/40/^1
^DQ(2,190,45.10)= RIGHT,LEFT,BOTH
^DQ(2,190,45.70)= ^ */ */ **1/
^DQ(2,190,50)= TM^^150/150/150/^1
^DQ(2,190,50.10)= RIGHT,LEFT,BOTH
^DQ(2,190,50.70)= ^ */ */ **1/
^DQ(2,190,60)= TM^^160/160/160/^1
^DQ(2,190,60.10)= RIGHT,LEFT,BOTH
^DQ(2,190,60.70)= ^ */ */*%*/
^DQ(2,190,80)= TM^^81/81/81/^1
^DQ(2,190,80.10)= RIGHT,LEFT,BOTH
^DQ(2,190,80.70)= ^ */ */ **1/
^DQ(2,190,81)= A^^^1
^DQ(2,190,81.10)= SKIP,QUARIPLEGIC,PARALYSIS
^DQ(2,190,81.70)= ^*%*/ */ */
^DQ(2,190,130)= A^^^1
^DQ(2,190,130.10)= NORMAL,ABNORMAL
^DQ(2,190,130.70)= ^ */ */
^DQ(2,190,140)= AM^^^3
^DQ(2,190,140.10)=
LIGHT TOUCH,PRESSURE SENSE,HEAT SENSE,COLD SENSE,SENSE OF SHAPE
^DQ(2,190,140.20)=
SENSE OF FORM,PASSIVE MOVEMENT,ACTIVE MOVEMENT,WEAKNESS,ANESTHESIA
^DQ(2,190,140.30)= HYPESTHESIA
^DQ(2,190,140.70)=
^ */ */ */ */ */ */ */ */ **15/ **15/ **15/
^DQ(2,190,150)= A^^^1
^DQ(2,190,150.10)=
NORMAL,ABNORMAL,DECEREBRATE,ANOMALY,TUMOR,TRAUMA
^DQ(2,190,150.70)= ^ */ */ */ */ */ */
^DQ(2,190,160)= A^^^1
^DQ(2,190,160.10)=
NORMAL,ABNORMAL,HYPERACTIVE,SLOW,HYPOACTIVE,ABSENT
^DQ(2,190,160.70)= ^ */ */ */ */ */ */
^DQ(2,200)= ALL :
```

APPENDIX C

OUTPUTS FROM PHYSICAL EXAMINATION CASE STUDIES

FORMAT USED THROUGHOUT APPENDIX C:

CASE NUMBER

POSITIVE PHYSICAL EXAMINATION FINDINGS AS PRESENTED IN THE CONVENTIONAL MEDICAL RECORD.

OUTPUT OF PHYSICAL FINDINGS FROM THE PHYSICAL EXAMINATION PORTION OF THE COMPUTERIZED MEDICAL RECORD.

ZA STRING HOLDING THE PHYSICAL EXAMINATION FINDINGS..

CASE 1.

EXAMINATION REVEALED PENETRATION OF RIGHT UPPER LID AND UPPER OUTER ORBITAL QUADRANT AND X-RAY APPEARANCE OF FOREIGN BODY IN THE UPPER ORBIT, APPARENTLY ABOVE AND POSTERIOR TO THE GLOBE. THERE WAS NO EVIDENCE OF PENETRATION OF THE GLOBE, WITH MARKED COMMOTIO RETINAE PRESENT 10-12 QUADRANT ABOVE AND POSTERIOR. THERE MAY BE ENOUGH TEARS IN THE RETINA TO REQUIRE LATER CRYOCOAGULATION. WE WILL OBSERVE HIM CLOSELY FOR THIS. THERE WAS SMALLVITREOUS HEMORRHAGE, THE ANTERIOR CHAMBER WAS CLEAR, LENS WAS CLEAR.

EYES :
RIGHT EYE : PENETRATION OF AND FOREIGN BODY IN UPPER OUTER QUADRANT OCULAR ORBIT, PENETRATION OF UPPER EYE LID, ABNORMAL ACUITY, COMMOTIO RETINAE AND TEARS IN RETINA, AND HEMORRHAGE IN VITREOUS.

ZA(3) = 1/2(1(2(2(2(9,10))))2(2(7))4(2)6(3(13,14)7(1)))/

CASE 2.

CHEST: SEVERE INTERCOSTAL AND STERNAL RETRACTION NOTED ON RESPIRATIONS. THERE WAS OBVIOUS MUSCLE WASTING OVER THE CHEST WALL WITH PROMINENT ACTIVE CHEST. ON AUSCULTATION BILATERAL RHONCHI AND INSPIRATORY AND EXPIRATORY COARSE BREATH SOUNDS WERE AUDIBLE. RESPIRATORY RATE VERY RAPID AND SHALLOW. ON PLACING THE INFANT IN THE DECUBITUS POSITION FLUID AND MUCOUS COULD BE HEARD IN THE UPPER BRONCHIAL TREE.

CHEST : COARSE BREATH SOUNDS, AND COARSE RONCHI. MUCOUS BOTH UPPER BRONCHIAL TREES.

ZA(10) = 1/1(1(1)2(1)3(2(2)5(1)))2(5(2(1(1(1(1)2(1)3(10)))))))/

CASE 3.

JAGGED LAC L EAR LOBE

EARS : LACERATION LEFT LOBE.

ZA(4) = 1/2(1(2(3(8))))/

CASE 4.

HARSH CRACKLING SOUNDS WITH SOME COARSE RHONCHI WERE HEARD AT THE END OF INSPIRATION IN THE LEFT MID LUNG FIELD POSTERIORLY.

CHEST : HARSH, CRACKLING AND COARSE RONCHI LEFT POSTERIOR MIDDLE LUNG FIELD.

ZA(10) = 1/2(3(3(3(3(1(1)2(1)3(5(1,2,3)))))))/

CASE 5.

EXAM OF CHEST REVEALED OCCASIONAL COARSE RHONCHI, HOWEVER, THERE WERE NO RALES AND THERE WAS ONLY A SLIGHT EXPIRATORY WHEEZE ON DEEP EXPIRATION.

CHEST : CRACKLING AND COARSE RONCHI.

ZA(10) = 1/1(1(1)2(1)3(5(1,2)))/

CASE 6.

THIS 13 YEAR OLD YOUNG LADY WAS ADMITTED TO THE HOSPITAL ON THE EVENING OF 7-1-71 AFTER LACERATING THE FLEXOR SURFACE OF HER RIGHT FOREARM ON A DOOR GLASS.

SKIN :
EXTREMITIES : LACERATION FLEXOR SURFACE OF RIGHT FORE ARM.

ZA(2) = 1/9(6(2(2(17))))/

CASE 7.

THIS 15 YEAR OLD NEGRO MALE WAS FIRST SEEN IN ORAL SURGERY CLINIC WHERE FOLLOWING CLINICAL AND RADIOGRAPHIC EXAMINATIONS HE WAS FOUND TO HAVE BILATERALLY IMPACTED MAXILLARY AND MANDIBULAR 3RD MOLARS, WITH CARIES OF HIS POSTERIOR MAXILLARY AND MANDIBULAR TEETH.

MOUTH :
TEETH : CARIES.

ZA(6) = 1/4(2)/

CASE 8.

THIS 13 YEAR OLD WHITE MALE WAS ADMITTED TO THE HOSPITAL ON 1-6. HE HAD SIGNS AND SYMPTOMS OF A PERIRECTAL ABSCESS PRESENTING ON THE LEFT SIDE OF THE ANUS.

RECTAL : PERIRECTAL ABSCESS.

ZA(16) = 1/1(8(2))/

CASE 9.

ENT: SCARRED FIBROTIC TONSILS.

THROAT :
TONSILS : SCARRED AND FIBROTIC BOTH TONSILS.

ZA(7) = 1/1(1(13,14))/

CASE 10.

EXAM OF THE EXTREMITIES WAS NORMAL EXCEPT FOR HIS LEFT ARM WHICH REVEALED A DIFFUSE SWELLING OF HIS ENTIRE LEFT FOREARM PROBABLY MOST MARKED OVER THE PROXIMAL ULNA. THERE WAS A WELL HEALED SURGICAL SCAR OVER THE PROXIMAL ULNA ABOUT 8 CM. IN LENGTH.

EXTREMITIES : TUMOR AND SCAR LEFT ARM.

ZA(18) = 1/2(1(2(3,4)))/

CASE 11.

THE PELVIS IS DEPRESSED DOWN ON THE RIGHT AND THE PATIENT WALKS, HOWEVER, WITH A SLIGHT SHORT LEG LIMP AND HAS NO EVIDENCE OF ANY CONTRACTURE IN THE TRICEPS SURAE. THE PATIENT'S CLINICAL LEG LENGTH MEASUREMENT INDICATED A 1.5 CM. DIFFERENCE IN THE RIGHT LOWER EXTREMITY AS COMPARED TO THE LEFT, THE RIGHT BEING SHORTER THAN THE LEFT.
EXTREMITIES : ABNORMAL STANCE. SHORT RIGHT LEG.

ZA(18) = 1/1(3(2))2(2(1(9)))/

CASE 12.

THE PATIENT IS A WHITE FEMALE 13 MONTHS WHO CAME IN WITH A THIRD DEGREE BURN OF DORSUM OF LEFT WRIST.

SKIN :
EXTREMITIES : 3RD DEGREE BURN DORSAL SURFACE OF LEFT WRIST.

ZA(2) = 1/9(4(2(3(10(16(3))))))/

CASE 13.

EXTREMITIES REVEALED SCARS WHERE HE HAD HAD PREVIOUS FLEXION CONTRACTURE RELEASES. HAMSTRING RELEASES OF HIS KNEES. HE HAD THE TYPICAL FINDINGS OF SPASTIC QUADRIPARESIS FROM HIS CEREBRAL PALSY. HE HAD MARKED TIGHTNESS OF HIS ADDUCTORS BILATERALLY AND HE HAD SIGNIFICANT SCISSORING WHEN HE WALKED.

EXTREMITIES : ABNORMAL GAIT. SCAR BOTH LEGS.

ZA(18) = 1/1(2(2))2(2(3(3)))/

NEUROLOGICAL :
MOTOR FUNCTION : QUARIPLEGIC BOTH LEGS.

ZA(19 = 1/9(3(3(2)))/

CASE 14.

ABDOMEN: THERE IS SOME DIFFUSE TENDERNESS, NOTHING WELL LOCALIZED.

ABDOMEN : TENDERNESS.

ZA(14) = 1/1(1(1)2(1)3(1)4(4))/

CASE 15.

THIS INFANT ON ADMISSION WAS 2 DAYS OLD WITH A HISTORY OF INTERMITTENT JAUNDICE AND CYANOSIS SINCE BIRTH. THE CHILD HAD 6-7 EPISODES OF CYANOTIC EXTREMITIES AND TOTAL BODYCYANOSIS SINCE BIRTH. THE CHILD WAS VERY JAUNDICED ON ADMISSION AND THE EXTREMITIES WERE CYANOTIC.

SKIN :
GENERALIZED : JAUNDICED.
EXTREMITIES : CYANOTIC.

ZA(2) = 1/1(1(6))9(1(1(5)))/

CASE 16.

THERE ARE SEVERAL OSTEOCHONDROMAS PALPABLE IN ALL EXTREMITIES, ESPECIALLY THE LEFT AND RIGHT DISTAL FEMUR AND BOTH DISTAL FOREARMS. THERE IS A SCAR OVER THE RIGHT FIBULA, ABOUT 20 CMS. LONG. NO SIGNS OF INFLAMMATION. THERE IS RIGHT PERONEAL PARALYSIS WITH DROP FOOT AND ALSO A DEFORMITY OF THE THIRD TOE.

EXTREMITIES : OSTEOCHONDROMA BOTH ARMS, ANOMALY AND SCAR RIGHT LEG, AND OSTEOCHONDROMA BOTH LEGS.

ZA(18) = 1/2(1(3(11))2(1(3,8)3(11)))/

CASE 17.

PATIENT IS A 6 MONTHS OLD WHITE FEMALE WITH CLEFT PALATE. HEART SHOWED GRADE II/VI SYSTOLIC MURMUR AT THE LEFT INTERCOSTAL SPACE CLOSE TO THE LEFT STERNAL BORDER, ALONG THE SECOND AND THIRD INTERCOSTAL SPACE.

MOUTH :
ROOF OF MOUTH : CLEFT PALATE.

ZA(6) = 1/1(2)/

HEART :
APEX : GRADE II - GRADE VI SYSTOLIC MURMUR.

ZA(12) = 1/3(6(2(10(3(1(1)))))))/

CASE 18.

VISUAL ACUITY RIGHT EYE 20/25, BEST CORRECTED LEFT EYE 20/20. EOM, PUPILS AND POSITION ARE NORMAL. OPHTHALMOSCOPIC EXAM NORMAL EXCEPT FOR PAPILLEDEMA OF THE OPTIC DISC OF ABOUT 3 DIOPTERS IN RIGHT EYE AND ABOUT 1 TO 2 DIOPTERS IN LEFT EYE. THERE IS A HEMORRHAGE IN THE UPPER TEMPORAL QUADRANT AT APPROXIMATELY 10:30 TO 11 O'CLOCK IN RIGHT EYE WITH DILATATION OF THE VEINS AND SOME QUESTIONABLE SMALL FLAMED AND PUNCTATE HEMORRHAGES IN THE PERIPHERY AND MARGIN OF THE NERVE HEADS.

EYES :
RIGHT EYE : HEMORRHAGE UPPER QUADRANT OCULAR ORBIT, ABNORMAL ACUITY, AND PAPILLEDEMA OPTIC DISC.
LEFT EYE : PAPILLEDEMA OPTIC DISC.

ZA(3) = 1/2(1(2(1(2(6))))4(2)6(2(1)))3(6(2(1)))/

CASE 19.

CONJUNCTIVAL LACERATION AT 9 O'CLOCK POSITION APPROXIMATELY 3 MM FROM LIMBUS. A SMALL METALLIC F.B. CAN BE SEEN IN THE CONJUNCTIVA DEEP TO LACERATION.

EYES :
RIGHT EYE : LACERATION OF AND FOREIGN BODY IN CONJUNCTIVA.

ZA(3) = 1/2(3(2(6,7)))/

CASE 20.

HEENT: EXTREMELY LARGE HYPERTROPHIC ADENOIDS AND TONSILS WITH VERY SMALL AIRWAY POSTERIORLY.

NOSE :
GENERALIZED : HYPERTROPHY BOTH ADENOIDS.

ZA(5) = 1/1(2(3(10)))/

THROAT :
TONSILS : HYPERTROPHY BOTH TONSILS.

ZA(7) = 1/1(1(1))/

VITA

Cathy N. Jedrek was born in Utica, New York on March 6, 1949. She is the daughter of Mr. and Mrs. Frank Jedrek of New York Mills, New York. After attending local public schools, she attended the State University of New York at Albany and in May 1971 she received a Bachelor of Science degree in Public Accounting.

In September 1972, she began study for the Master of Science degree at the University of Tennessee with a major in Computer Science. While at the University of Tennessee, she worked as a Teaching Assistant in the Computer Science Department. She received the Master of Science degree in June 1974.

Ms. Jedrek is a member of the Association for Computing Machinery.