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## CHAPTER ONE

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# The Problem-Oriented Approach

Michael D. Lorenz

During the 1960s, the problem-oriented medical record (POMR) was introduced in medical practice by Dr. Larry Weed. Dr. Weed developed a system of clinical problem solving that linked components of the medical record to the patient via “problems” or clinical signs. The POMR encouraged the physician to employ sound logic in patient evaluation and it provided a logical structure for displaying medical data, plans, and outcomes. In the early 1970s, the POA (problem-oriented approach) and POMR were adopted by the faculty at the University of Georgia for use in the veterinary teaching hospital. Since then, the POA and the POMR have been adopted by most veterinary colleges in North America. It has largely replaced the differential diagnosis approach, but elements of differential diagnosis are employed in the POA.

The basic tenet of the POA is that disease alters anatomy and function to cause clinical signs, which are called “problems” in the POA system. Emphasis is placed on accurate problem identification and a clear understanding of the pathophysiology that create each problem. When the underlying pathophysiology is understood, specific diseases that cause the problem are more quickly recalled. It is useful to first identify categories of disease for each problem and then list specific diseases for a category. The major categories of disease can be recalled by using the acronym DAMNIT-V, where each letter stands for a specific category of disease. The acronym is presented in Table 1-1. In the POA, specific etiologies or diseases are called “rule-outs.” The most appropriate diagnostic procedures needed to rule in or rule out each suspected cause are coupled with each rule-out.

The clinical reasoning process utilized in the POA is based on four steps: (1) database collection, (2) problem identification, (3) plan formulation, and (4) assessment and follow-up.

### Step 1: Database Collection

The initial database should contain the information necessary to allow identification of all problems in the patient. The contents of the database for any particular animal should be specified in advance. This is called the “guaranteed” database, and it is collected on each and every animal. The content of the guaranteed data is often debated, but there is agreement that the minimum guaranteed database must always include a complete history and complete physical examination. In older animals, a strong argument can be made to include a complete blood count, biochemical profile, and urinalysis. These diagnostic procedures can be viewed as an extension of the physical examination since they broadly screen several body systems.

**TABLE 1-1.** Diagnostic acronym—the DAMNIT-V scheme

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|                                               |
|-----------------------------------------------|
| D = Degenerative                              |
| A = Anomaly                                   |
| M = Metabolic                                 |
| N = Neoplastic, nutritional                   |
| I = Inflammatory, infectious, immune mediated |
| T = Trauma, toxicity                          |
| V = Vascular                                  |

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In this book, the problems discussed are largely identified from the history and physical examination. A problem-specific database is the information necessary (from diagnostic tests and procedures) to properly evaluate the rule-outs for a specific problem. In each of the following chapters, a specific problem is presented and the rule-outs and diagnostic procedures for that problem are discussed.

### ***History***

The history is the first component of the database. Clinicians and students are encouraged to take a complete history and to resist the temptation to substitute diagnostic tests for a thorough history. The history alerts the clinician to the presence of potential problems that need to be explored in depth on the physical examination. First, the chief complaint is determined. This complaint is pursued in depth, noting any additional problems and their chronological development. All medications are listed since treatment often alters the normal progression of signs that would indicate organ or system dysfunction. See Figure 1-1 for an example of a form used to record the history.

### ***Physical Examination***

The physical examination is the second and most important component of the database. Problems not identified in the physical examination are usually also missed when invasive or expensive diagnostic tests are performed. The assessment of laboratory tests involves correlation with the history and physical examination findings. A complete physical examination takes about 15 minutes. Each body system is examined with special attention given to those body systems in which dysfunction is suspected from the history. Ocular and neurologic examinations take more time and frequently are slighted during the physical examination. A physical examination form should be followed that stresses a complete review of body systems (see Figure 1-2). Abnormalities are recorded for each system. Special examination forms for the integumentary system, eye, and nervous system are very helpful and reduce writing time.


## **Step 2: Problem Identification**

The second step in clinical problem solving is problem identification. A problem is defined as any abnormality requiring medical or surgical intervention or one that interferes with the quality of life. Problems should be stated at their current level of understanding. An overstated problem may cause expensive, invasive, or needless diagnostic tests to be performed.

The POMR couples all notations in the medical record to numbered problems listed on the MPL. The MPL is placed in the front of the medical record where it serves as a

6

The Problem-Oriented Approach

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| Weight _____ kg.    est. _____ act. _____ Temp. _____ °C    Pulse _____ / _____ (rate) (char) Resp. _____<br>Hydration status _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |             |                         |               |       |             |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| Check appropriate box<br>Describe abnormalities below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;"></th> <th style="width: 10%; text-align: center;">Not<br/>Exam</th> <th style="width: 10%; text-align: center;">Norm</th> <th style="width: 10%; text-align: center;">Abnorm</th> <th style="width: 30%;"></th> <th style="width: 10%; text-align: center;">Not<br/>Exam</th> <th style="width: 10%; text-align: center;">Norm</th> <th style="width: 10%; text-align: center;">Abnorm</th> </tr> </table> |       | Not<br>Exam | Norm                    | Abnorm        |       | Not<br>Exam | Norm  | Abnorm              |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
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| <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">1. General Appearance</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 30%;">9. Urogenital</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">_____</td> </tr> <tr> <td>2. Mucous Membranes</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td>10. Auditory</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>3. Cardiovascular</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td>11a. Eyes</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>4. Respiratory</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td>11b. Fundic</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>5. Integumentary</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td>12. Abdominal Palpation</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>6. Alimentary</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td>13. Rectal Palpation</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>7. Musculoskeletal</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td>14. Lymph Nodes</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>8. Nervous</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td>15. Other</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> </table> | 1. General Appearance                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | _____                   | 9. Urogenital | _____ | _____       | _____ | 2. Mucous Membranes | _____ | _____ | _____ | 10. Auditory | _____ | _____ | _____ | 3. Cardiovascular | _____ | _____ | _____ | 11a. Eyes | _____ | _____ | _____ | 4. Respiratory | _____ | _____ | _____ | 11b. Fundic | _____ | _____ | _____ | 5. Integumentary | _____ | _____ | _____ | 12. Abdominal Palpation | _____ | _____ | _____ | 6. Alimentary | _____ | _____ | _____ | 13. Rectal Palpation | _____ | _____ | _____ | 7. Musculoskeletal | _____ | _____ | _____ | 14. Lymph Nodes | _____ | _____ | _____ | 8. Nervous | _____ | _____ | _____ | 15. Other | _____ | _____ | _____ | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border: 1px solid black; vertical-align: top; padding: 5px;">ABNORMAL FINDINGS</td> <td style="border: 1px solid black; height: 150px;"></td> </tr> </table> | ABNORMAL FINDINGS |  |
| 1. General Appearance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 9. Urogenital           | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| 2. Mucous Membranes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 10. Auditory            | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| 3. Cardiovascular                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 11a. Eyes               | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| 4. Respiratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 11b. Fundic             | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| 5. Integumentary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 12. Abdominal Palpation | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| 6. Alimentary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 13. Rectal Palpation    | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| 7. Musculoskeletal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 14. Lymph Nodes         | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| 8. Nervous                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _____ | _____       | 15. Other               | _____         | _____ | _____       |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
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| Date: _____ Student: _____<br>_____ Clinician: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |             |                         |               |       |             |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |
| <div style="border: 1px solid black; padding: 5px; display: inline-block;">PHYSICAL EXAM</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |             |                         |               |       |             |       |                     |       |       |       |              |       |       |       |                   |       |       |       |           |       |       |       |                |       |       |       |             |       |       |       |                  |       |       |       |                         |       |       |       |               |       |       |       |                      |       |       |       |                    |       |       |       |                 |       |       |       |            |       |       |       |           |       |       |       |                                                                                                                                                                                                                                                  |                   |  |

**FIGURE 1-2.** Physical examination form—an example of a form used to systematically record physical examination findings.

table of contents that directs the care of the patient. Problems can be redefined to a higher level of understanding, or they may be combined with other problems. Clinical problem solving has problem resolution as the primary goal. Problems may be resolved, updated, or combined with other problems to a specific diagnosis or only resolved therapeutically. Problems can be inactivated when no further diagnostic or therapeutic action is warranted but resolution has not occurred.

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**FIGURE 1-4.** Initial plan form—a form used to record the initial plan in a problem-oriented format.

the most likely causes. Diagnostic procedures for each rule-out are listed. In this manner, clinical reasoning is displayed and can be audited. The clinician has stated his or her thought process: that is, “Here are the problems I have identified,” “These are the most likely causes (rule-outs) in my opinion,” and “I will perform these diagnostic procedures to test my hypothesis.” When displayed in the POMR, the clinical reasoning process can be quickly audited.

Developing a well-founded diagnostic plan is the subject for each chapter of this book. The POA emphasizes the management of problems through knowledge of their mechanisms and causes. By listing the problems, interrelationships can be more easily elucidated. A rule-out that appears in the diagnostic plan for more than one problem should be highly suspected as the primary diagnosis and diagnostic tests should be directed at that condition.

The management of certain problems involves the collection of data beyond that contained in the initial database. This collection of data is called a problem-specific database. It includes tests or procedures that help establish the cause and the metabolic or biochemical consequences of the problem(s). Clinical algorithms are sequential steps in clinical reasoning on the basis of the results of the problem-specific database. Clinical algorithms are used in this book to display the logical progression of problem management. “Perfect” algorithms do not exist. Therefore, understanding the reasons for each decision is important. Algorithms are very useful in medical management, since it is impossible to remember all the causes of specific problems.

### ***Therapeutic Plan***

Therapy is coupled with the problem it is intended to resolve or help. This provides a method to audit the logic of treatment. During the formulation of the initial plan, a clinician must weigh the possible benefits of symptomatic therapy against the alterations that therapy might cause in laboratory test results or progression of signs that may be important to diagnosis. Serum should be saved prior to therapy for future biochemical or immunologic tests.

### ***Client/Owner Education***

This section of the initial plan describes the information given to clients about their animal’s problems, diagnostic tests, cost, and prognosis.

## **Step 4: Assessment and Follow-up**

Step 4 is the assessment of data collected from the initial plan (or the problem-specific database). The results are correlated with the history and physical findings and compared to the list of rule-outs for each problem. In this manner, the clinician is assessing the hypothesis stated in the initial plan. The assessment should be written in the medical record in relationship to each problem and should accurately interpret the results of diagnostic tests or procedures. The assessment should explain the logic for changes in the MPL.

Follow-up represents actions to be taken on the results of the initial plan or daily plans. In the POMR, follow-up is maintained in daily progress notes (see Figure 1-5). Progress notes





## Summary

The POA to medical management is based on logical concepts. Disease creates clinical signs or problems. When problems are logically managed, the underlying cause(s) can be identified. The POA is not a new system; it follows the same logic that astute clinicians have used for many years in developing a differential diagnosis. In the differential diagnosis method, problem solving is done mentally. The POMR provides a structured format for the display of an old system of medical management. It is no panacea for sloppy medical records or poor clinical reasoning. It will not correct the problems created by superficial histories or incomplete physical examinations. It is a system that functions well when all steps are meticulously followed.

This is a book about problems: how they are identified, why they occur, what diseases are ultimately responsible, and they are logically pursued. It is not a book about specific diseases, which are amply covered in other textbooks. When the knowledge of disease is coupled with the knowledge of problems, the clinical reasoning process operates at its highest level.

The POA is a logical way to think about diagnosis and patient management. A POMR is not necessary for a clinician to think in terms of “problem solving.” However, when the POMR is used, it forces one to use a logical problem-solving approach. The POA is especially beneficial in the clinical training of students.

## Suggested Readings

- Weed, L.L. 1964. Medical records, patient care, and medical education. *Ir J Med Surg* 6:271–282.  
Weed, L.L. 1968. Medical records that guide and teach. *N Engl J Med* 278:593–600.

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