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DIFFERENTIAL DIAGNOSIS

FOR THE ADVANCED PRACTICE NURSE

Differential Diagnosis: Common Symptoms Table Cough

Diff Dx	Sore throat	fever	Productive cough	Dyspnea	Headache	Chest pain	Weight loss	Hemoptysis
URI (including acute bronchitis)	yes	low	Yes or no	mild	Yes or now	no	no	no
Pneumonia (viral, bacterial, aspiration, rarely fungal)	rare	Yes, high	Yes or no	yes	Yes or no	Yes or no	no	Yes or no
Postnasal drip (allergic, bacterial origin)	Yes scratchy	no	no	no	Yes or no	no	no	no
COPD exacerbation	no	no	Yes or no	yes	no	no	no	no
Pulmonary embolism	no	no	Yes or no	Yes, severe	no	Yes with deep breath	no	occasional
Asthma	no	no	no	yes	no	no	no	no
ACE inhibitors	no	no	no	no	no	no	no	no
Tumor	no	Yes or no	Yes or no	no	no	Yes or no	no	Yes or no
TB or Fungal infections	no	yes	no	no	no	no	yes	yes

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DIFFERENTIAL DIAGNOSIS FOR THE ADVANCED PRACTICE NURSE

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PREFACE

Establishing *differential diagnosis* can be challenging even for the expert advanced practice nurse (APN). For the APN student, establishing the diagnosis is even more of a challenge. It is the goal of the authors to present a clinically useful guide for both the student and the clinical provider to use in discerning a reliable diagnosis. Much of the diagnosis is based on patient input, so standard methods of communicating with the patient are important in eliciting a useful history and background that can accurately point the APN to a likely diagnosis. Using this as a platform from which to conduct and order appropriate diagnostic tests is the next logical step for the clinician. How does one learn to formulate such a platform? Currently, there are very few textbooks available that would provide such a guide to the development of a differential diagnosis for common patient/client complaints. This book is designed to bridge the gap between common chief complaints and the formulation of a correct diagnosis by providing a step-by-step approach to eliciting useful patient responses through an unfolding case study approach. We have attempted to include the more commonly occurring symptoms that present in the clinical setting. There are a few symptoms such as "fever" that have been omitted, as this "symptom" might require an entire treatise on its own if we were to address every possible condition that included fever as part of the presenting symptoms.

This handy clinical reference presents a standard method of formulating a differential diagnosis that the APN can use throughout clinical practice. Thirty-eight common symptoms are organized and presented in alphabetical order, starting with abdominal pain and moving through to cough, ear discharge, fatigue, hand and joint swelling, headache, low back pain, shortness of breath, and skin rashes, to vomiting and wrist pain (last symptom). These symptoms, or chief complaints, represent the symptoms most frequently presented by patients to the primary care practitioner.

PATIENT-BASED CASE SCENARIOS

The patient-based case scenario is used to present each symptom. The case unfolds systematically and is followed consistently as each symptom is explored, as in a clinical setting. This systematic approach helps the student to structure her or his approach to a patient, supporting the idea of establishing a method of clinical decision making. Each symptom exploration follows the same format, which includes a "Case Presentation" followed by:

1. Introduction to Complaint (includes background, usual cause, additional causes)
2. History of Complaint (includes symptomatology, directed questions to ask, assessment: cardinal signs and symptoms, medical history: general, medical history: specific to complaint)

3. Physical Examination (includes vital signs, general appearance, visual examination of area concerning chief complaint, additional related inspection and examination, areas to palpate and areas to auscultate)
4. Case Study: History and Physical Examination Findings (includes responses to directed questions, findings of physical examination)
5. Differential Diagnosis (a table that compares typical symptoms associated with conditions that might present similarly and need to be compared with the results of the patient's history and physical examination findings)
6. Diagnostic Examination (a table that presents diagnostic tests that the APN can consider performing or ordering to facilitate arriving at the correct diagnosis)
7. Clinical Decision Making (a summary of the case study and statement of the likely diagnosis)

UNIQUE FEATURES

Case Study: History—This two-column table presents the directed question posed to the patient in the first column and the patient's response to the question in the second column.

Case Study: Physical Examination Findings—This section presents the actual findings of the physical examination. Together, the case study history table and the case study physical examination findings lead the examiner to the differential diagnosis table, which clearly compares the relative differences among the more usual and customary diagnoses.

Differential Diagnosis Table—This table presents the more usual diagnostic choices that can be made based on the client's chief complaint and provides the clinician significant clues as to which diagnoses might be most accurate.

Diagnostic Examination Table—This table presents the diagnostic tools available to further clarify or confirm a diagnosis related to the presenting symptom. It includes the estimated cost and codes to be considered when determining which tests to order. Some of the tests are common tests that are included in the office visit, such as the otoscopy, which provides visualization of the ear canal and tympanic membrane to assess for the presence of foreign body, signs of trauma, erythema, effusion, or rupture. Others provide more insight into a possible diagnosis and often are more costly.

Clinical Decision Making—This section describes the APN's analysis of the patient's health history (including responses to directed and nondirected questions), the physical exam, results of the diagnostic tests, and the scrutiny of the differential diagnosis table (comparing common symptoms for possible diagnoses). Decision making is laid out for the reader, indicating the salient points that surfaced during the analysis process, and offers the most likely diagnosis.

Clinical information presented in this book is considered generally accepted practice. Although every effort has been made to present correct and up-to-date information, the health care field is rapidly changing and the idea of "common knowledge" today might be different tomorrow, based on new developments and research findings. For this reason, readers are encouraged to keep up with all available resources to help ensure accurate decision making.

Establishing differential diagnoses for client complaints is a critical step in the delivery of optimum health care. It is our hope that this book will serve as a useful guide for nurses in practice. We feel it will be a wonderful adjunct to APN curricula in nursing programs across the globe.

Jacqueline Rhoads
Marilee Murphy Jensen

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Above all, I want to thank my mother, who supported and encouraged me in spite of all the time it took me away from her.

Jacqueline Rhoads

INTRODUCTION TO DIFFERENTIAL DIAGNOSIS AND DIAGNOSIS OF COMMON PROBLEMS

Diseases are defined by a pattern of symptoms the patient reports, signs observed during physical examination, and diagnostic testing. Determining the differential diagnosis is the process of distinguishing one disease from another that presents with similar symptoms. With the chief complaint established, information is gathered through the history and physical examination. When the patient presents with a chief complaint, such as cough, the provider considers the most common diseases that present with cough, forming a working differential diagnosis list. The provider analyzes the data obtained, eliminates some diseases, and narrows down the differential diagnosis. At times, further diagnostic testing is needed to make the final diagnosis. The construction of a differential diagnosis is essential in making an accurate diagnosis.

PATIENT HISTORY

Identification/Chief Complaint

The first piece of information obtained is the chief complaint or the patient's reason for seeking medical attention. This statement gives the provider a general idea of possible diagnoses. For example, "a healthy 16-year-old boy presents with a nonproductive cough for 3 days."

Subjective

The most common etiology of the disease is in the ears, nose, throat, and respiratory system. With this in mind, the provider asks the patients a series of *open-ended questions* to gather data related to the presenting problem. These questions form the basis of the symptom analysis:

- Onset
- Location/radiation
- Duration/timing
- Character
- Associated symptoms
- Aggravating or triggering factors
- Alleviating factors
- Effects on daily life

Once a general history is obtained, the provider moves on to obtain more details through a *directed history*. Patients may not offer pertinent symptoms unless prompted. These questions are focused on the diagnostic possibilities related to the presenting problem. For example, a patient who presents with chest pain may not recall that the pain is much better when he or she leans forward, indicating possible pericarditis.

Once questions regarding the symptom are completed, the provider moves on to obtain data regarding the patient's general health status, and relevant past medical, family, and social history. The patient's past medical history and family history outline risk factors for diseases. The social history may reveal occupational exposures or habits that influence the presence of diseases, such as heart and lung disease from smoking, or liver disease from alcohol or drug use.

PHYSICAL EXAMINATION

The physical examination starts when you walk into the room and observe the patient's general appearance. Visual clues include facial expression, mood, stress level, hygiene, skin color, and breathing pattern. Although they may seem trivial, the assessment of vital signs is critical, and their accuracy is imperative. The presence of fever, tachycardia, or low blood pressure is cause for concern and alerts the provider that the patient may have a serious disease.

Unlike the patient who comes in for a comprehensive physical examination, the patient who presents with a symptom requires a *focused* physical examination. The examination is directed by the chief complaint and history. For example, a 16-year-old with a recent cough requires examination of the ears, eyes, nose, throat, neck (for lymphadenopathy), heart, lungs, and abdomen (for an enlarged liver or spleen). Attention is given to the skin to look for cyanosis, the nails for clubbing, and the vascular system for edema. Neurologic examination is limited to mental status, and other parts of the examination are not relevant.

The physical examination provides positive and negative findings, and may provide the diagnosis without the need for further testing. For example, if the examination of a patient who reports a painful skin rash yields findings of a cluster of vesicles on an erythematous base following a dermatome, this is a positive physical finding confirming clinical diagnosis of herpes zoster. On the other hand, the lack of a rash would be a negative physical finding and further exploration is needed. The physical examination may also reveal unsuspected findings, or may be completely normal despite the presence of disease.

DIFFERENTIAL DIAGNOSIS

Once the chief complaint, history, and physical examination are established, a list of possible diseases is formed ranking the most common diagnoses and the most serious or "not to miss" diagnoses. The axiom that common diseases present commonly and uncommon diseases are uncommon cannot be overstressed. Keeping an open mind, and exploring all possibilities, is important. Premature closure or discarding a diagnosis too early may result in diagnostic error. The depth of one's differential diagnosis is determined by the breadth of knowledge of the provider. A disease cannot be diagnosed and treated unless it is known to the provider. This can be a challenge for the novice who is faced with a mountain of information to learn about thousands of diseases. It results in a chronic sense of dissatisfaction with one's knowledge base, and can be a source of great fear and frustration. However, it serves to stimulate exploration and learning, and with experience and guidance, knowledge grows. The novice will find that a solid reference enables him or her to master the task of differential diagnosis as his or her clinical experience matures.

DIAGNOSTIC TESTING

When the diagnosis cannot be made on history and physical data alone, diagnostic testing is the next step in determining the correct diagnosis. Diagnostic testing should be done only if necessary to yield an impact on the diagnosis, and ultimate treatment of the problem. Ordering unnecessary tests is enormously expensive. When possible, order basic tests to screen for disease, and if the diagnosis remains unclear, move on to more elaborate testing.

Consider the sensitivity and specificity of a test as well. "Sensitivity" is the proportion of patients with the diagnosis who will test positive. "Specificity" is the proportion of patients without the diagnosis who will test negative.

If the diagnosis is not defined by the history, physical examination, and diagnostic testing, the provider then needs to reevaluate the patient over time, reformulating new diagnostic possibilities as new signs or symptoms arise.

STEPS TO WRITING A DIFFERENTIAL DIAGNOSIS

Knowledge of how to write a medical diagnosis comprises several critical steps.

1. Obtain the patient's chief complaint, such as "cough for 2 weeks" and list three common problems that present with that symptom. For example, acute cough is most likely viral bronchitis, pneumonia, or viral rhinosinusitis with postnasal drip.
2. Obtain a detailed history as outlined above. Make a list of the patient's symptoms and pertinent risk factors. Note the pertinent positive and negative associated symptoms. For example, a patient with a cough who has a high fever and shortness of breath (positives) likely has pneumonia. A patient who has a cough without a high fever or shortness of breath (negatives) may have a viral bronchitis. Based on the information from your history, direct your physical examination to look for significant signs of illness. For example, is there sinus tenderness? Is there a postnasal drip in the posterior pharynx? Are there wheezes or crackles present?
3. Review your differential diagnosis list of possible diagnoses based on the history and physical examination. Determine whether you need additional diagnostic testing based on your findings. For example, a patient with a fever of 102°F, heart rate of 120, and respiratory rate of 30 with diminished breath sounds in the right lower lobe and crackles will benefit from a chest x-ray to confirm the presence or absence of pneumonia. A complete blood count will identify whether there is a significant leukocytosis or elevated white blood cell count. A basic metabolic panel will ascertain whether there is an electrolyte imbalance or dehydration.
4. Establish a clear determination that shows why this particular diagnosis is accurate for the patient. Review your rationale for why you chose this diagnosis as opposed to others on your list of possibilities. Keep an open mind as you review your facts for any other diagnostic possibilities you may have missed, including a life-threatening illness.
5. Develop a treatment plan, including diagnostic testing, pharmacologic agents, patient education, and follow-up. If your diagnosis remains unclear, consider appropriate referral for further evaluation.

SUMMARY

This book is written to help the reader learn the process of formulating a differential diagnosis using the skills of gathering appropriate data from the history, physical examination, and relevant diagnostic testing. Each chapter is interspersed with cases describing an initial chief complaint, history, and physical examination. Tables outlining the common diagnosis with cardinal signs and symptoms as well as diagnostic testing are provided for the reader's review. Clinical diagnostic reasoning for the final diagnosis is outlined. The approach is to give pertinent information as well as demonstrate the process of clinical reasoning. It is well known that the process of differential diagnosis takes years to master. It is especially challenging for new students learning the complexities of diagnosis. It is my hope that this book will help you start your journey with the tools to make this learning process interesting and relevant.