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FOURTH EDITION

CASE FILES®
Family Medicine

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Notice

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DEDICATION

To my incredible editor Catherine Johnson, whose imagination knows no bounds, whose compassion has no limits, and whose brilliance is a wonder to behold. I have been so fortunate to have you as my one and only editor for these Case Files books. You have been friend, encourager, and occasional bearer of the whip. Our successes are largely due to you and I will always be indebted to you.

– ECT

To my friends and colleagues at Hopital Saint Nicolas in St. Marc and Hopital Universitaire Justinien in Cap Haitien, Haiti.

– DB

To the students, residents, faculty, and patients of EVMS: the best teachers I could ever have.

And to May and Sean: for their infinite patience and love.

– BB

To my students and residents who teach me as much as I strive to teach them.

To my dedicated colleagues in academic family medicine who inspire me to become a greater teacher and clinician.

To Jacqui, Gwyneth, and Lilya for loving and supporting me.

– JJH

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PREFACE

We appreciate all the kind remarks and suggestions from the many medical students over the past 3 years. Your positive reception has been an incredible encouragement, especially in light of the short life of the *Case Files®* series. In this fourth edition of *Case Files®: Family Medicine*, the basic format of the book has been retained. Improvements were made in updating many of the chapters. New cases include Substance Abuse, Asthma, Sleep Apnea, Osteoporosis, Chronic Pain Management, and Leg Swelling. We reviewed the clinical scenarios with the intent of improving them; however, their "real-life" presentations patterned after actual clinical experience were accurate and instructive. The multiple-choice questions (MCQs) have been carefully reviewed and rewritten to ensure that they comply with the National Board and USMLE format. Through this fourth edition, we hope that the reader will continue to enjoy learning diagnosis and management through the simulated clinical cases. It certainly is a privilege to be teachers for so many students, and it is with humility that we present this edition.

ACKNOWLEDGMENTS

The curriculum that evolved into the ideas for this series was inspired by two talented and forthright students, Philbert Yau and Chuck Rosipal, who have since graduated from medical school. It has been a pleasure to work with Dr. Don Briscoe, a brilliant, compassionate, and dedicated teacher and leader, Dr. Bruce Britton, who is an excellent teacher and communicator, and most recently Dr. Joel Heidelbaugh, who has a amazing breadth of knowledge and brings a fresh perspective. I am greatly indebted to my editor, Catherine Johnson, whose exuberance, experience, and vision helped to shape this series. I appreciate McGraw-Hill's believing in the concept of teaching through clinical cases; I am also grateful to Catherine Saggese for her excellent production expertise, and Cindy Yoo for her wonderful editing. I am thankful to Raghavi Khullar for the outstanding and precise project management. At the University of Texas Medical School at Houston, I appreciate Dr. Patricia Butler for her encouragement, Dr. Sean Blackwell for his example, role model and inspiration. Most of all, I appreciate my ever-loving wife Terri, and four wonderful children, Andy and his wife Anna, Michael, Allison, and Christina for their patience, encouragement, and understanding.

Eugene C. Toy, MD

Mastering the cognitive knowledge within a field such as family medicine is a formidable task. It is even more difficult to draw on that knowledge, procure, and filter through the clinical and laboratory data, develop a differential diagnosis, and, finally, to form a rational treatment plan. To gain these skills, the student often learns best at the bedside, guided and instructed by experienced teachers, and inspired toward self-directed, diligent reading. Clearly, there is no replacement for education at the bedside. Unfortunately, clinical situations usually do not encompass the breadth of the specialty. Perhaps the best alternative is a carefully crafted patient case designed to stimulate the clinical approach and decision making. In an attempt to achieve that goal, we have constructed a collection of clinical vignettes to teach diagnostic or therapeutic approaches that are relevant to family medicine. Most importantly, the explanations for the cases emphasize the mechanisms and underlying principles, rather than merely rote questions and answers.

This book is organized for versatility to allow the student "in a rush" to go quickly through the scenarios and check the corresponding answers, as well as enable the student who wants thought-provoking explanations to take a slower path. The answers are arranged from simple to complex: a summary of the pertinent points, the bare answers, an analysis of the case, an approach to the topic, a comprehension test at the end for reinforcement and emphasis, and a list of resources for further reading. The clinical vignettes are purposely placed in random order to simulate the way that real patients present to the practitioner. Section II includes a listing of cases to aid the student who desires to test his/her knowledge of a certain area, or to review a topic including basic definitions. Finally, we intentionally did not primarily use MCQ format because clues (or distractions) are not available in the real world. Nevertheless, several MCQs are included at the end of each scenario to reinforce concepts or introduce related topics.

HOW TO GET THE MOST OUT OF THIS BOOK

Each case is designed to simulate a patient encounter with open-ended questions. At times, the patient's complaint is different from the most concerning issue, and sometimes extraneous information is given. The answers are organized with four different parts.

PART I

1. The **Summary** identifies the salient aspects of the case, filtering out the extraneous information. The student should formulate his/her summary from the case before looking at the answers. A comparison to the summation in the answer will help to improve one's ability to focus on the important data, while appropriately discarding the irrelevant information, a fundamental skill in clinical problem solving.

2. A **Straightforward Answer** is given to each open-ended question.
3. The **Analysis of the Case**, which is comprised of two parts:
   a. **Objectives** of the Case: A listing of the two or three main principles that is crucial for a practitioner in managing the patient. Again, the student is challenged to make educated "guesses" about the objectives of the case upon initial review of the case scenario, which help to sharpen his/her clinical and analytical skills.
   b. **Considerations:** A discussion of the relevant points and a brief approach to the specific patient.

PART II

The Approach to the Disease Process, which has two distinct parts:

a. **Definitions or Pathophysiology:** Terminology or basic science correlates that are pertinent to the disease process.
b. **Clinical Approach:** A discussion of the approach to the clinical problem in general, including tables, figures, and algorithms.

PART III

The **Comprehension Questions** for each case is composed of several multiple-choice questions that either reinforce the material or introduce new and related concepts. Questions about material not found in the text have explanations in the answers.

PART IV

Clinical Pearls are a listing of several clinically important points that summarize the text, and allow for easy review of the material, such as before an examination.

How to Approach Clinical Problems

Part 1. Approach to the Patient

Applying "book learning" to a specific clinical situation is one the most challenging tasks in medicine. To do so, the clinician must not only retain information, organize facts, and recall large amounts of data but also apply all of this to the patient. The purpose of this text is to facilitate this process.

The first step involves gathering information, also known as establishing the database. This includes taking the history, performing the physical examination, and obtaining selective laboratory examinations, special studies, and/or imaging tests. Sensitivity and respect should always be exercised during the interview of patients. A good clinician also knows how to ask the same question in several different ways, using different terminology. For example, patients may deny having "congestive heart failure" but will answer affirmatively to being treated for "fluid on the lungs." Starting with open-ended questions for each section of the history often can help gather large amounts of information on the patient efficiently and allow the clinician's follow-up questions be targeted and more meaningful.

CLINICAL PEARL

- The history is usually the single most important tool in obtaining a diagnosis. The art of seeking this information in a nonjudgmental, sensitive, and thorough manner cannot be overemphasized.

HISTORY

1. **Basic information:**
   a. **Age:** Some conditions are more common at certain ages; for instance, chest pain in an elderly patient is more worrisome for coronary artery disease than the same complaint in a teenager.
   b. **Gender:** Some disorders are more common in men, such as abdominal aortic aneurysms. In contrast, women more commonly have autoimmune problems, such as chronic idiopathic thrombocytopenic purpura or systemic lupus erythematosus. Also, the possibility of pregnancy must be considered in any woman of childbearing age.
   c. **Ethnicity:** Some disease processes are more common in certain ethnic groups (such as type 2 diabetes mellitus in the Hispanic population).

CLINICAL PEARL

- *Family Medicine* illustrates the importance of longitudinal care, that is, seeing the patient in various phases and stages of life.

2. **Chief complaint:** What is it that brought the patient into the hospital? Has there been a change in a chronic or recurring condition or is this a completely new problem? The duration and character of the complaint, associated symptoms, and exacerbating/relieving factors should be recorded. The chief complaint engenders a differential diagnosis, and the possible etiologies should be explored by further inquiry.

CLINICAL PEARL

- The first line of any presentation should include *age, ethnicity, gender, marital status, and chief complaint*. Example: A 32-year-old married white man complains of lower abdominal pain of 8-hour duration.

3. **Past medical history:**
   a. Major illnesses such as hypertension, diabetes, reactive airway disease, congestive heart failure, angina, or stroke should be detailed.
      i. Age of onset, severity, end-organ involvement.
      ii. Medications taken for the particular illness, including any recent changes to medications and reason for the change(s).
      iii. Last evaluation of the condition (eg, when was the last stress test or cardiac catheterization performed in the patient with angina).
      iv. Which physician or clinic is following the patient for the disorder?
   b. Minor illnesses such as recent upper respiratory infections.
   c. Hospitalizations, no matter how trivial, should be queried.
4. **Past surgical history:** Date and type of procedure performed, indication, and outcome. Laparoscopy versus laparotomy should be distinguished. Surgeon and hospital name/location should be listed. This information should be correlated with the surgical scars on the patient's body. Any complications should be delineated including anesthetic complications, difficult intubations, and so on.
5. **Allergies:** Reactions to medications should be recorded, including severity and temporal relationship to medication. Immediate hypersensitivity should be distinguished from an adverse reaction.
6. **Medications:** A list of medications, dosage, route of administration and frequency, and duration of use should be developed. Prescription, over-the-counter, supplements, and herbal remedies are all relevant. If the patient is currently taking antibiotics, it is important to note what type of infection is being treated.
7. **Immunization history:** Vaccination and prevention of disease is a principal goal of the family physician; hence, recording the immunizations received including dates, age, route, and adverse reactions, if any, is critical.

8. **Screening history:** Cost-effective surveillance for common diseases or malignancy is another cornerstone responsibility of the family physician. An organized record-keeping is important to a time-efficient approach to this area.

9. **Social history:** Occupation, marital status, family support, and tendencies toward depression or anxiety are important. Use or abuse of illicit drugs, tobacco, or alcohol should also be recorded. Social history, including marital stressors, sexual dysfunction, and sexual preference, is of importance. Patients, especially older patients or those with chronic illnesses, should be asked about medical power of attorney and advanced directives.

10. **Family history:** Many major medical problems are genetically transmitted (eg, hemophilia, sickle cell disease). In addition, a family history of conditions such as breast cancer and ischemic heart disease can be risk factors for the development of these diseases.

11. **Review of systems:** A systematic review should be performed but focused on the life-threatening and the more common diseases. For example, in a young man with a testicular mass, trauma to the area, weight loss, and infectious symptoms are important to note. In an elderly woman with generalized weakness, symptoms suggestive of cardiac disease should be elicited, such as chest pain, shortness of breath, fatigue, or palpitations.

PHYSICAL EXAMINATION

1. **General appearance:** Mental status, alert versus obtunded, anxious, in pain, in distress, interaction with other family members, and with examiner.

2. **Vital signs:** Record the temperature, blood pressure, heart rate, and respiratory rate. An oxygen saturation is useful in patients with respiratory symptoms. Height and weight are often placed here with a body mass index (BMI) calculated (weight in kg/height in meter squared = kg/m^2).

3. **Head and neck examination:** Evidence of trauma, tumors, facial edema, goiter and thyroid nodules, and carotid bruits should be sought. In patients with altered mental status or a head injury, pupillary size, symmetry, and reactivity are important. Mucous membranes should be inspected for pallor, jaundice, and evidence of dehydration. Cervical and supraclavicular nodes should be palpated.

4. **Breast examination:** Inspection for symmetry and skin or nipple retraction, as well as palpation for masses. The nipple should be assessed for discharge, and the axillary and supraclavicular regions should be examined.

5. **Cardiac examination:** The point of maximal impulse (PMI) should be ascertained, and the heart auscultated at the apex and base. It is important to note whether the auscultated rhythm is regular or irregular. Heart sounds (including S_3 and S_4), murmurs, clicks, and rubs should be characterized. Systolic flow murmurs are fairly common as a result of the increased cardiac output, but significant diastolic murmurs are unusual.

6. **Pulmonary examination:** The lung fields should be examined systematically and thoroughly. Stridor, wheezes, rales, and rhonchi should be recorded. The clinician should also search for evidence of consolidation (bronchial breath sounds, egophony) and increased work of breathing (retractions, abdominal breathing, accessory muscle use).
7. **Abdominal examination:** The abdomen should be inspected for scars, distension, masses, and discoloration. For instance, the Grey-Turner sign of bruising at the flank areas may indicate intra-abdominal or retroperitoneal hemorrhage. Auscultation should identify normal versus high-pitched and hyperactive versus hypoactive bowel sounds. The abdomen should be percussed for the presence of shifting dullness (indicating ascites). Then careful palpation should begin away from the area of pain and progress to include the whole abdomen to assess for tenderness, masses, organomegaly (ie, spleen or liver), and peritoneal signs. Guarding and whether it is voluntary or involuntary should be noted.
8. **Back and spine examination:** The back should be assessed for symmetry, tenderness, and masses. The flank regions particularly are important to assess for pain on percussion that may indicate renal disease.
9. **Genital examination:**
   a. **Female:** The external genitalia should be inspected, then the speculum used to visualize the cervix and vagina. A bimanual examination should attempt to elicit cervical motion tenderness, uterine size, and ovarian masses or tenderness.
   b. **Male:** The penis should be examined for hypospadias, lesions, and discharge. The scrotum should be palpated for tenderness and masses. If a mass is present, it can be transilluminated to distinguish between solid and cystic masses. The groin region should be carefully palpated for bulging (hernias) upon rest and provocation (coughing, standing).
   c. **Rectal examination:** A rectal examination will reveal masses in the posterior pelvis and may identify gross or occult blood in the stool. In females, nodularity and tenderness in the uterosacral ligament may be signs of endometriosis. The posterior uterus and palpable masses in the cul-de-sac may be identified by rectal examination. In the male, the prostate gland should be palpated for tenderness, nodularity, and enlargement.
10. **Extremities and skin:** The presence of joint effusions, tenderness, rashes, edema, and cyanosis should be recorded. It is also important to note capillary refill and peripheral pulses.
11. **Neurologic examination:** Patients who present with neurologic complaints require a thorough assessment, including mental status, cranial nerves, strength, sensation, reflexes, and cerebellar function.

CLINICAL PEARL

- A thorough understanding of functional anatomy is important to optimally interpret the physical examination findings.

12. **Laboratory assessment depends on the circumstances**
    a. CBC, or complete blood count, can assess for anemia, leukocytosis (infection), and thrombocytopenia.
    b. Basic metabolic panel: electrolytes, glucose, blood urea nitrogen (BUN), and creatinine (renal function).
    c. Urinalysis and/or urine culture to assess for hematuria, pyuria, or bacteriuria. A pregnancy test is important in women of childbearing age.
    d. Aspartate aminotransferase (AST), alanine aminotransferase (ALT), bilirubin, alkaline phosphatase for liver function; amylase and lipase to evaluate the pancreas.
    e. Cardiac markers (creatine kinase myocardial band [CK-MB], troponin, myoglobin) if coronary artery disease or other cardiac dysfunction is suspected.
    f. Drug levels such as acetaminophen level **in possible overdoses.**
    g. Arterial blood gas measurements give information about oxygenation, carbon dioxide, and pH readings.

13. **Diagnostic adjuncts**
    a. Electrocardiogram if cardiac ischemia, dysrhythmia, or other cardiac dysfunction is suspected.
    b. Ultrasound examination is useful in evaluating pelvic processes in female patients (eg, pelvic inflammatory disease, tuboovarian abscess) and in diagnosing gall stones and other gallbladder disease. With the addition of color-flow Doppler, deep venous thrombosis and ovarian or testicular torsion can be detected.
    c. Computed tomography (CT) is useful in assessing the brain for masses, bleeding, strokes, and skull fractures. CTs of the chest can evaluate for masses, fluid collections, aortic dissections, and pulmonary emboli. Abdominal CTs can detect infection (abscess, appendicitis, diverticulitis), masses, aortic aneurysms, and ureteral stones.
    d. Magnetic resonance imaging (MRI) helps to identify soft-tissue planes very well. In the emergency department setting, this is most commonly used to rule out spinal cord compression, cauda equina syndrome, and epidural abscess or hematoma.
    e. **Screening tests:** Fasting lipid panel can demonstrate the cholesterol level, including the low-density lipoprotein (LDL) levels, which have prognostic significance in coronary heart disease; fasting glucose and thyroid tests may be important; in many centers, dual-energy x-ray absorptiometry (DEXA) is the test of choice to monitor bone mineral density; the mammogram is the examination of choice to assess for subclinical breast cancer; fecal occult blood testing, flexible sigmoidoscopy, double-contrast barium enema, and colonoscopy are used to screen for colon cancer.

Part 2. Approach to Clinical Problem Solving

CLASSIC CLINICAL PROBLEM SOLVING

There are typically four distinct steps that the family physician undertakes to systematically solve most clinical problems:

1. Making the diagnosis
2. Assessing the severity of the disease
3. Treating based on the stage of the disease
4. Following the patient's response to the treatment

Making the Diagnosis

This is achieved by carefully evaluating the patient, analyzing the information, assessing risk factors, and developing a list of possible diagnoses (the differential). Usually a long list of possible diagnoses can be pared down to a few of the most likely or most serious ones, based on the clinician's knowledge, experience, assessment of the likelihood of having a condition (pretest probability), and selective testing. For example, a patient who complains of upper abdominal pain and has a history of nonsteroidal anti-inflammatory drug (NSAID) use may have peptic ulcer disease; another patient who has abdominal pain, fatty food intolerance, and abdominal bloating may have cholelithiasis. Yet another individual with a 1-day history of periumbilical pain that now localizes to the right lower quadrant may have acute appendicitis.

CLINICAL PEARL

- The first step in clinical problem solving is making the diagnosis.

Assessing the Severity of the Disease

After establishing the diagnosis, the next step is to characterize the severity of the disease process; in other words, to describe "how bad" the disease is. This may be as simple as determining whether a patient is "sick" or "not sick." Is the patient with a urinary tract infection septic or stable for outpatient therapy? In other cases, a more formal staging may be used. For example, cancer staging is used for the strict assessment of extent of malignancy.

CLINICAL PEARL

- The second step in clinical problem solving is to establish the severity or stage of disease. This usually impacts the treatment and/or prognosis.

Treating Based on Stage

Many illnesses are characterized by stage or severity because this affects prognosis and treatment. As an example, a formerly healthy young man with pneumonia and no respiratory distress may be treated with oral antibiotics at home. An older person with emphysema and pneumonia would probably be admitted to the hospital for IV antibiotics. A patient with pneumonia and respiratory failure would likely be intubated and admitted to the intensive care unit for further treatment.

CLINICAL PEARL

- The third step in clinical problem solving is tailoring the treatment to fit the severity or "stage" of the disease.

Following the Response to Treatment

The final step in the approach to disease is to follow the patient's response to the therapy. Some responses are clinical, such as improvement (or lack of improvement) in a patient's pain. Other responses may be followed by testing (eg, monitoring the anion gap in a patient with diabetic ketoacidosis). The clinician must be prepared to know what to do if the patient does not respond as expected. Is the next step to treat again, to reassess the diagnosis, or to follow up with another more specific test?

CLINICAL PEARL

- The fourth step in clinical problem solving is to monitor treatment response or efficacy. This may be measured in different ways—symptomatically or based on physical examination or other testing. For the emergency physician, the vital signs, oxygenation, urine output, and mental status are the key parameters.

Part 3. Approach to Reading

The clinical problem-oriented approach to reading is different from the classic "systematic" research of a disease. Patients rarely present with a clear diagnosis; hence, the student must become skilled in applying textbook information to the clinical scenario. Because reading with a purpose improves the retention of information, the student should read with the goal of answering specific questions. There are several fundamental questions that facilitate clinical thinking. These are:

1. What is the most likely diagnosis?
2. How would you confirm the diagnosis?
3. What should be your next step?

4. What is the best screening strategy in this situation?
5. What are the risk factors for this condition?
6. What are the complications associated with the disease process?
7. What is the best therapy?

CLINICAL PEARL

- Reading with the purpose of answering the seven fundamental clinical questions improves retention of information and facilitates the application of "book knowledge" to "clinical knowledge."

What Is the Most Likely Diagnosis?

The method of establishing the diagnosis was discussed in the previous section. One way of determining the most likely diagnosis is to develop standard "approaches" to common clinical problems. It is helpful to understand the most common causes of various presentations, such as "the worst headache of the patient's life is worrisome for a subarachnoid hemorrhage" (see the Clinical Pearls at end of each case).

The clinical scenario would be something such as:

A 38-year-old woman is noted to have a 2-day history of unilateral, throbbing headache with photophobia. What is the most likely diagnosis?

With no other information to go on, the student would note that this woman has a unilateral headache with photophobia. Using the "most common cause" information, the student would make an educated guess that the patient has a migraine headache. If instead the patient is noted to have "the worst headache of her life," the student would use the Clinical Pearl:

The worst headache of the patient's life is worrisome for a subarachnoid hemorrhage.

CLINICAL PEARL

- The more common cause of a unilateral, throbbing headache with photophobia is a migraine, but the main concern is subarachnoid hemorrhage. If the patient describes this as "the worst headache of her life," the concern for a subarachnoid bleed is increased.

How Would You Confirm the Diagnosis

In the scenario above, the woman with "the worst headache" is suspected of having a subarachnoid hemorrhage. This diagnosis could be confirmed by a CT scan of the head and/or lumbar puncture (LP). The student should learn the limitations of various diagnostic tests, especially when used early in a disease process. The LP **showing xanthochromia (red blood cells) is the "gold standard" test for diagnosing subarachnoid hemorrhage, but it may be negative early in the disease course.**

What should be your next step? This question is difficult because the next step has many possibilities; the answer may be to obtain more diagnostic information, stage the illness, or introduce therapy. It is often a more challenging question than "What is the most likely diagnosis?" because there may be insufficient information to make a diagnosis and the next step may be to pursue more diagnostic information. Another possibility is that there is enough information for a probable diagnosis, and the next step is to stage the disease. Finally, the most appropriate answer may be to treat. Hence, from clinical data, a judgment needs to be rendered regarding how far along one is on the road of:

1. Make the diagnosis → 2. Stage the disease →
3. Treat based on stage → 4. Follow response

Frequently, the student is taught "to regurgitate" the same information that someone has written about a particular disease, but is not skilled at identifying the next step. This talent is learned optimally at the bedside, in a supportive environment, with freedom to make educated guesses, and with constructive feedback. A sample scenario might describe a student's thought process as follows:

1. **Make the diagnosis:** "Based on the information I have, I believe that the patient has a small bowel obstruction from adhesive disease *because* he presents with nausea and vomiting, abdominal distension, and high-pitched hyperactive bowel sounds, and has dilated loops of small bowel on x-ray."
2. **Stage the disease:** "I don't believe that this is severe disease as he does not have fever, evidence of sepsis, intractable pain, peritoneal signs, or leukocytosis."
3. **Treat based on stage:** "Therefore, my next step is to treat with nothing per mouth, nasogastric (NG) tube drainage, IV fluids, and observation."
4. **Follow response:** "I want to follow the treatment by assessing his pain (I will ask him to rate the pain on a scale of 1 to 10 every day), his bowel function (I will ask whether he has had nausea, vomiting, or passed flatus), his temperature, abdominal examination, serum bicarbonate (for metabolic acidemia), white blood cell count, and then reassess him in 48 hours."

In a similar patient, when the clinical presentation is unclear, perhaps the best "next step" may be diagnostic such as an oral contrast radiologic study to assess for bowel obstruction.

CLINICAL PEARL

- Usually, the vague query, "What is your next step?" is the most difficult question because the answer may be diagnostic, staging, or therapeutic.

What Is the Best Screening Strategy in This Situation?

A major role of the family physician is screening for common and/or dangerous conditions where there may be interventions to alleviate disease. Cost-effectiveness, ease of the screening modality, wide availability, and presence of intervention are

some of the important issues. The age, gender, and risk factors for the disease process in question play roles. In general, age is one of the most important risk factors for cancer. For instance, with breast cancer, an annual or biannual mammogram is recommended in women older than age 50. This imaging technique is widely available, inexpensive, safe, has been shown to decrease mortality. In the United States, screening examinations with strong evidence for effectiveness are fully covered by insurance.

What Are the Risk Factors for This Process?

Understanding the risk factors helps the practitioner to establish a diagnosis and to determine how to interpret tests. For example, understanding risk-factor analysis may help in the management of a 55-year-old woman with anemia. If the patient has risk factors for endometrial cancer (such as diabetes, hypertension, anovulation) and complains of postmenopausal bleeding, she likely has endometrial carcinoma and should have an endometrial biopsy. Otherwise, occult colonic bleeding is a common etiology. If she takes NSAIDs or aspirin, then peptic ulcer disease is the most likely cause.

CLINICAL PEARL

- Being able to assess risk factors helps to guide testing and develop the differential diagnosis.

What Are the Complications to This Process?

Clinicians must be cognizant of the complications of a disease, so that they will understand how to follow and monitor the patient. Sometimes the student has to make the diagnosis from clinical clues and then apply his/her knowledge of the consequences of the pathologic process. For example, "A 26-year-old man complains of right lower-extremity swelling and pain after a trans-Atlantic flight" and his Doppler ultrasound reveals a deep vein thrombosis. Complications of this process include pulmonary embolism (PE). Understanding the types of consequences also helps the clinician to be aware of the dangers to a patient. If the patient has any symptoms consistent with a PE, a ventilation-perfusion scan or CT scan with angiographic imaging of the chest may be necessary.

What Is the Best Therapy?

To answer this question, not only does the clinician need to reach the correct diagnosis and assess the severity of the condition, but (s)he must also weigh the situation to determine the appropriate intervention. For the student, knowing exact dosages is not as important as understanding the best medication, route of delivery, mechanism of action, and possible complications. It is important for the student to be able to verbalize the diagnosis and the rationale for the therapy. It is also important that the therapy choice takes into consideration patient beliefs and desires. Evidence-based medicine combines the best available evidence, the clinicians' experience and the patient's beliefs and values.

CLINICAL PEARL

- Therapy should be logical and based on the severity of disease and the specific diagnosis. An exception to this rule is in an emergent situation, such as respiratory failure or shock, when the patient needs treatment even as the etiology is being investigated.

Summary

1. There is no replacement for a meticulous history and physical examination.
2. There are four steps in the clinical approach to the family medicine patient: making the diagnosis, assessing severity, treating based on severity, and following response.
3. There are seven questions that help to bridge the gap between the textbook and the clinical arena.

REFERENCES

South-Paul J, Matheny S. *Current Diagnosis and Treatment in Family Medicine*. 4th ed. New York, NY: McGraw-Hill Education; 2015.

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SECTION II

Listing of Cases

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Listing by Case Number

Listing by Disorder (Alphabetical)