

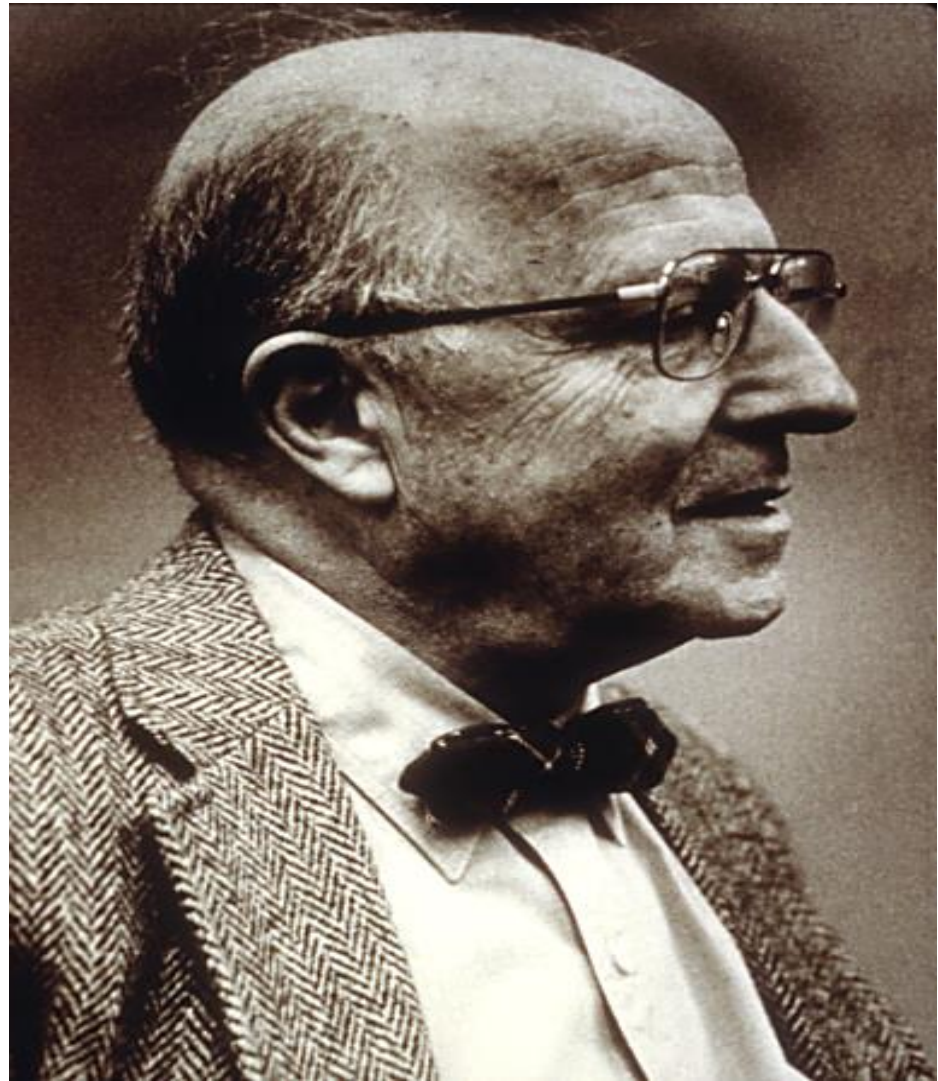
Teaching Clinical Reasoning in the context of Clinical Skills Training

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MEDICINE *of* THE HIGHEST ORDER



Dr. George Engel
1913-1999

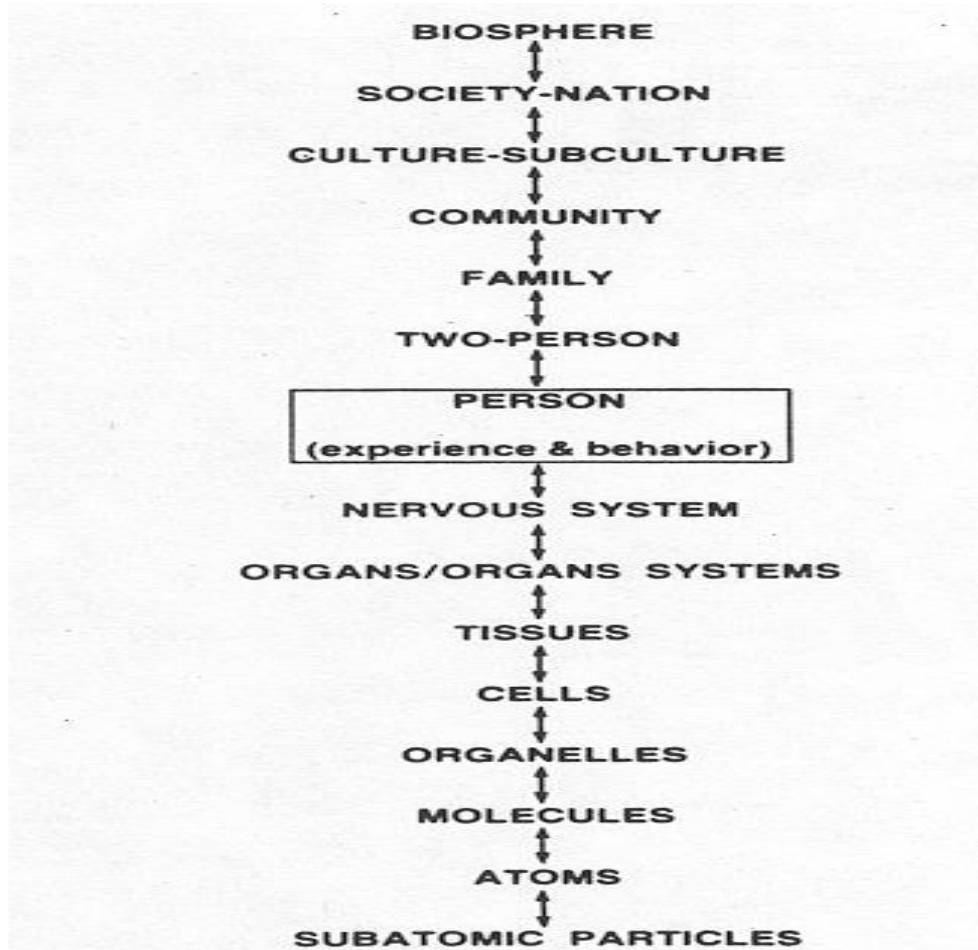


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BPS MODEL

Hierarchy of Natural Systems



The Medical Interview

Specific Teaching and Learning Methods

Specific skills based approach

Similar sequence to all medical encounters

Experiential learning (observation, feedback, rehearsal)

- Role play
- Standardized patients
- Real patients

Includes knowledge and attitudinal learning

The Medical Interview

A Collaborative Partnership

Patient-centered approach

- Conceptual and ethical background
- Research showing better outcomes

Physician has an active role

- Clarification of medical details of patient's story
- Physical examination and laboratory
- Clinical reasoning - making an accurate diagnosis
- Treatment - developing a treatment plan with patient

Mutuality- not physician or patient dominance

The Medical Interview

The Tasks

- 1) Initiate the session
- 2) Patient-centered interview
- 3) Clarify the patient's concerns
- 4) Build the relationship
- 5) Past medical history, context, habits
- 6) Clinical reasoning
- 7) Explanation and planning
- 8) Closing the session

The Medical Interview

Task 1: Initiate the Session

Greet

Attend to immediate comfort

Establish rapport

Elicit all concerns (patient and physician)

Set a common agenda

The Medical Interview

Task 2: Patient-centered Interview

Explore the patient's main concern(s)

Seek attributions and associations

Hear the patient's ideas, expectations, feelings

Use open-ended questions; encouragement

Summarize what you have heard

The Medical Interview

Task 3: Clarify the Patient's Concerns

Define the 7 characteristics of main symptoms

- Location and radiation
- Quality
- Quantity and severity
- Chronology; time course
- Setting
- Aggravating and alleviating factors
- Associated symptoms

Focus questions to narrow diagnostic options

Test hypotheses; look for patterns

Focused review of systems

The Medical Interview

Task 4: Build the Relationship

Develop rapport; show interest; listen

Attend to cues of emotional distress

Respond to emotions

Involve patient in medical decisions

Task 4: Building the Relationship Skills: Responding to Emotion

Acknowledge

- *You seem frightened.*

Legitimize

- *Anyone in your shoes would be frightened.*

Explore

- *Tell me what is the most frightening part.*

Empathize

- *Your experience certainly sounds frightening.*

Support and nonabandonment

- *We are going to work through this together.*

The Medical Interview

Task 5: Past Medical History, Context, Habits

Past medical, psychiatric, surgical history

Treatments, medications, allergies

Health habits (smoking, alcohol, exercise,...)

Family history / genogram

Personal and social history

Comprehensive review of systems

The Medical Interview

Task 6: Clinical Reasoning

Step 1: Generate a problem list

Step 2: Brainstorm diagnostic possibilities

Step 3: Place general probabilities on dx's

Step 4: Decide on probabilistic thresholds

Step 5: Select areas for further inquiry

Step 6: Act once thresholds are achieved

The Medical Interview

Task 7: Explanation and Planning

Find out what the patient knows

Find out what the patient wants to know

Provide information in small amounts

Achieve a common understanding

Share decision-making

Negotiate differences

The Medical Interview

Task 8: Closing the Session

Summarize

Make a clear plan for follow up

Reinforce agreed-upon responsibilities

Ask about any final questions

The Medical Interview Summary

Fundamental clinical skill

- Basis for focused physical examination and lab testing
- Basis for accurate diagnosis and treatment
- Basis for engagement of patient and family

Clinical encounters follow a similar sequence

- Hearing and clarifying the patient's story
- Establishing a therapeutic relationship
- Making an accurate diagnosis
- Jointly establishing a treatment plan

Task 6: Clinical Reasoning The Medical Interview

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2017

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Task 6: Clinical Reasoning Evidence for Problems

Not taught with same rigor as Hx and PE

Students use different strategies than clinicians

Thinking either biomedical or psychosocial dx

Over-reliance on clinical laboratory

- Potential to generate false positives
- Unnecessary expense

Tremendous variability between physicians

Goals

To make an accurate diagnosis

- To guide effective treatment
- To reduce unnecessary uncertainty
- To provide explanation and reassurance

To rule-in most probable and rule-out most worrisome diagnoses

- To confirm hypotheses from hx and physical
- To guide proper use and interpretation of dx tests
- To pass probability thresholds for clinical actions

Goals

To use diagnostic testing efficiently

- To develop accurate pretest probabilities
- To choose tests with the highest yield
- To minimize unnecessary and misleading tests

To make your clinical reasoning transparent

- To communicate better with patients / colleagues
- To improve your skills and efficiency

Overview of Skills

Initial diagnostic strategies

Broadening and narrowing the differential

Selecting appropriate diagnostic tests

Communicating your findings (Task 7)

Initial Diagnostic Approaches

Exhaustion

Pattern recognition (Gestalt)

Multiple branching (arborization)

Hypothetico-deductive

Exhaustion

Rigorous collection of all medical facts

All areas explored in equal depth

No hypotheses formed or tested

All data sifted through at the end

Advantage: may unearth surprising details

Disadvantage: very inefficient

Pattern Recognition

Realization patient's presentation conforms known picture

May be associated with different senses

- Visual: the "stare" of a patient with Grave's disease
- Olfactory: the ketotic smell of a patient with ketoacidosis

Some patterns may involve multiple senses

- Slow speech, discouragement, tone of a severely depressed patient
- Facial asymmetry, slurred speech, denial of a stroke patient

Advantage: efficient; improves with experience

Disadvantage: potential for premature closure; miss atypicals

Multiple Branching

Preset algorithms for exploring problems

A series of closed-ended “yes”/“no” queries

Each answer determines the next inquiry

Advantage: inherent logic and efficiency; minimizes unnecessary testing; based on probability data

Disadvantage: can severely narrow range of inquiry; population-based; little room for uniqueness

Hypothetico-Deductive

Occurs throughout the medical encounter

Begins during initial phases of interview

- Short list of diagnostic possibilities
- May be based on nature of symptoms, epidemiology, pattern recognition, algorithms

Continuously developed and refined

- Clarification skills in medical interview
- Focused physical examination

Hypothetico-Deductive

Performed by students and experienced clinicians

- Validity, accuracy and efficiency improve with experience
- Experienced clinicians entertain relatively few hypotheses, and move to closure quickly

Advantages: allows for continuous assessment and refinement of hypotheses; efficient and accurate

Disadvantages: may lead to premature closure; may miss atypical presentations

Six Steps in Probabilistic Clinical Reasoning

Step 1: Generate a problem list

Step 2: Brainstorm diagnostic possibilities

Step 3: Place general probabilities on dx's

Step 4: Decide on probabilistic thresholds

Step 5: Select areas for further inquiry

Step 6: Act once thresholds are achieved
(or repeat steps 2-5)

Step 1: Generate a Problem List

- Name problems at level known
- Use diagnostic language only when certain
 - *Chest pain vs. angina or coronary artery disease*
 - *Abdominal pain vs. gall bladder disease*
- Make the list inclusive and multidimensional
 - *Include all "loose ends" - tender spots, rashes,...*
 - *Include psychosocial problems - recent losses, stress*

Step 2: Brainstorm Diagnostic Possibilities Around Major Problem(s)

Encourage ideas even if they don't seem to fit

Be non-critical at this phase

Look at the loose ends on the problem list, see if new ideas emerge

Think of common and rare conditions

Keep going until no more ideas come

Step 3: Place General Probabilities on Diagnoses

- Identify relevant medical evidence
 - *Has this problem / presentation been studied?*
 - *If so, how valid is the study?*
 - *How well does this patient fit study criteria?*
- Factor in basic epidemiology
 - *Common things are common*
 - *Atypical common more frequent than typical rare*
 - *On the other hand, rare things do occur*

Step 3: Place General Probabilities on Diagnoses

Utilize general categories at first

- “Likely” - diagnoses that best fit
- “Possible” - diagnoses that could fit
- “Unlikely” - diagnoses that don't fit well

Put probabilities on ‘likely’ and ‘possible’ diagnoses

Temporarily set aside ‘unlikely’ diagnoses

Total of probabilities must equal 100%

Step 4: Decide on Probabilistic Thresholds for Action

Work-up strategy depends on category

- “Likely” - aggressively work-up; rule-in
- “Possible” - work-up if life threatening or would significantly change management

Be sure further inquiry will make a difference

- *What will be done differently with results?*
- *How certain must I be to treat?*
- *How certain must I be to stop the work-up?*

Step 5: Select Areas for Further Inquiry

Goal of inquiry: reduce diagnostic uncertainty

Potential domains of inquiry

- Further history from patient and/or family
- More detailed and specific physical examination
- Carefully selected diagnostic testing

Discuss diagnostic approaches with patient

- Risks and benefits; alternative approaches
- Ensure informed consent

Step 5: Select Areas for Further Inquiry

A test cannot be interpreted properly without considering the pre-test probability

When pretest probability is high

- *A positive test tends to confirm the diagnosis*
- *An unexpectedly negative test usually does not rule-out disease*

When pretest probability is low

- *A normal test tends to rule out disease*
- *An unexpectedly positive test usually does not rule-in disease*

Step 6: Act Once Thresholds are Achieved

- Do I have a working diagnosis?
 - *Enough information to proceed with Rx without testing*
 - *Keeping an open mind to unexpected changes*
- How much certainty is needed for this Dx or Rx?
- Are the worrisome diagnoses of high enough probability to justify more testing?
- Does early detection make a difference? Can I wait for the natural history to tell me more?

Task6: Clinical Reasoning

Some Pitfalls

Premature closure:

- *What else could be causing this if it is not XXX?*

Considering only one hypothesis at a time:

- *If you are ruling out a serious diagnosis with a 25% probability, what makes up the other 75%?*

Overly shaping the patient's story:

- *Go back and re-listen to the patient's story of illness.*

Task6: Clinical Reasoning

Some More Pitfalls

Endless inquiry without decisions:

- *How much will my probabilities change with another test?*

Ignoring data that don't fit:

- *What are the loose ends? Are there potential factors I am ignoring?*

Overemphasis on recent experience (recall bias):

- *Is my experience with XXX clouding my judgment?*

Over-reliance on prior diagnoses:

- *Am I skeptical enough of the diagnoses already made?*

Task6: Clinical Reasoning

Additional confounders around inpatient teaching

Selection bias re who gets presented in conferences

- Morning report
- Palliative care conference
- Morbidity and mortality round
- “Interesting” cases

Complexity of patients who make it into the hospital

- Multiple diagnoses at the same time
- Heavy exposure of acute on chronic disease
- Medical vs surgical services
- Much more challenging for beginners

Task 6: Clinical Reasoning Summary

Clinical reasoning is a core clinical skill that improves with practice

Clinical hypotheses should be generated and tested throughout the medical interview and physical exam

Eventually, probabilities should be placed on clinical hypotheses which guide subsequent testing and Rx

Clinicians should learn how to articulate their thinking with patients and colleagues

Some illustrative clinical examples

Either standardized patients or paper cases

25 year old asking about screening for breast cancer

- *Adding in a family history of an older relative*
- *Adding in BRAC positivity*

40 year old man with “atypical” chest pain

- *Adding in a history of anxiety and panic attacks*
- *Adding in a family history of early coronary disease*

Bloody diarrhea in a 50 year old

- *Adding in a travel history to a high risk area*
- *Adding in a strong family history of IBD or colon cancer*

Potential Contexts Where This Approach is Used

Introduction to Clinical Medicine

Clinical Interviewing Rounds

Comprehensive Assessment at the End of Years 2 and 3

Bedside Teaching Rounds

Morning Report

Morbidity and Mortality Rounds

Comments and Discussion

So far...

Case Illustration

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Case Introduction

35 y.o. grad student; religion and psych

Buddhist: connection, consciousness, quality

Very healthy; very stressed about her studies

Upper abdominal pain

No nausea, vomiting, bowel changes, blood

No HIV risks, drugs, ETOH, NSAIDS

Initial physical examination normal

Six Steps in Probabilistic Clinical Reasoning

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Continuation of Case

History

- No response to antacids
- Early satiety; unable to eat full meals
- Lost 5 pounds
- No vomiting, blood; few bowel movements

Physical examination

- Fullness and probable mass in epigastrium
- Stool guaiac negative

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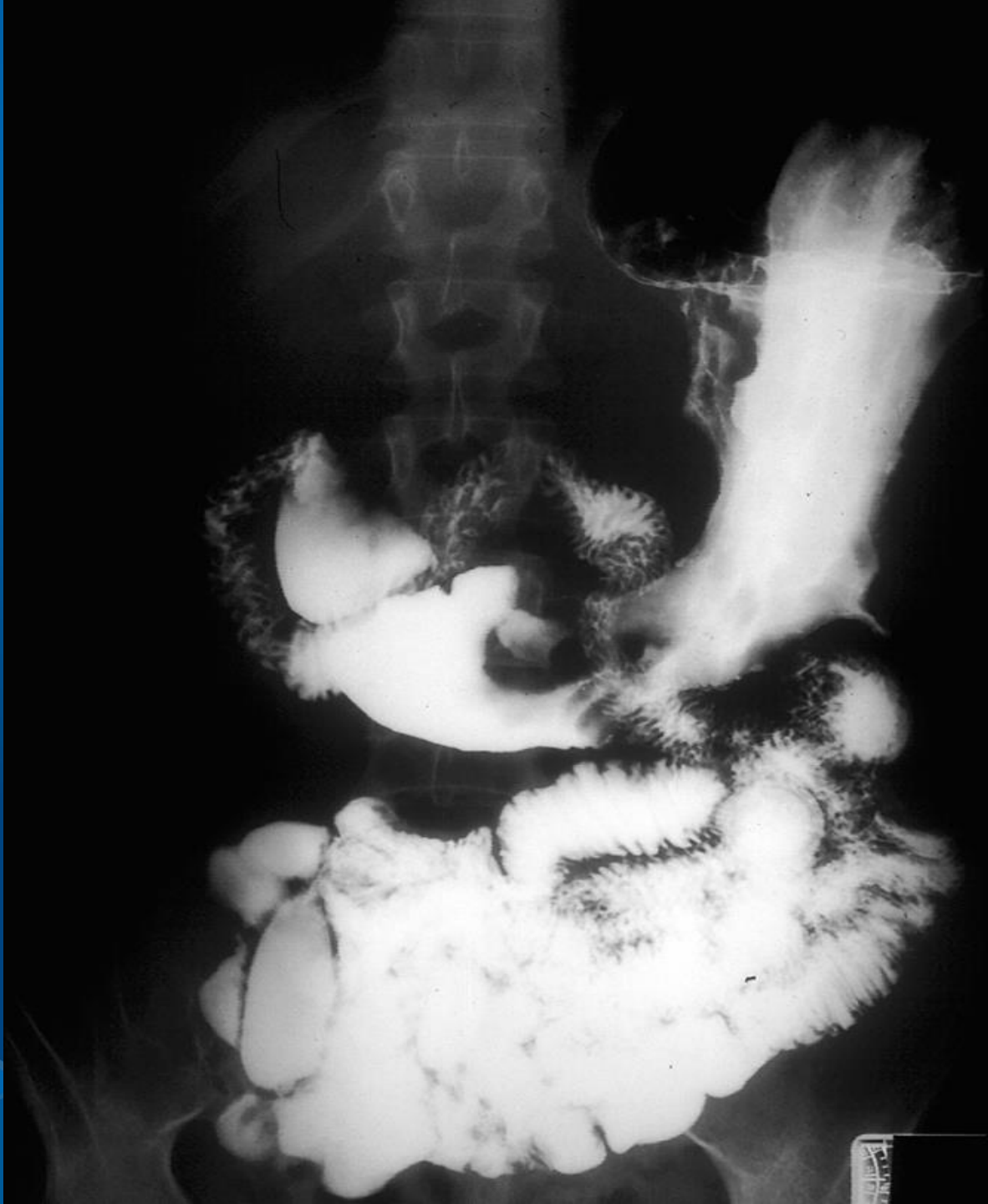
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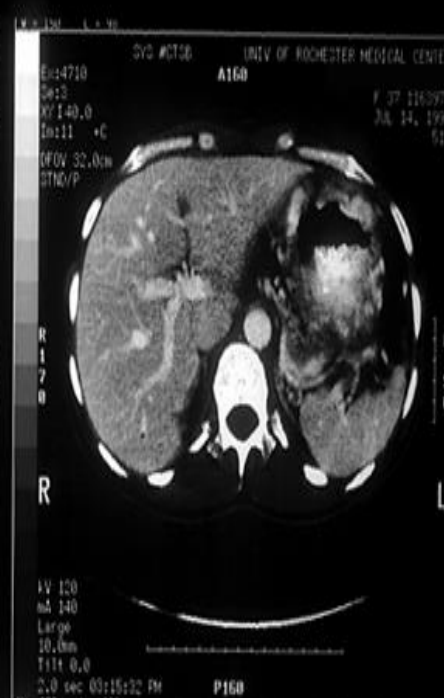
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What should she be told at this time?

What are your next steps?



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What is most likely now?

Likely possibilities

- Lymphoma
- Gastric cancer

Rare possibilities

- Benign tumors of stomach wall muscle
- Carcinoid cancer
- Sarcoma; leiomyosarcoma

What clinical reasoning lessons come from this case?

Comments and Discussion



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