

Promoting Effective Teaching in Clinical Settings

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Disclosures

- ▶ I have no conflicts in relation to this presentation.

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Objectives

- ▶ Describe effective strategies for teaching in the clinical environment to promote engagement and active learning
- ▶ Establish procedures to prepare your learners for the clinic experience
- ▶ Understand the use of Diagnostic and Management scripts in clinical teaching
- ▶ Formulate Clinical reasoning schemas for common diagnoses in Allergy/Immunology

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Spoiler Alert: Nothing I'm saying is *novel*

- ▶ It's likely that you are already implementing many of the things I will review today without realizing it
- ▶ Giving these techniques a name is helpful not only for teaching but also for understanding the target points for *remediation*

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Background

- ▶ Clinical teachers must diagnose both
 - ▶ the patient's clinical problem
 - ▶ the learner's ability and skill
- ▶ Physicians learn to reason through different connections as physicians than they did as medical students
 - ▶ Rather than memorizing facts, physicians' clinical learning involves assimilation of examples which can accumulate to influence pattern recognition



Norman, Bowen 2006

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“To teach is to learn twice.” Joubert



Whitman and Schwenk 1994

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Pre-clinical work



Review prior experiences

- Part of orientation week?
- Bootcamp lectures?



Establish an operating plan

- 1) Agree on roles and expectations
- 2) Discuss salient points of history taking and social determinants review which should be addressed (modified by visit type?)
- 3) Review what an Allergy/Immunology exam looks like

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Agree on roles and expectations



- ▶ Orient the learner to the clinic and staff
 - ▶ Establish arrival times (!)
- ▶ Based on level of the learner:
 - ▶ Discuss their introduction to the patient/family to describe how they fit into the medical team
 - ▶ Review who will take the lead on the various aspects of the visit (H&P, wrap up, etc.); this will change as they advance
- ▶ Remind learners that the wide range of faculty will expose them to a variety of treatment plans which are all valid
- ▶ Discuss feedback timing (during clinic, after reviewing notes, etc)

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Review History-taking

- ▶ Review EMR templates for collecting information, if used
- ▶ Chart prep to minimize reviewing charts in patient rooms
- ▶ Review expectations for eliciting points of history (flexible):
 - ▶ types and timing of symptoms
 - ▶ environmental and occupational exposures
 - ▶ prior diagnoses or associated diseases
 - ▶ prior treatments
 - ▶ family history
 - ▶ identify social determinants which can impact care

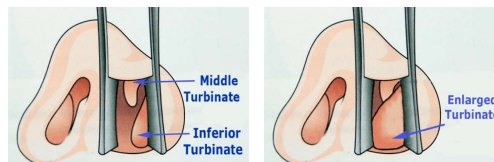


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Establishing a baseline physical exam

- ▶ General expectations for systems which should be reviewed
- ▶ Focus on allergy-immunology *can't miss* findings
- ▶ Pictures are worth a thousand words- ie. are you talking about the same thing?
- ▶ Pediatric examinations



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Moving to the clinic...

- ▶ Take a population of learners who have been part of a medical team environment for the majority of their training and make them into independent, self-sufficient providers who can function one-on-one with patients

Piece of cake, right?



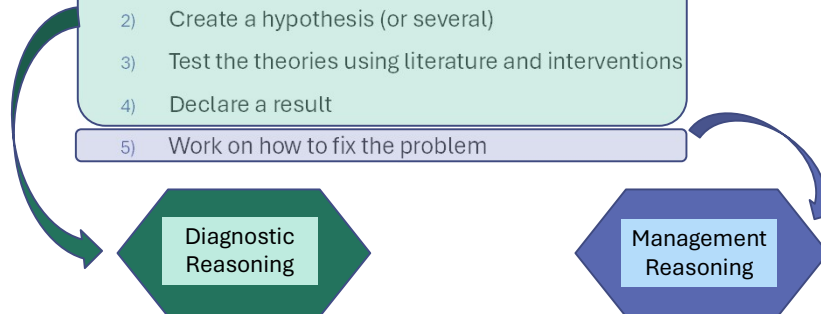
Clinical Reasoning

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Clinical Reasoning, what is it?

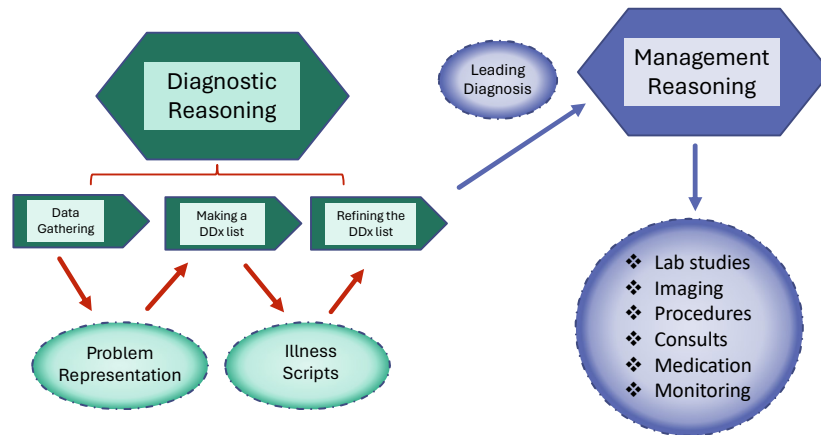
- ▶ Generally speaking, this is a nebulous term about clinical care which is reminiscent of the scientific method:

- 1) Identify a problem
- 2) Create a hypothesis (or several)
- 3) Test the theories using literature and interventions
- 4) Declare a result
- 5) Work on how to fix the problem



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The Schema of Clinical Reasoning

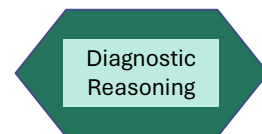


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Diagnostic Reasoning

- ▶ Classification task that assigns meaningful labels to a constellation of
 - ▶ History and Symptoms
 - ▶ Physical examination findings
 - ▶ Test and imaging results
- ▶ Focus for early learners- residents, early fellows

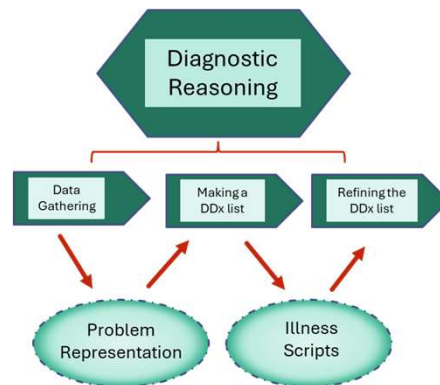



Cook 2018 Y. COOK
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Diagnostic Reasoning

- Data Gathering
 - Involves data collection and synthesis
 - Create a “problem representation” or “one-liner”
- Develop a differential diagnosis
- Prioritize the differential
 - based on information gathered as well as “Illness scripts”




Cook 2018, Bowen 2006 

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Problem representation

- ▶ This is a one-sentence summarization which concisely reports the pertinent patient and illness information for the visit
- ▶ This step moves a learner from the “reporter” phase of medical history taking with long narratives to more global understanding of the presentation



Audetat 2017, part 2 

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Problem representation- Words matter

From this:

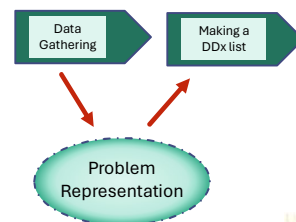
- ▶ This 54yo gentleman presents with...
- ▶ pain and swelling in his knee since last night.
- ▶ He's had this a few times before in the same knee.
- ▶ Doesn't recall an injury.
- ▶ He doesn't have any other medical issues.

Bowen 2006 

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Creating a differential diagnosis

- ▶ Creation of a list of possible diagnoses based on a general symptom
 - ▶ Compare and contrast on the basis of the relationship among the actual clinical data on the case
 - ▶ Based on answers to some questions during the H&P, so the learner needs to stay on task for this
 - ▶ Prioritization by likelihood





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Illness scripts



- ▶ Specialized mental information packets that link clinically relevant knowledge about general disease categories, specific examples of diseases, as well as any associated conditions that contribute to diseases
- ▶ They work because:
 - 1) Enable pattern recognition of epidemiological features.
 - 2) Inform history-taking based on the contextual patterns
 - 3) Integrate new clinical knowledge with prior knowledge.
 - 4) Improve diagnostic efficiency and accuracy.

Audetat 2017, Gavinsky 2019



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Illness scripts can prioritize your differential

- ▶ These are provider-dependent, but knowledge recalled as illness scripts has a predictable structure:
 - ▶ the Epidemiology/Risk factors
 - ▶ the Pathophysiology
 - ▶ Signs and symptoms of disease



Teaching Questions	Appendicitis	Acute Gastroenteritis
Predisposing Condition:	Predisposing Condition:	Predisposing Condition:
What epidemiologic factors influence the probability that a patient is at risk for disease (eg age, gender, past medical history, and environmental influences)?	<ul style="list-style-type: none"> • no clear predisposing factors 	<ul style="list-style-type: none"> • sick contacts • overseas travel
Pathophysiologic Insult:	Pathophysiologic Insult:	Pathophysiologic Insult:
What are the major pathophysiologic insults that contribute to the disease state?	<ul style="list-style-type: none"> • fecalith • ischemia of bowel wall • local inflammation • perforation 	<ul style="list-style-type: none"> • effacement of villi • viral or bacterial invasion • local inflammation
Clinical Consequences:	Clinical Consequences:	Clinical Consequences:
What are the symptoms and signs that may result from the predisposing condition or pathophysiologic insult?	<ul style="list-style-type: none"> • severe, localized pain • nausea, vomiting, anorexia, diarrhea • fever 	<ul style="list-style-type: none"> • mild, diffuse pain • nausea, vomiting, anorexia, diarrhea • fever +/-
Step 5: Select the Illness Script That Best Matches the Patient's Presentation: This patient's presentation is most consistent with acute appendicitis.		

Fleming 2012, Bowen 2006



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Diagnostic Reasoning- Case

▶ Patient presentation

- ▶ 5 yo child with daily congestion for the last 6 months
- ▶ Has runny nose and sneezing which is worse in the morning, improves later in the day
- ▶ Takes daily cetirizine with mild decrease in symptoms
- ▶ Family history- seasonal allergies in mom
- ▶ Environmental history- moved into a new house in August (carpet, pet dog) and started kindergarten, which he loves. Dad smokes *outside* the home.
- ▶ No other medical history

▶ Problem representation

- ▶ 5 yo otherwise healthy child who presents with uncontrolled chronic rhinitis

...in the setting of both environmental exposures and infectious triggers



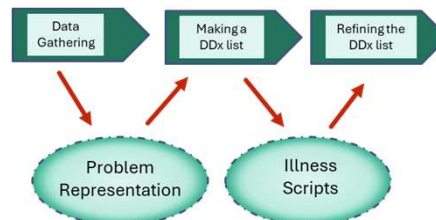
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Diagnostic Reasoning- Starting the DDx

▶ Chronic rhinitis

- ▶ Allergic rhinitis, perennial
- ▶ Infection
- ▶ Irritant-induced Rhinitis
- ▶ Vasomotor rhinitis
- ▶ Atrophic rhinitis
- ▶ Drug-induced rhinitis
- ▶ Hormonal rhinitis
- ▶ CSF leak




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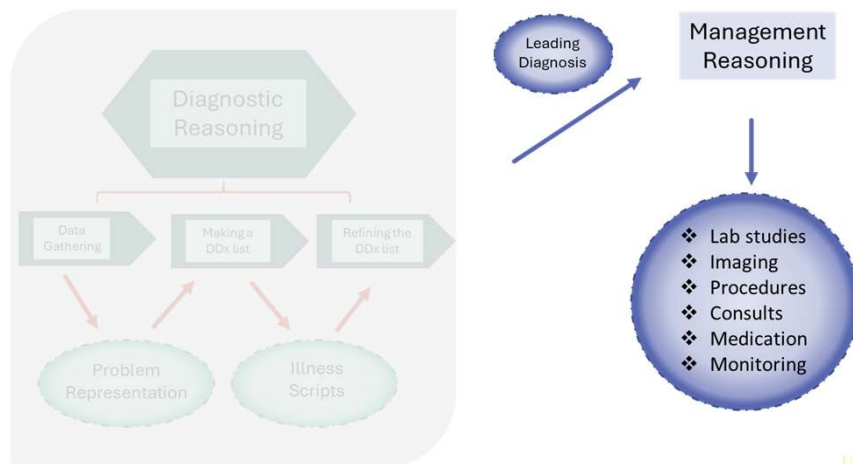
Diagnostic Reasoning- Illness scripts

Categories	Allergic rhinitis, perennial	Infection-induced rhinitis	Irritant-induced rhinitis
Epidemiology/ Risk Factors	Family History of atopy	High infection exposure at school	Paternal smoking
Pathophysiology	Contact-related inflammation and vasodilation of nasal membranes	Viral-induced nasal inflammation and vasodilation	Airborne substances and particulates which induce Inflammation and vasodilation of nasal membranes
Signs and Symptoms	Rhinorrhea, congestion, sneezing	Intermittent rhinorrhea, congestion, sneezing; possible fever	Rhinorrhea, congestion, sneezing
Select the best script for this patient's presentation...			

Fleming 2012 

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Where we are so far...






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Management Reasoning


- ▶ The process of making decisions about patient management, including choices about treatment, follow-up visits, further testing, and allocation of limited resources
 - ▶ This is situationally-dependent and there is no one right answer
- ▶ Relies on the principles of adaptive expertise rather than routine expertise; adjustments are part of the plan

Cook 2018, Parsons 2020 

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Management Reasoning

- ▶ This is a task of prioritization, with essential competencies in
 - ▶ **Patient-centered care**
 - ▶ focusing on patient/family preference and negotiations with each
 - ▶ **Awareness of logistical constraints**
 - ▶ societal values and resource availability influence treatment planning
 - ▶ **Tolerance of uncertainty**
 - ▶ plans are expected to evolve over time, monitoring and adjustments to therapy are necessary

Cook 2018, Cook 2019 

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Management Scripts

- ▶ The mental schema that clinicians develop and use when making management decisions to address:

- ▶ Complexity of care
- ▶ Probability of correct diagnosis choice
- ▶ Establishment of high-value care ideals
- ▶ Shared decision-making

- ▶ A deliberate patient-centered care model where the interventions *considered* always outnumber those *performed*

- ❖ Lab studies
- ❖ Imaging
- ❖ Procedures
- ❖ Consults
- ❖ Medication
- ❖ Monitoring


Abdoler 2022 

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Management Scripts- patient presentation

- ▶ Young woman presenting to the emergency department with fevers, dysuria, and flank pain concerning for pyelonephritis

Types of Interventions	Potential Management Options
Labs	CBC, BMP, UA with reflex culture, blood cultures
Imaging	Renal Ultrasound CT abdomen (with or without contrast)
Procedures	Foley catheter placement
Specialists	Infectious Diseases consultation Urology consultation
Medications	Fluroquinolone (IV or PO) Cephalosporin (IV or PO)
Monitoring	Hospital admission Follow-up PCP appointment Follow-up phone call from ED (for symptoms and urine culture results)

Abdoler 2022 

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Feature	Potential script elements
Problem to be solved	- Level of specificity can vary ("Rhinitis" or "Chronic rhinitis" or "Perennial Allergic rhinitis")
Management options	- Drugs - Non-drug treatments - Diagnostic tests - Consultations - Benefits/ Side Effects - Costs - Monitoring and follow-up
Preferences, values, constraints	- . . . Of patient or family - . . . Of providers - . . . Of system
Education needs	- Before decision-making (what is going on, implications, prognosis) - During decision-making (options) - After decision-making (next steps)
Interactions	- Human-human (communication, negotiation, shared decision-making; with patient, nurse) - Human-computer (EHR, knowledge resource) - Human-system (care pathway, insurance preapproval)
Pause for review	- Management Pause to include all stakeholders and address all options - Equity reflection to mitigate implicit bias in care

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Recall our patient's Illness scripts?

Categories	Allergic rhinitis, perennial	Infection-induced rhinitis	Irritant-induced rhinitis
Epidemiology/ Risk Factors	Family History of atopy	High infection exposure at school	Paternal smoking
Pathophysiology	Contact-related inflammation and vasodilation of nasal membranes	Viral-induced nasal inflammation and vasodilation	Airborne substances and particulates which induce Inflammation and vasodilation of nasal membranes
Signs and Symptoms	Rhinorrhea, congestion, sneezing	Intermittent rhinorrhea, congestion, sneezing; possible fever	Rhinorrhea, congestion, sneezing

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Management script- Chronic Rhinitis

Allergic rhinitis, perennial Infection-induced rhinitis Irritant-induced rhinitis

Intervention	Potential Management options
Labs	1) IgE to aeroallergens 2) None 3) Urine cotinine levels (?)
Imaging	CT head to evaluate for turbinate and adenoidal enlargement
Procedures	1) SPT for possible triggers, recommendation of removal of carpet and pets 2) Removal from School temporarily 3) Smoking cessation counseling
Specialists	ENT for evaluation of anatomy
Medications	-Nasal steroid -Nasal saline rinses -Alternative antihistamine
Monitoring	-Return to clinic for follow up visit after intervention (4-6 weeks) -Phone call/video visit -Advise return only if there are continued symptoms

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And now you...

- ▶ Mild persistent asthma (first controller)
- ▶ Chronic urticaria
- ▶ Food allergy
- ▶ FPIES
- ▶ Hypogammaglobulinemia

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Summary

- ▶ Clinical reasoning should be structured in purposeful lessons for our learners
- ▶ Using diagnostic and management schemas can help to organize the thought process
- ▶ Noting the step in the algorithm where a learner is struggling can help to pinpoint areas to work on



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*Thank
you!*



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