How to Teach Clinical Reasoning

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Acknowledgements

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Outline

Theory

Diagnostic Reasoning

Management Reasoning

Example of Clinical Reasoning in Process

35 y/o with fevers x 1 month				
Wt loss (40 lb)	Night sweats	CXR: PNA	Cultures neg	Guatemala

Diagnosis: Tuberculosis

Young, M. E., Dory, V., Lubarsky, S. & Thomas, A. How Different Theories of Clinical Reasoning Influence Teaching and Assessment. Acad Med 93, 1415 (2018).

Dual Processing Theory

System 1: Intuitive Thinking
Quick, immediate recognition

Experience   Expertise

System 2: Analytical Thinking
Slow, conscious processing

Audétat, M.-C., Laurin, S., Dory, V., Charlin, B. & Nendaz, M. R. Diagnosis and management of clinical reasoning difficulties: Part I. Clinical reasoning supervision and educational diagnosis. Med Teach 39, 1–5 (2017).

Theories of Clinical Reasoning

Component	Description
Knowledge	Remember **facts** about diseases
Organization	How symptoms & diseases **relate** to one another
Cognitive Processing	Distinguish relevant clinical features, synthesize, & **test** hypotheses
Meta-Cognition	**Monitor** for biases & errors

Young, M. E., Dory, V., Lubarsky, S. & Thomas, A. How Different Theories of Clinical Reasoning Influence Teaching and Assessment. Acad Med 93, 1415 (2018).

Teaching Clinical Reasoning

Diagnostic Reasoning	Management Reasoning
• Single "correct" answer • Independent of context & patient preferences • Definitive end-point	• Multiple reasonable options • Prioritization of patient, provider, & system preferences • Continual monitoring & adjustment
Novice learners	**Advanced learners**

Cook, D. A., Durning, S. J., Sherbino, J. & Gruppen, L. D. Management Reasoning: Implications for Health Professions Educators and a Research Agenda. Acad Med 94, 1310–1316 (2019).

Consults often fall into one category

Diagnostic Reasoning	Management Reasoning
Can you help us figure out the cause of this patient's fever?	We need your help treating this patient's bacteremia.

Outline

Theory

Diagnostic Reasoning

Management Reasoning

Diagnosing an illness correctly requires many skills

Identify the problem

→

Develop a Ddx

→

Prioritize the Ddx

Problem Representation

Diagnostic Schema

Illness Scripts

Diagnosing an illness correctly requires many skills

Identify the problem

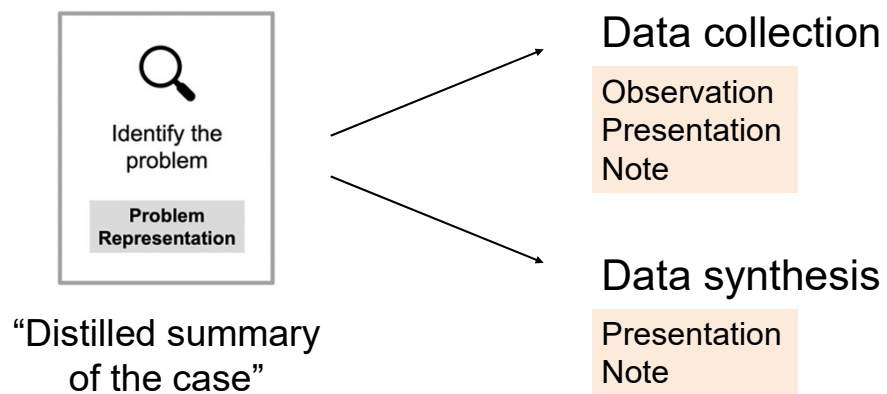**Problem Representation**

Develop a Ddx

Diagnostic Schema

Prioritize the Ddx

Illness Scripts

Identify the Problem: Assessing the learner

Identify the problem

Problem Representation

"Distilled summary of the case"

Data collection

Observation
Presentation
Note

Data synthesis

Presentation
Note

Identify the Problem: Assessing the learner

Issues	How to Identify
Data collection	Did you ask about…? Did you find…? How did you ask the patient…? How did the patient respond…? Let's do the exam together….
Data synthesis	How would you summarize the case in 1 sentence? Why did you include/exclude "x" in your summary? How would including/excluding "x" change the case? How could you re-phrase….?

Identify the problem: teach problem representations

35 y/o male with 1 month of fevers, night sweats, and weight loss presenting with cough and found to have pneumonia on CXR.
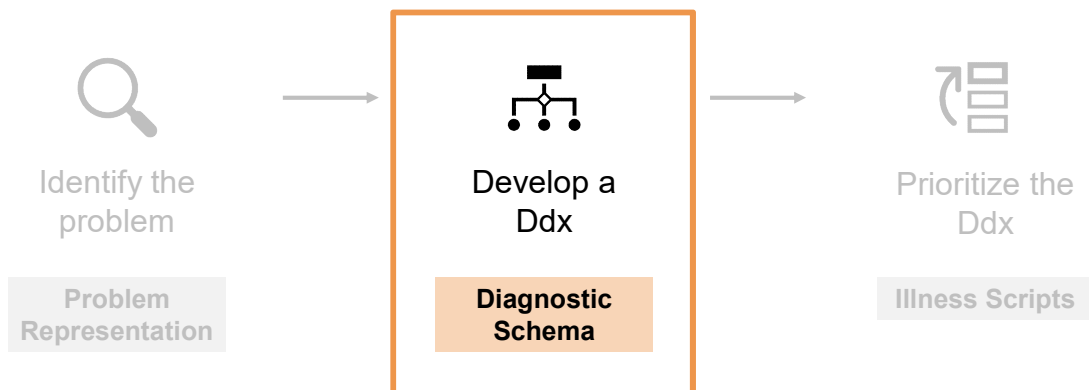
↓

35 y/o immunocompetent male recently emigrated from Guatemala with B symptoms and chronic upper lobe cavitary pneumonia.
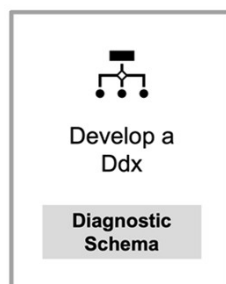
Semantic qualifiers

Paired opposing descriptors that allow us to compare/contrast diagnoses (e.g., acute/chronic)

Identify the problem: teach problem representations

35 y/o male with 1 month of fevers, night sweats, and weight loss presenting with cough and found to have pneumonia on CXR.

↓

35 y/o immunocompetent male recently emigrated from Guatemala with B symptoms and chronic upper lobe cavitary pneumonia.

Key features

Defining & distinguishing features that aid in prioritizing the differential diagnosis (e.g., epidemiology, labs, etc.)

Diagnosing an illness correctly requires many skills

Identify the problem

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Develop a differential diagnosis: teach schemas

Develop a differential diagnosis: teach schemas

Develop a differential diagnosis: resources

🖥	Websites	Clinical Problem Solvers Core IM GrepMed
📚	Books	Frameworks in Internal Medicine A Pocket Manual of Differential Diagnosis

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Diagnosing an illness correctly requires many skills
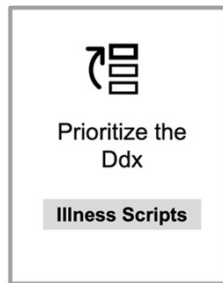
Identify the problem → Develop a Ddx → Prioritize the Ddx

Problem Representation

Diagnostic Schema

Illness Scripts

Prioritize the differential diagnosis: assessing the learner
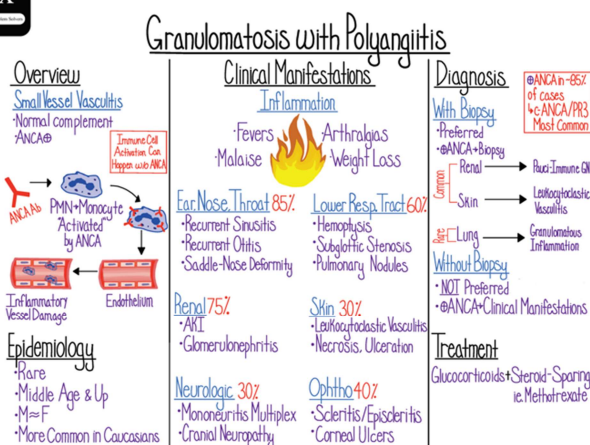
Prioritize the Ddx

Illness Scripts

Select & test hypotheses

What diagnosis do you think is most likely? Why?

Is there anything that doesn't fit with that diagnosis?

How would your impression change if…?

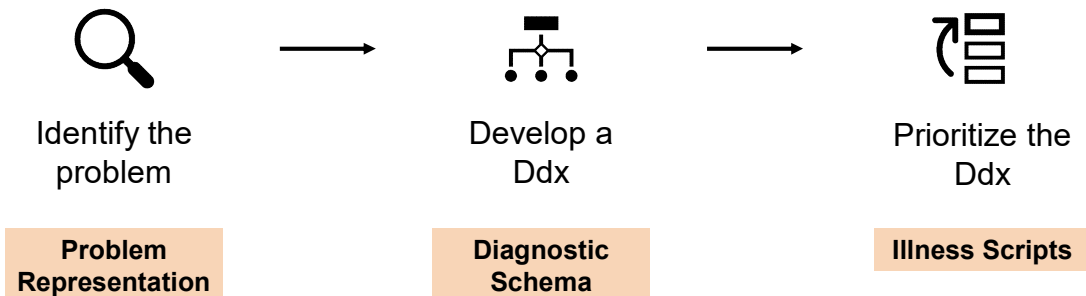# Prioritize the differential diagnosis: teach illness scripts

Components:
Pathophysiology
Epidemiology
Clinical Manifestations
Diagnostics
Treatment

Source: https://clinicalproblemsolving.com/granulomatosis-with-polyangiitis-2/

Prioritize the differential diagnosis: teach illness scripts

	Tuberculosis	Granulomatosis with polyangiitis	Histoplasmosis
Epidemiology			
Presence of fever?			
Lab Abnormalities			
Imaging Findings			

Have learners read horizontally to compare & contrast top diagnoses based on key features of the case to refine their illness scripts.

Diagnosing an illness correctly requires many skills

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Diagnostic Schema

Illness Scripts

Outline

Theory	Diagnostic Reasoning	Management Reasoning

Managing an illness requires different skills
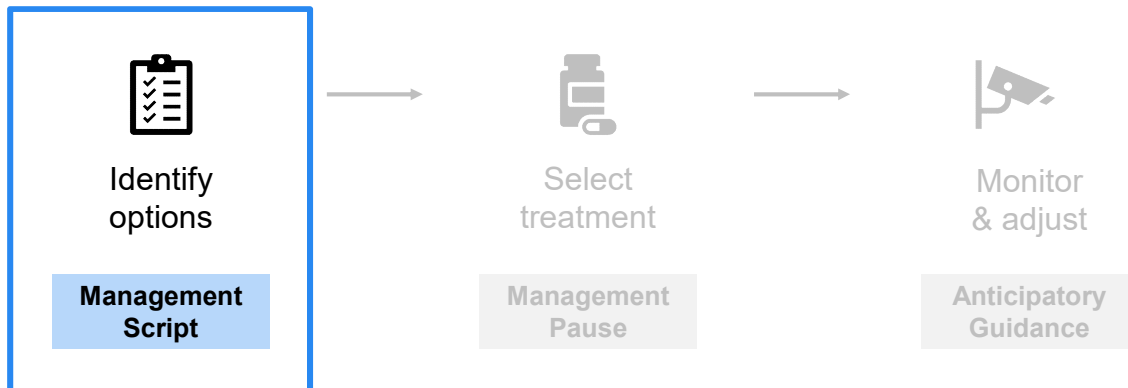
Identify options → Select treatment → Monitor & adjust

Management Script   **Management Pause**   **Anticipatory Guidance**

Identify Options: Teach Management Scripts

Component	Description	Examples
Laboratory studies	Biological samples of a patient analyzed for information about a patient's genetic or physiological condition; sometimes obtained from a procedure	Basic metabolic panel, urinalysis
Imaging studies	A radiological intervention creating a visual representation of the internal structures of a patient's body	Magnetic resonance imaging (MRI), computed tomography (CT), X-ray, ultrasound
Procedures	Any medical or surgical intervention where an instrument is introduced on (noninvasive) or into (invasive) the body for diagnostic or therapeutic purposes; usually requires completion of a formal consent form	Lumbar puncture, paracentesis, colonoscopy, electromyography, electrocardiogram
Specialists/ consultants	Health care professionals asked to provide their expert medical opinion regarding a patient's care	Cardiology, social work, physical therapy consults
Medications	Any substance, chemical, or drug administered to treat a patient's health problem	Oral morphine, subcutaneous morphine, intravenous morphine
Monitoring	Evaluating a patient's physiologic parameters on a regular basis or assessing a patient's response to treatment	Vital signs, neurological checks, intake and output, daily weights, therapeutic response

Parsons, A. S., Wijesekera, T. P. & Rencic, J. J. The Management Script: A Practical Tool for Teaching Management Reasoning. Acad Med 95, 1179–1185 (2020).

Managing an illness requires different skills
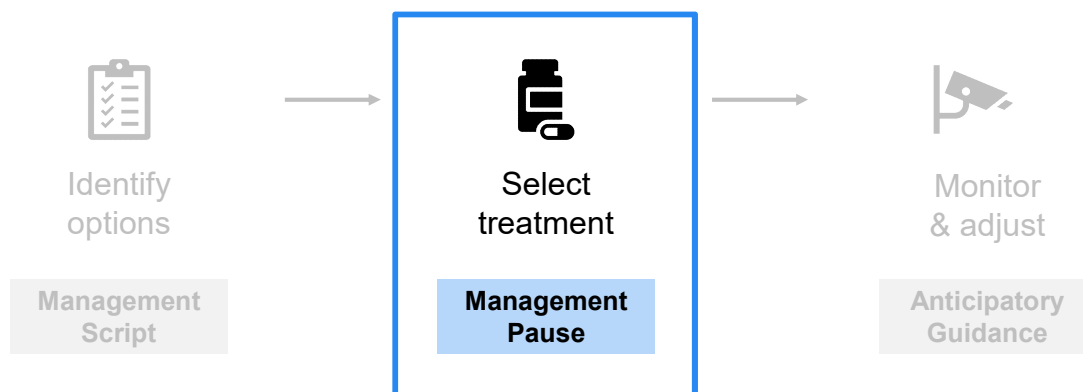
Identify options

Management Script

Select treatment

Management Pause

Monitor & adjust

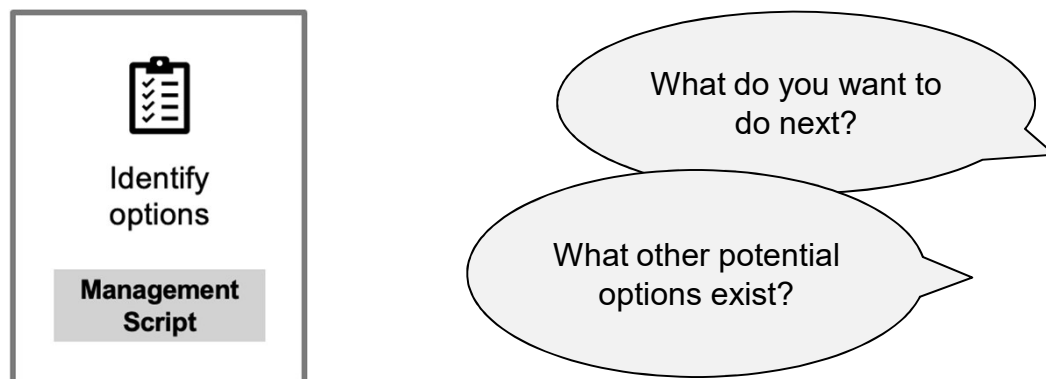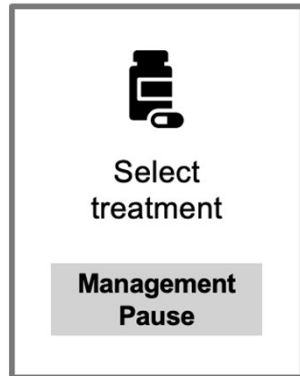Anticipatory Guidance
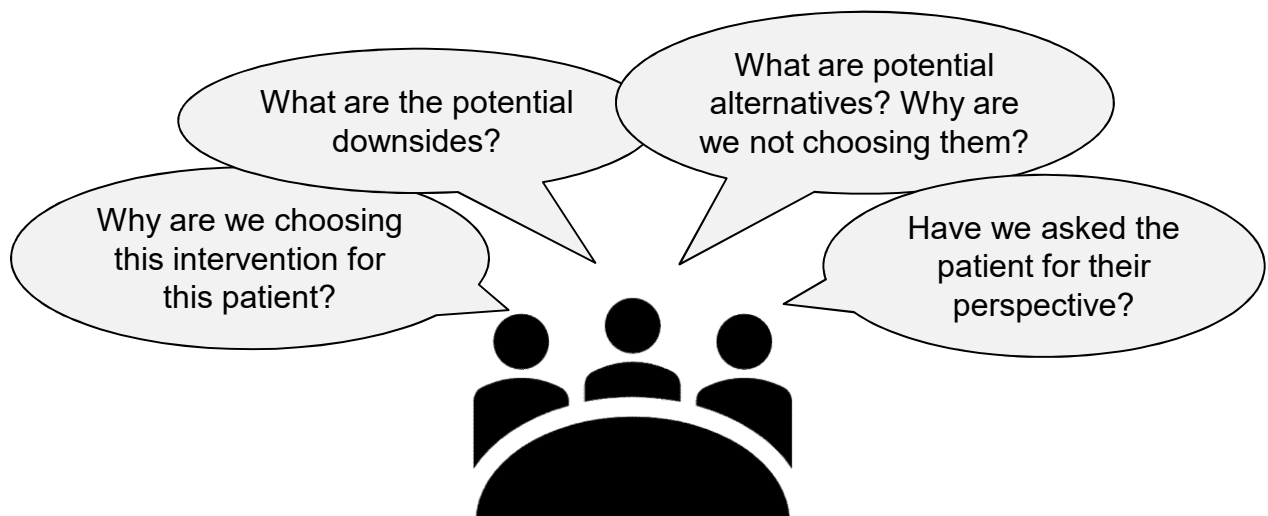
Select Treatment: Incorporate Context
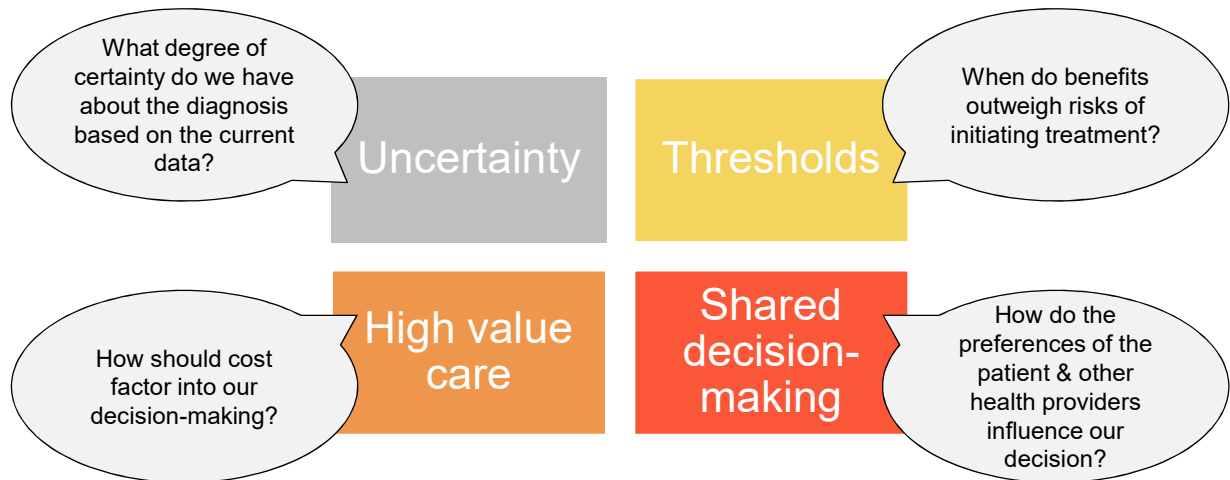
What degree of certainty do we have about the diagnosis based on the current data?

Uncertainty

Thresholds

When do benefits outweigh risks of initiating treatment?

How should cost factor into our decision-making?

High value care

Shared decision-making

How do the preferences of the patient & other health providers influence our decision?

Abdoler, E. A., Parsons, A. S. & Wijesekera, T. P. The future of teaching management reasoning: important questions and potential solutions. Diagnosis 0, (2022).

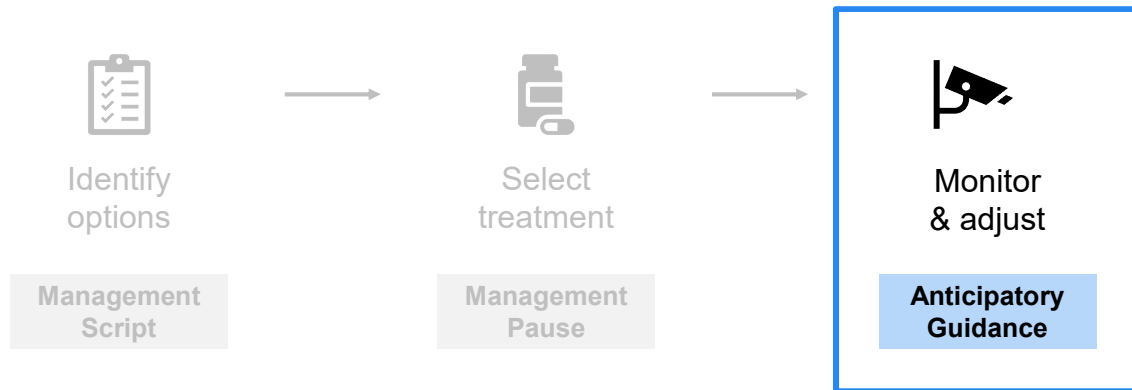## Select Treatment: The Equity Reflection

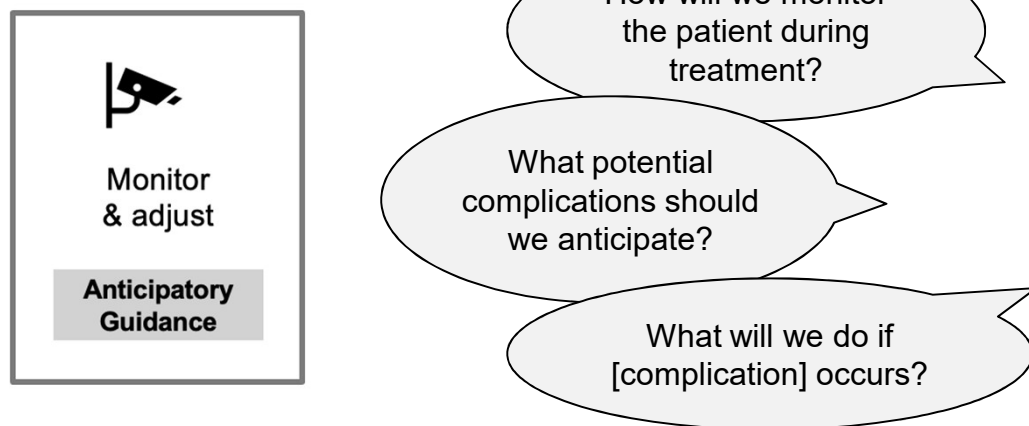| Use either of the following lines of questioning: (source below)	
1. Are we deviating in any way from the standard of care in this situation? 2. In what ways? 3. Why? 4. Instead of deviating, what could we do differently to provide the highest value care?	1. If you were being discharged in the same situation, is there anything you would want done differently? 2. What? 3. Why aren't we doing the same for this patient? 4. If there are barriers, how can we leverage our multidisciplinary team to overcome them?

Abdoler, E. A., Parsons, A. S. & Wijesekera, T. P. The future of teaching management reasoning: important questions and potential solutions. Diagnosis 0, (2022).

Managing an illness requires different skills

Identify
options

**Management
Script**

Select
treatment

**Management
Pause**

Monitor
& adjust

**Anticipatory
Guidance**

Monitor & Adjust: Assessing the Learner

Monitor
& adjust

**Anticipatory
Guidance**

How will we monitor
the patient during
treatment?

What potential
complications should
we anticipate?

What will we do if
[complication] occurs?

Monitor & Adjust: Teaching Anticipatory Guidance

Monitor	Prognosis	Communication	Adjustment

Managing an illness requires different skills

Identify options → Select treatment → Monitor & adjust

Management Script   **Management Pause**   **Anticipatory Guidance**
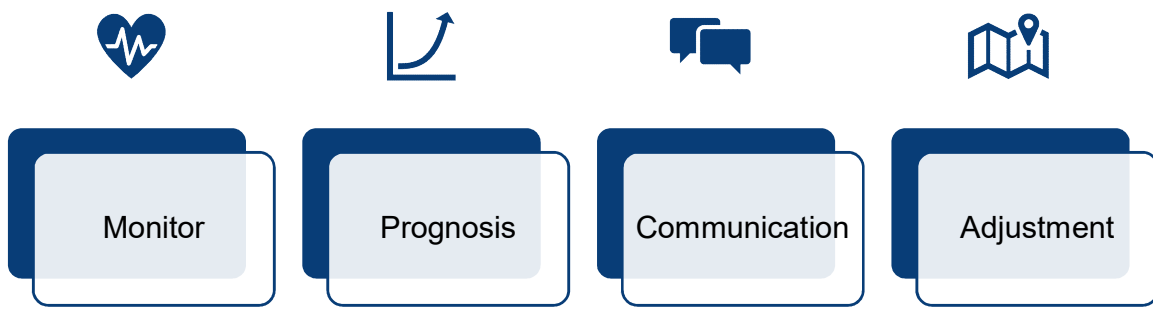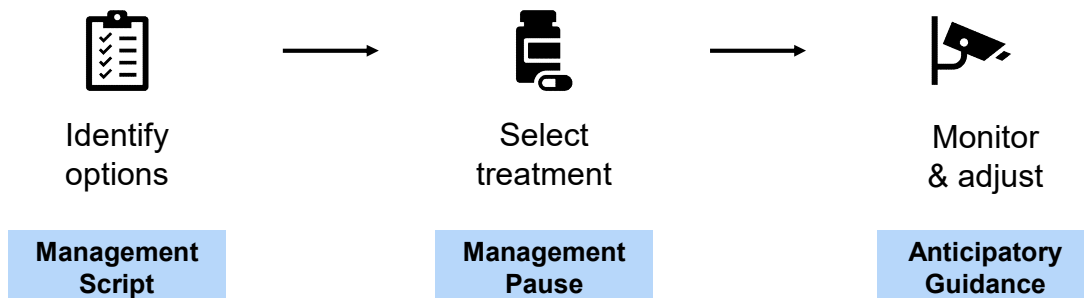
Take Home Points

Is the patient's problem primarily a **diagnostic** or **management** issue?

Diagnostic Reasoning

Identify the problem → Develop a Ddx → Prioritize the Ddx

Problem Representation | Diagnostic Schema | Illness Scripts

Management Reasoning

Identify options → Select treatment → Monitor & adjust

Management Script | Management Pause | Anticipatory Guidance