# How We Learn Clinical Medicine

## *(and why it matters)*

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# DISCLOSURES:

NONE

# Learning objectives

After the presentation the participant will be able to:

1. Describe the Dreyfus model of skill acquisition

2. Diagnose a clinical learner's stage within the Dreyfus model

3. Describe techniques to assist the troubled clinical learner
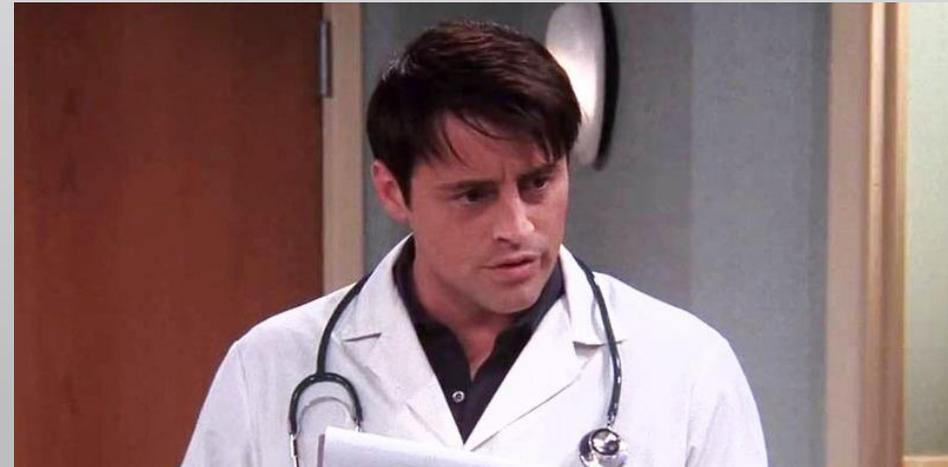
Information is delivered differently at each level

But we went to school to learn CLINICAL medicine……

# Medical school

## Years 1 and 2
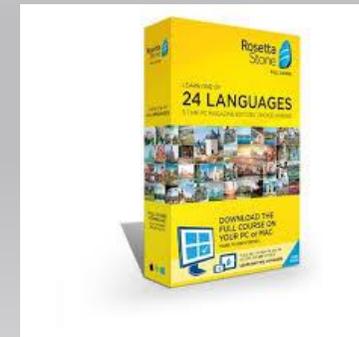


## Years 3 and 4

The clinician's brain gets from there to here…. But exactly how?

Understanding that process can make you a much better teacher!

# Dreyfus Developmental Model

- Novice
- Advanced Beginner
- Competent
- Proficient
- Expert
- Master

# From the Educational Bench to the Clinical Bedside: Translating the Dreyfus Developmental Model to the Learning of Clinical Skills

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## Abstract

The Accreditation Council for Graduate Medical Education Outcome Project has shifted the focus of residents' education to competency-based outcomes of learning. The challenge of meaningful assessment of learner competence has stimulated interest in the Dreyfus and Dreyfus Model, a framework for assessing skill acquisition that describes developmental stages beginning with novice and progressing through advanced beginner, competent, proficient, expert, and master. Many educators have adopted this model, but no consensus about its adaptation to clinical medicine has been documented.

In this article, the authors seek to integrate generally accepted knowledge and beliefs about how one learns to practice clinical medicine into a coherent developmental framework using the Dreyfus and Dreyfus model of skill acquisition. Using the general domain of patient care, the characteristics and skills of learners at each stage of development are translated into typical behaviors. A tangible picture of this model in real-world practice is provided through snapshots of typical learner performance at discrete moments in time along the developmental continuum. The Dreyfus and Dreyfus

model is discussed in the context of other developmental models of assessment of learner competence. The limitations of the model, in particular the controversy around the behaviors of "experts," are discussed in light of other interpretations of expertise in the literature. Support for descriptive developmental models of assessment is presented in the context of a discussion of the deconstructing versus reconstructing of competencies.

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The Accreditation Council for Graduate Medical Education (ACGME) Outcome Project has shifted the focus of residents' education to competency-based outcomes of learning experiences in six broad and diverse domains.[1] The challenge of achieving meaningful teaching in each of these domains is surpassed only by the challenge of successfully assessing learner competence. Many educators have adopted the assessment rubric of the Dreyfus and Dreyfus model, a framework for skill acquisition

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that describes developmental stages beginning with novice and progressing through advanced beginner, competent, proficient, expert, and master.[2] Originally applied to skills such as driving a car and playing chess, the model has been adopted by medical educators without a consensus on interpretation of the stages as they apply to the acquisition of clinical skills by physicians in training. Recognizing that no one model provides a panacea for clinical assessment of competence, the widespread adoption of the novice-to-master rubric calls for some thoughtful discussion and consensus around the use of those terms and the others associated with the model. Our purpose in writing this article is to establish a framework for the application of the Dreyfus model of skill development to the assessment of students and residents as they learn to practice clinical medicine. We apply this model in the context of generally accepted truths about how one learns, and we combine it with examples from the field to illustrate the application of these truths and the model in clinical settings. We also suggest strategies for teaching and learning at each stage.

## Integration of Accepted Educational Truths About Learning and the Dreyfus Model

Eva[3] describes clinical reasoning as being dependent on two processes: (1) the analytic method, and (2) the nonanalytic method, or pattern-based recognition. Integration of these processes provides a framework for practicing the science and the art of medicine. The analytic method refers to the hypothetico-deductive approach to problem solving characteristic of the scientific method, whereas pattern-based recognition relies on the learner's ability to realize relationships between a repertoire of context-specific past clinical experiences (illness scripts) and the current clinical situation. The importance of the content and context (setting and circumstance) as well as personal influences (beliefs and attitudes) in creating these relationships makes each pattern unique to the individual.

Learners at all stages unconsciously use both forms of reasoning in clinical practice; more experienced learners have the advantage of a more extensive library of illness scripts and accordingly rely more heavily on pattern recognition

# Dreyfus Model – Clincal Skills

Novice

- Decision making is **rule based**
- Uses **analytic reasoning** and rules to link cause and effect
- Has **little ability to filter or prioritize information**, so synthesis is difficult at best and the big picture is elusive

Advanced Beginner

- Is able to sort through rules and information to **decide what is relevant on the basis of past experience**
- Uses **both analytic reasoning and pattern recognition** to solve problems
- Is able to abstract from concrete and specific information to more general aspects of a problem

# Dreyfus Model – Clinical Skills

Competent

- **Emotional buy-in** allows the learner to feel an appropriate level of responsibility
- **More expansive experience** tips the balance in clinical reasoning from methodical and analytic to more readily identifiable **pattern recognition** of common clinical problem presentations
- Sees the big picture
- **Complex or uncommon problems still require reliance on analytic reasoning**
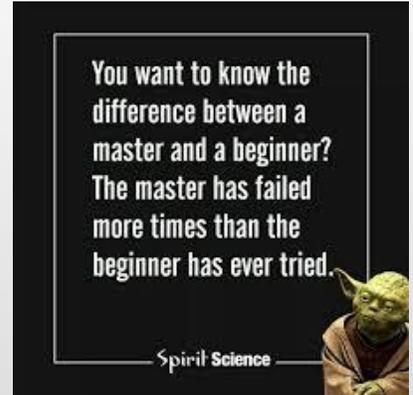
# Dreyfus Model – Clinical Skills

Proficient

- Breadth of past experience allows one to rely on pattern recognition of illness presentation such that **clinical problem solving seems intuitive**

- **Still needs to fall back to methodical and analytic reasoning for managing problems** because exhaustive number of permutations and responses to management have provided less experience in this regard than in illness recognition

- Is **comfortable with evolving situations**; able to extrapolate from a known situation to an unknown situation (capable)

# Dreyfus Model – Clinical Skills

Expert

- Thought, feeling, and action align into **intuitive problem recognition and intuitive situational responses** and management
- *Is open to notice the unexpected*
- Is clever
- Is perceptive in discriminating features that do not fit a recognizable pattern

# Dreyfus Model – Clinical Skills



You want to know the difference between a master and a beginner? The master has failed more times than the beginner has ever tried.

Spirit Science

## Master

- Exercises practical wisdom
- **Goes beyond the big picture and sees a bigger picture of the culture and context of each situation**
- Has a **deep level of commitment to the work**
- Has great concern for right and wrong decisions; this fosters emotional engagement
- Is **intensely motivated by emotional engagement to pursue ongoing learning and improvement**
- Reflects in, on, and for action

# So how does this make you a better teacher?

We have learned to DIAGNOSE each stage... now let's learn to TREAT

# Medical Students

- The true Novice
  - Obtain and report history/physical in fully structured and rule based fashion
  - Unaware of pertinent positives and negatives

# Medical Students

- Must help learner organize knowledge
  - Point out MEANINGFUL info in H&P
  - Eliminate irrelevant info

- Have student read about TWO things on the differential diagnosis at the same time
  - Helps build illness scripts
  - Fosters learning on how to discriminate between similar diagnoses

# The lagging 1ˢᵗ or 2ⁿᵈ year resident

- The resident stuck in the Advanced Beginner stage longer than their colleagues

- The resident you just "can't seem to get through to" to help them grow and improve

# The lagging 1ˢᵗ or 2ⁿᵈ year resident…

- Need MORE EXPERIENCE
  - Bread and butter cases!!!!
  - Zebras are fun but stunt growth at this phase
- Make them verbalize their own DDx and treatment plan
  - **<u>Five step microskills model</u>**
    - Get a commitment
    - Probe for supporting evidence
    - Teach general rules
    - Reinforce what was done right
    - Correct mistakes

# The lagging 1ˢᵗ or 2ⁿᵈ year resident…

- Still pulling your hair out?
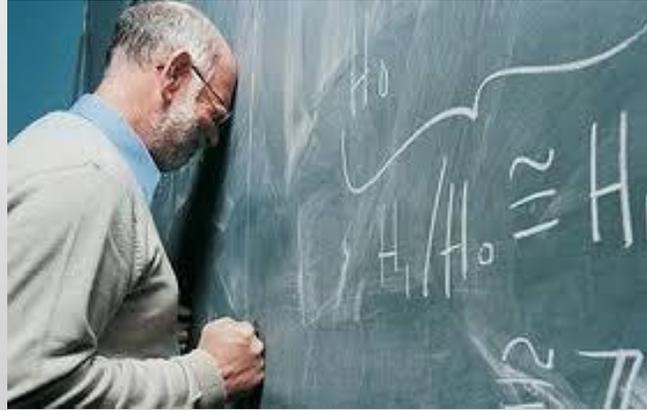


- The "near peer" may be the best coach because *the more experienced clinician often relies solely on pattern recognition rather than analytic reasoning, making it difficult for the clinician to understand where the learner is encountering difficulties and how to help overcome them*

# The struggling senior resident

- When presented with a more complex case or very new presentation of a case – they freeze
  - Slow thinking, inefficient care
  - Overwhelmed or frazzled



- **Competency** is when the shift from analytical to nonanalytical thinking occurs for a number of reasons
  - Struggling senior resident is stuck in analytical thinking and lost in all the new complexities of the case presented to them

# The struggling senior resident

- Senior residents need
  - exposure to COMMON and UNCOMMON cases
  - <span style="color:red">AUTONOMY</span> to make decisions regarding patient care
  - <span style="color:red">ACCOUNTABILITY</span> for those decisions

- Leads to **emotional buy-in** and true engagement with the patient
  - That anxious feeling of "is this the right drug/dose/plan"
  - Leads to deeper learning, more robust illness scripts, seeing the big picture
  - Shifts analytical thinking to non-analytical/pattern recognition

# The struggling senior resident

- If learners are "told" rather than "asked" what to do, they will never achieve the **<span style="color:red">emotional buy-in</span>** that is necessary to assume appropriate responsibility for patient outcomes.

- In addition, it is critical that the learner see a breadth and depth of patient encounters to be able to construct and store in memory a **<span style="color:red">robust repertoire of illness scripts</span>**.

- *Both of these processes are necessary to tip the balance of clinical reasoning to pattern recognition*. **If this does not occur… learner will rely too heavily on analytic reasoning and be forced to struggle with each feature of an illness rather than assimilating the features into a "whole."**

Competency might be the requirement, but proficiency is the goal!

# The Chief: Competent → Proficient

## *Emotional Buy-In + Capability = Proficiency*

"Capability": the ability to extrapolate from the known to the unknown clinical situation to handle an unfamiliar problem

Even when it's unfamiliar territory, you are more comfortable and can adapt

– shift back to analytical thinking at times.

# The Chief: Competent → Proficient

- Intuition is how clinical situations are navigated

- Unconsciously sift through all the illness scripts and see the pattern/diagnosis

- But knows when to SLOW DOWN
  - Recognizes the outlier in the pattern that could signal wrong dx

# The Chief: Competent → Proficient

- Needs to work along side an expert
  - Encourage learner to TRUST INTUITION
  - Ensure they see some ambiguous cases but not too many
    - Will rely too much on analytical processes and not learn to trust their pattern recognition
  - Point out the findings that require one to SLOW DOWN
  - Ensure culture where it's ok to ask for help

# What about us teachers?

We still have more to learn….

# The Expert



- Intuition leads to immediate action in clinical situations
  - Almost automated so enjoys the clinical dilemmas
  - Knows when to slow down, recognizes subtle pattern changes

- Can lead to complacency – most clinical cases = boring
  - Decreased emotional involvement/drive to improve
  - Instead of becoming Master, becomes "experienced Non-expert"
    - No longer slows down… fully automated
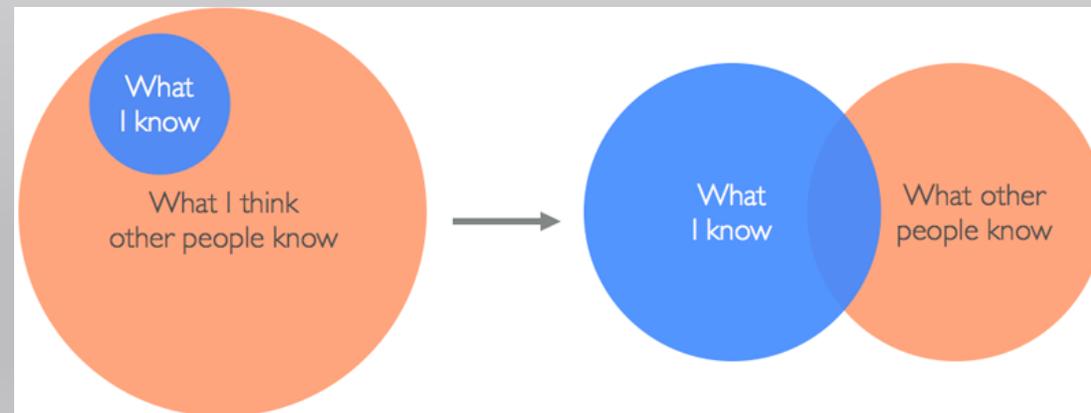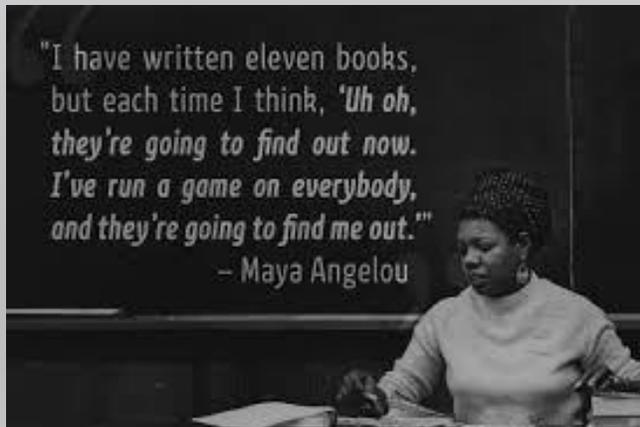    - Misses subtle pattern changes

# The Master



- Who everyone goes to with tough cases

- Sees big picture AND bigger pic of clinical context and culture in which situation occurs


- DEEP COMMITMENT to work
  - Emotional buy in is driver for life long learning
  - Very reflective of own practice in habitual way

# Dreyfus Model

- Diagnose your learner then treat

- Teach your learner about this model to help them grow

- Beware "Imposter Syndrome"



"I have written eleven books, but each time I think, 'Uh oh, they're going to find out now. I've run a game on everybody, and they're going to find me out.'"
— Maya Angelou



What I know

What I think other people know

What I know

What other people know

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