

My background

- Structured program at Penn to work with struggling students, residents and fellows within Department of Medicine since 2014
- Led remediation efforts for over 150 learners at Penn and elsewhere
- Help build remediation programs at other institutions
- Increasing emphasis on supporting learners with shelf, Step and Boards exams



University of Pennsylvania
Perelman
 School of Medicine
 Medical Learner Support Program

3

Why this is important



Costly



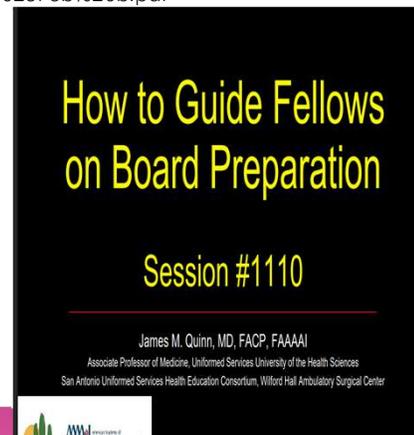
Stressful

To the learners
 To YOU!

4

What this wont be

- A general guide to Board prep
 - <https://education.aaaai.org/sites/default/files/media/2022-04/Quinn%20-%20How%20Guide%20fellows%20board%20prep%20Quinn%2025Feb%20b.pdf>
- Method for diagnosing/treating learning differences
- I AM NOT ABAI boarded



5

GOALS AND OBJECTIVES

1. GOAL- Develop a strategy to recognize and successfully support learners at highest risk of failing boards
2. Objectives:
 - A. How to best predict learners who may struggle to pass
 - B. Recognize phenotypes of learners who might struggle
 - C. Develop tools for each phenotype
 - D. General tools

6

Recognizing Learners at Risk- General Principle

Learners at highest risk are likely those who have struggled with exams before

Many learners will recognize that their studying is not progressing

But most learners will not be forthcoming

Create an environment where learners feel open to share info with you

7

Recognizing at risk learners

- High sensitivity, low specificity approach
- That's ok because you have limitless time and resources and
- not all learners will struggle for the same reasons, so....
- Need to tailor approach to the particular learner

- Using phenotypes to more easily identify learners and develop a plan in a time efficient but effective way... stay tuned

8

Recognizing Learners at Risk

No publicly available information on learners who fail

14 years of experience has allowed us to see some themes.... And to develop some phenotypes

To the audience- Think back to learners who have failed.... Any themes?

9

Recognizing at risk learners- particular barriers

- ITE scores- not yet validated in AAAAI
- No great "pre-tests" and paucity of question resources

10

**THE
PHENOTYPES**

- The overwhelmed
- The burned out, the unmotivated
- The foundation lacking
- The overloader
- The passive consumer
- The anxiety spiraler

11

**Phenotypes-
Why its
important**

- Likely oversimplifies, yes
- But often with learners who struggle, a one size fits all approach is taken
- Learners struggle for very different reasons and no single strategy will work for every learner
- Diagnose the problem before you treat it

12

Phenotypes- strategy and organization



What you might see



What you might find- ie what
to look for or ask for



What to do

13



PHENOTYPE 1-
THE
OVERWHELMED

14

**The Overwhelmed-
what it looks like**

Many if not most learners fit here



Why?

No detailed curriculum

Not great review/question resources

Second job

15

The Overwhelmed



16

The Overwhelmed- What you might see

Misconstrued

- Lazy/work avoider
- Procrastinator
- Disorganized

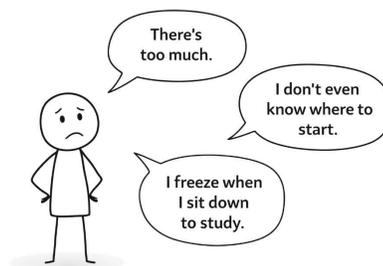
Lots of inertia completing tasks

- Working frantically and often at last minute
- Or not working at all

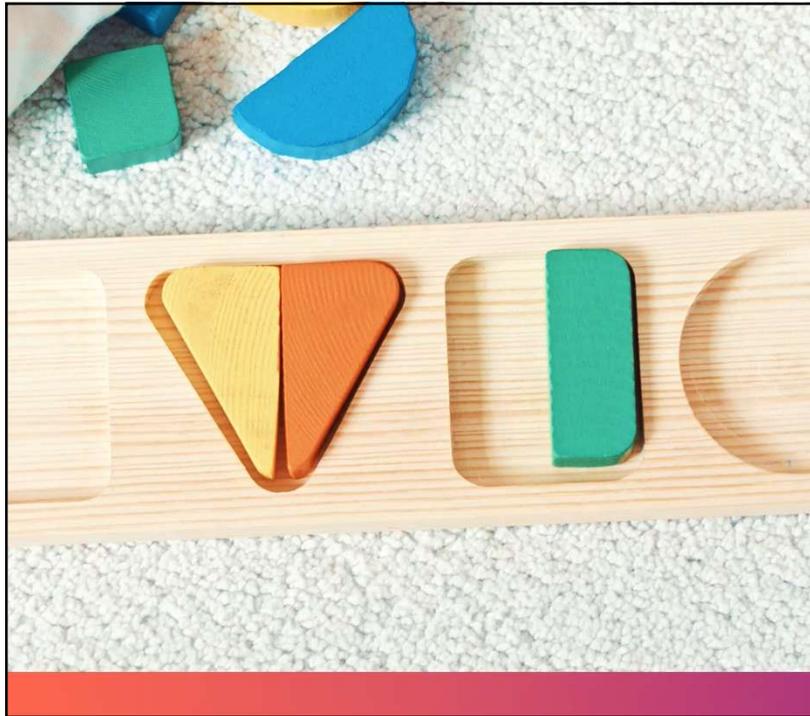
17

The Overwhelmed- What you might find

- Feels crushed by the volume
- Not sure how to accomplish such a massive task



18



Studying for Boards is a **LARGE** task

Needs to be structured,
organized

BROKEN INTO DIGESTABLE
CHUNKS

Even once material is mastered it
needs to be maintained

19

Two steps

- Building a planned building- STEP BY STEP
- Maintenance



20

Strategies

STUCTURE

- Make a large topic into several smaller ones with a roadmap
 - STRUCTURE!!
- Use ALL of the time a learner has- no cramming
- Studying isn't just from a text book
 - Clinical learning as an apprenticeship

MAINTENANCE

- Emphasize spaced repitition

21

Structure- Blueprints

Certification Blueprint	
<p>ABAI's Certification Blueprint illustrates the expected coverage of topics appearing on the annual Certification examination. The percentages (shown below) are to be used as a guideline and are not a definitive representation of examination content. These percentages are regularly monitored by the ABAI Board of Directors with the intent that the examination content will reflect the breadth of medical knowledge essential for competence in allergy and immunology.</p>	
A. Allergy and Hypersensitivity Principles and Disorders (epidemiology, risk factors, clinical presentation, diagnosis and differential diagnosis, treatment/management, physiology/pathophysiology)	54%
1. Head and neck	11%
A.1.a. Nasal (allergic and non-allergic rhinitis)	
A.1.b. Sinus (acute and chronic, NP, allergic fungal sinusitis)	
A.1.c. Ocular	
A.1.d. Anatomy, physiology & pathology	
A.1.e. Diagnostics - Nasal/conjunctival provocation, mucociliary function	
A.1.f. Cough	
2. Dermatologic	11%
A.2.a. Eczema	
A.2.b. Atopic Dermatitis	
A.2.c. Contact Hypersensitivity	
A.2.d. Urticaria	

3. Lung	11%
A.3.a. Asthma and related disorders	
A.3.b. Occupational diseases	
A.3.c. ABPA	
A.3.d. Hypersensitivity pneumonitis	
A.3.e. Eosinophilic granulomatous polyangiitis (CSS)	
A.3.f. COPD	
A.3.g. ILD	
A.3.h. Anatomy, physiology & pathology	
A.3.i. Pulmonary diagnostic testing: e.g., spirometry, bronchoprovocation, body plethysmography, FeNO, IOS, Mucociliary function)	
4. Food and Drug Allergy/Hypersensitivity Reactions (not including eosinophilic GI disease)	11%
A.4.a. Adverse Reactions to Foods	
A.4.b. Allergens	
A.4.c. Adverse Reactions to Drugs & Biologicals (epidemiology, mechanism & management principles)	
5. Anaphylaxis and Mast Cell Activation Disorders (not food or drug-related)	10%
A.5.a. Idiopathic	
A.5.b. Exercise	
A.5.c. Latex	
A.5.d. Stinging insect	
A.5.e. Mastocytosis	

22

Structure- Blueprints refined

- Help them prioritize topics
 - Which topics they should have covered and when
- Try to align conferences and resources you share to specific blueprint topics

23

Intentional Blueprints.... Into spaced repetition

Topic	Case	Conference or text	Question	Flashcard
Lung A3a Asthma and Related	12/21 wards	Uptodate Article..		ANKI card 26
Lung A3a Asthma and Related				
Anaphylaxis A5a Idiopathic				

24

Spaced repetition

- Many medical learners do this incorrectly
- Repetition is not ideal for acquiring but better for MAINTAINING.....
- Flash cards
 - Old school works!
 - New school is more popular

25

The screenshot shows the Anki website interface. At the top, there is a navigation bar with links for 'Docs', 'Forums', 'AnkiWeb', 'Add-Ons', 'Shared Decks', and a 'Download Anki' button. Below the navigation bar, there is a sub-header 'Powerful, Intelligent Flashcards • Learn more →'. The main heading is 'Remembering is easier with Anki', followed by a short description: 'Anki is a flashcard program that helps you spend more time on challenging material, and less on what you already know.' Below this is another 'Download Anki →' button. The page is divided into two columns. The left column has a section titled 'Advantages' with the text 'Here are a few reasons why users love Anki.' The right column has a section titled 'Basic Concepts' with the text 'Anki supports complex workflows, but getting started is easy.' Below this is a table showing a list of decks with columns for 'Deck', 'New', 'Learn', and 'Due'. The table lists decks for Geography, Languages, English, German, and Medicine. Below the table is a section titled 'Decks' with the text: 'Decks are groups of flashcards that allow you to study specific parts of your collection instead of everything all at once. Create a new deck and add some flashcards to get started.'

[Anki](#) Docs Forums AnkiWeb Add-Ons Shared Decks [Download Anki](#)

Powerful, Intelligent Flashcards • Learn more →

Remembering is easier with Anki

Anki is a flashcard program that helps you spend more time on challenging material, and less on what you already know.

[Download Anki →](#)

Advantages

Here are a few reasons why users love Anki.

Basic Concepts

Anki supports complex workflows, but getting started is easy.

Deck	New	Learn	Due
• Geography	20	0	12/4
• Languages	6	9	5/3
• English	3	3	3/5
• German	3	6	1/8
• Medicine	16	1	2/4

Decks

Decks are groups of flashcards that allow you to study specific parts of your collection instead of everything all at once. Create a new deck and add some flashcards to get started.

26

AAAAI focused spaced repetition

- ACAAI flash cards
 - [ACAAI Flash Cards All Chapters | College Learning Connection](#)
- 409 flash cards
- No ability for user edits

27

The Overhelmed- Academic Resources

- Key citations
 - Sweller J. Cognitive load during problem solving. *Cognitive Science*. 1988.
 - Sweller J, Ayres P, Kalyuga S. *Cognitive Load Theory*. Springer; 2011.
 - van Merriënboer JJG, Sweller J. Cognitive load theory in health professional education. *Med Educ*. 2010.
- Additional reading
 - Norman G. Teaching basic science to optimize transfer. *Med Teach*. 2009.
 - Young JQ et al. Cognitive load theory: implications for medical education. *Acad Med*. 2014.

28



PHENOTYPE 2 -
THE
UNMOTIVATED

29

		Willingness to engage	
		Willing	Unwilling
Ableness	Able	Willing & Able	<u>Unwilling & Able</u>
	Unable	Willing & Unable	Unwilling & Unable

30

The Unmotivated- what you might see

noted easily and early and on wards

Missing shifts

Leaving notes undone

Signing out uncompleted tasks

Doing the minimum amount needed

31

The Unmotivated- what you might find

- Learners tend to NOT engage
- Don't usually confess to this

32

THE UNMOTIVATED- FIXES

1. HARDEST FOR YOU TO FIX
2. Outside resources for depression, burnout
3. Reminder of the practical consequences of a board failure
4. True Coaching
 - A. [ICF Coaching Credentials: Your Guide to the ACC, PCC & MCC](#)
 - B. Try to find what motivates them and use it

33



PHENOTYPE3-
THE MISSING
FOUNDATION
LEARNER

34

The Missing Foundation Learner- What you might see

- Exam failures and MORE
 - ABIM failure or barely passed
 - Struggles with Step 2 and Step 3
 - Low Residency ITE scores
- Inefficient chart biopsy
- Unable to effectively synthesize medically complex patients

35

THE MISSING FOUNDATION LEARNER- FIXES

1. Reteach them all of Medicine within a month
2. Or have them read all of Harrisons
3. Or every article in UpToDate

36



37

ABIM review resources

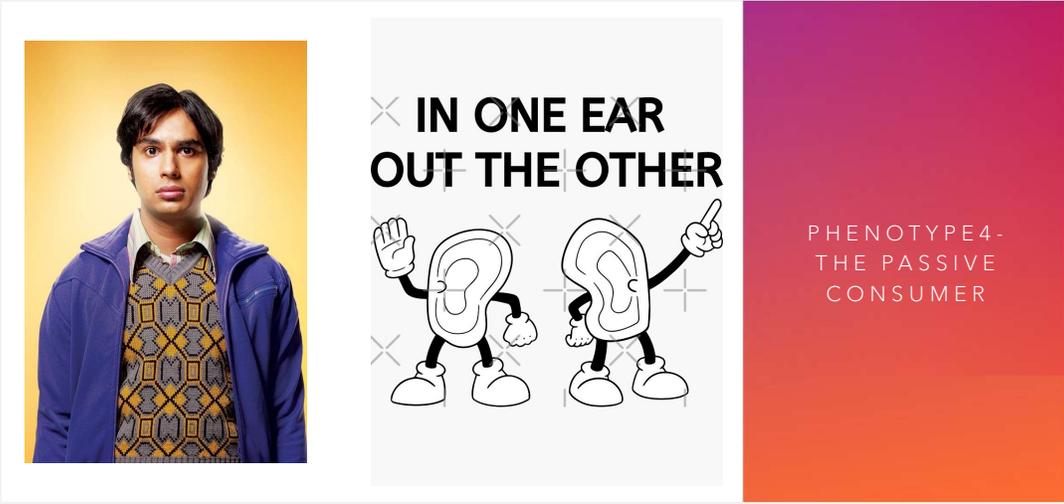
- Awesome Review
 - [Leading ABIM Certification and Recertification Course - Awesome Review](#)
- Board Vitals
 - [Medical Board Review, CME, & Question Bank - BoardVitals](#)
- ACP review course
 - [Internal Medicine Board Review Courses | IMBR | ACP](#)

38

ABIM Q-banks

- Uworld
 - [ABIM Question Bank - UWorld Internal Medicine Board Review](#)
- MKSAP
 - [ACP MKSAP - Login Page](#)
- StatPearls
 - [Ace The Internal Medicine Exam](#)

39

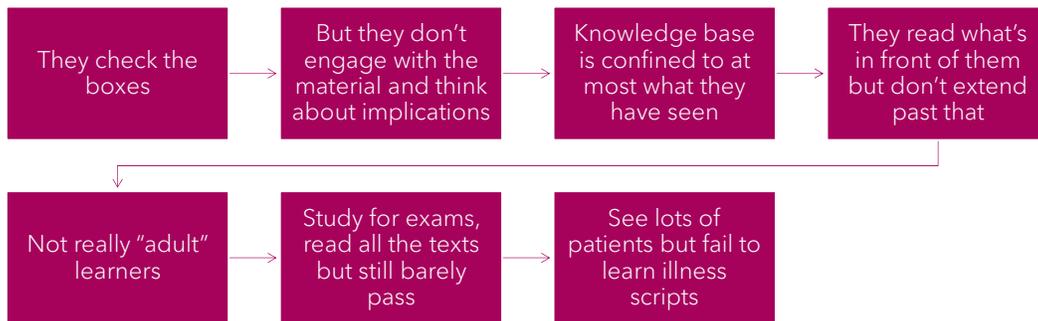


**IN ONE EAR
OUT THE OTHER**

PHENOTYPE4-
THE PASSIVE
CONSUMER

40

Passive Consumer- What you might see/find



41

PASSIVE CONSUMER- FIXES

1. GOAL is to make learning more active
Curiosity rather than requirements
drive learning
2. Best prescription is QUESTIONS
3. Since ABAI boards have a smaller
market, not as many large question
banks
4. I tried to review the resources that
exist and will share them.... Some in
the room are likely editors or
contributors

42

Outside of Question banks

- Help them formulate questions
- From what they see in clinic, topics or questions for them to review each week
- Ask them to frequently give talks to their teams or to you
- But.... Review of Qbanks

43

AIM self assessment

- AIM self assessment
 - [AIM Self-Assessment: Volume One \(REV\) | College Learning Connection](#)
 - Pros: Well validated and very reliable resources
 - Cons: Limited number of questions

The screenshot shows the course page for "AIM Self-Assessment: Volume One (REV)". The page includes a navigation bar with links for "Public website", "Member website", "Career center", "Foundation", and "College Learning Connection". Below the navigation bar, there are tabs for "OVERVIEW", "FACULTY", and "REGISTER/TAKE COURSE". The main content area features a large banner with the text "AIM Self-Assessment VOLUME ONE" and a price of \$199 for College Members, \$299 for non-members, and \$25 for Member Fellows-in-Training. A "Course summary" box on the right provides details: Available credit: 20.00 AMA PRA Category 1 Credit™, 20.00 Attendance, 20.00 MOC; Course opens: 07/28/2023; Course expires: 07/27/2026; Cost: \$299.00; Rating: 5 stars.

44

ImmunoBank

IMMUNOSTUDIO Home ImmunoGenius ImmunoBank About [Let's Connect](#)

**The perfect companion
for ABAI test preparation**

Ready. Set. Pass!

ImmunoBank is a first of its kind comprehensive

45

ImmunoStudio
Organizing Immunology Knowledge
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ImmunoBank

ImmunoBank is a first of its kind comprehensive Qbank now available for Allergy/Immunology fellows in training.

Created by clinician educators in allergy-immunology.

Over 400 board styled questions.

Take Custom Test

1. Select Test Content

Question Type: All

Subjects:

- ImmunoBank (370)
- A. Allergy and Hypersensitivity Principles and Disorders (243)
 - A.1 Head and neck (45)
 - A.2 Dermatologic (52)
 - A.3 Lung (85)
 - A.4 Food and Drug Allergy/Hypersensitivity Reactions (37)
 - A.5 Anaphylaxis and Mast Cell Activation Disorders (24)
- B. Immunological Disorders (127)
 - B.1 Immune Inflammatory Disorders (18)

Question 1 of 5

A 55-year-old winegrower presents with progressive dyspnea, fatigue, fevers and weight loss over the past year. HRCT shows honeycombing and pulmonary artery enlargement. Which of the following is the most likely causal agent?

- A. *Bacillus subtilis*
- B. *Botrytis cinerea*
- C. *Penicillium casei*
- D. *Staphylococcus aureus*

46

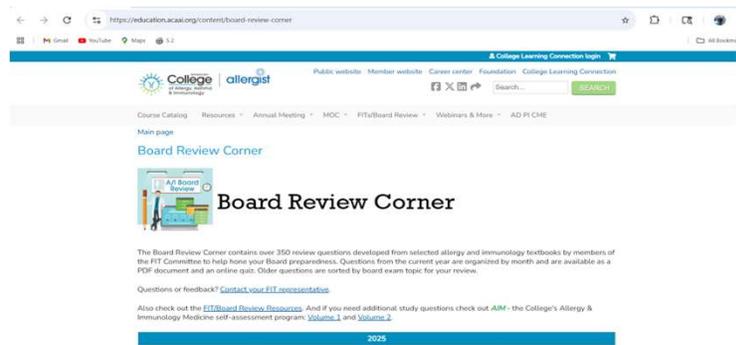
ImmunoBank

- [The perfect companion for ABAI test preparation - ImmunoStudio](#)
- Launched in the last year with 100 users in first year
- Links to primary and review articles and practice parameters
- 400 questions overall
- Beta tested and user input to revise questions
- No demo or trial mode
- Individual subscriptions 49-149\$

47

Board Review Corner

- [Board Review Corner | College Learning Connection](#)
- 350 questions
- Seems to be written by fellows



48

Stat Pearls

The screenshot shows the StatPearls website interface. At the top, there is a navigation bar with the StatPearls logo on the left and links for 'Institutional Sales', 'Student Resources', 'Search', 'Sign-up', and 'Login' on the right. Below the navigation bar is a horizontal menu with dropdown arrows for 'Physician', 'Student', 'Nurse Practitioner', 'Nurse', 'Pharmacist', 'Allied', 'Point of Care', and 'Free CME/CE'. The main content area features a large blue banner with a photograph of a male doctor in a white lab coat and stethoscope. The text on the banner reads: 'Ace The Allergy and Immunology Exam'. Below this, it states: 'Be prepared for the American Board of Physician Specialties® (ABPS) and American Board of Urgent Care Medicine (ABUCM®) with 514 Questions that our experts have selected to simulate the real exam.' A 'Money Back Guarantee' section follows, stating: 'Feedback from thousands of users proves our Q-Bank will help you excel on your exam. Use the Q-Banks and if you don't pass, we will refund your money. What do you have to lose?' A small blue chat icon with a red notification bubble is visible in the bottom right corner of the banner.

49

StatPearls

- [Ace The Allergy and Immunology Exam](#)
- Qbanks for multiple IM and Peds specialties
- \$199/month or \$599 for 6 months
- Just over 500 first, second and third order questions
- All questions written and reviewed by board certified Physicians or fellows
- All questions linked to exam blueprint and cross-referenced to other

50

Question Mountain

https://questionmountain.com/index_sp?user=allergy

Welcome Demo Preparation Users Help Contact

Login

Email or username
Password
Sign in

Remember me
[Sign up](#) | [Forgot password](#)

Allergy & Immunology board review

- Achieve excellence in **Allergy** boards and test preparation. Join TODAY. Computer based testing format. Make use of our great rates!
- High-yield questions. Detailed explanations. Follow test scores over time. A total of **200 questions** in **8 categories**: Immune cells (28), Anatomy and physiology (10), Research methods (23), Hypersensitivity (49), Immunology (35), Pharmacology (10), Diagnosis (10), Immune mechanisms (35).
- No software required. Compatible with PC, Mac, and Linux. Mobile-optimized for questions on the go!

Question Distribution

TOTAL=200
Categories=8

51

Question Mountain



Question Mountain (Archived)

Thank you for visiting **Question Mountain**. This site is now archived and is no longer being updated.

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52

While doing question banks

- Danger is they remain passive and disengaged
- Stay tuned, will discuss a technique in our next phenotype

53

The Passive Learner- More Resources

- Key citations
 - Bjork RA, Bjork EL. Desirable difficulties. *Psychol Learn Motiv.* 2011.
 - Dunlosky J et al. Improving students' learning with effective techniques. *Psychol Sci Public Interest.* 2013.
 - Brown PC, Roediger HL, McDaniel MA. *Make It Stick.* 2014.
- Additional reading
 - Karpicke JD, Blunt JR. Retrieval practice produces superior learning. *Psychol Sci.* 2011.
 - Mayer RE. *E-Learning and the Science of Instruction.*

54



PHENOTYPE5 -
THE
OVERLOADER

55

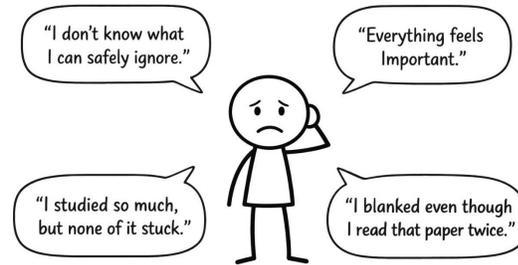
The Overloader- What you might see

- Lots of knowledge but if you push just a little you see the superficiality
- The opposite of the unmotivated but often exhausted or burned out
- High cognitive load so often forgets
 - Concepts they mastered one day are gone the next

56

The Overloader- What you might find

- Consumes massive amount of content INDISCRIMINATELY
- But the critical gets buried in the detail- forrest for the trees
- Cant distinguish most critical info from the noise



57

THE OVERLOADER-FIXES

1. Show them the forest!
 - Frameworks and key details over all the information
2. Emphasize how to identify key, can't miss points
3. I'll share the strategy we use for less "sophisticated" exams
 - I'll reference questions here but can substitute cases or papers

58

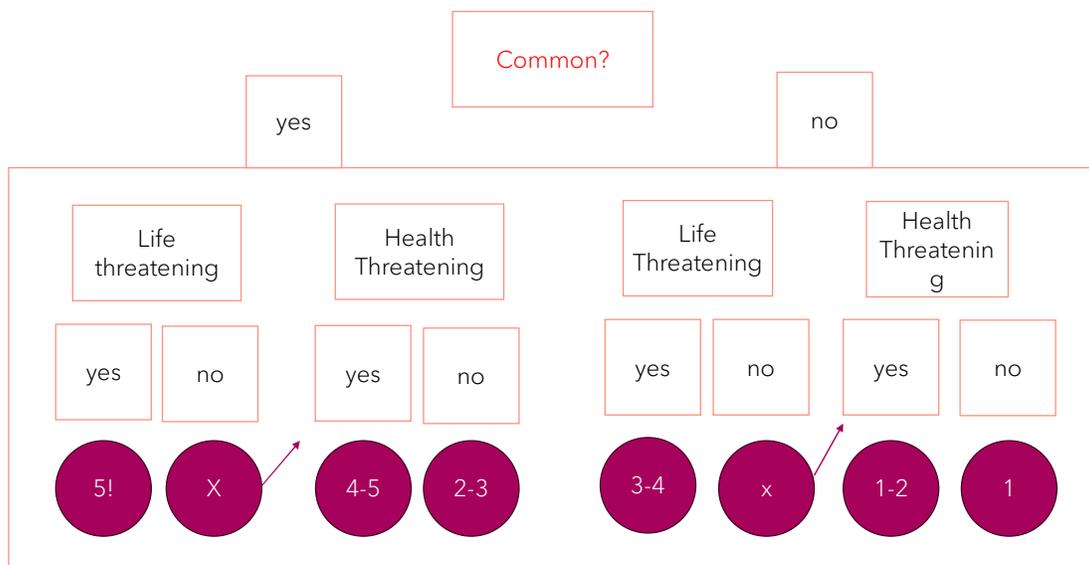
Ranking	What it means
1	Unlikely to appear on exam; not critical concept
2	Might appear on the exam but less likely; less critical concept
3	Probably will appear on the exam; not critical concept but should know
4	Will be on the exam; need to know this
5	Multiple questions on the exam; imprint on brain

A 20-year-old woman comes to the physician because of a 6-month history of diffuse joint pain, especially in her hips and knees. During this period, she occasionally has had a rash on her nose and cheeks. She has no history of serious illness and takes no medications. Her temperature is 38.1°C (100.5°F). Examination shows warmth and swelling of the knees. Laboratory studies show: Hemoglobin 10.5 ESR 40, BUN 25, Cr 1.4

Concepts tested?

- 1 Polyarticular Arthritis
- 2 Illness script for SLE

59



60

Recognize the high yield misses

Source	Concept	priority	treatment
Paper 1	Polyarticular Arthritis	4	
Paper 2	Lupus Presentation	5	
Uworld 25,2	Prevention of complications in diabetes	4	ACE's and ARB's (-pril, 1sartan)
NBME 3,22	Transfusion Reactions	5	

61

Reinforce

- Critical to use the spaced repetition tools we discussed earlier
- But they should not be reinforcing EVERYTHING

62

The Overloader- More resources

- Key citations
 - Zimmerman BJ. Becoming a self-regulated learner. *Theory Pract.* 2002.
 - Eva KW, Regehr G. Self-assessment in the health professions. *Acad Med.* 2005.
 - Cilliers FJ et al. Assessment impact on learning. *Med Educ.* 2010.
- Additional reading
 - Schmidt HG et al. A cognitive perspective on medical expertise. *Acad Med.* 1990.
 - Norman G, Eva K. Diagnostic reasoning. *Med Educ.* 2010.

63



PHENOTYPE6-
THE ANXIETY
SPIRARLER

64

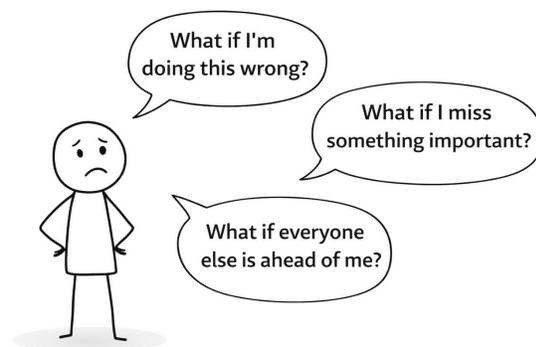
The Anxiety Spiraler- what you might see

- Rockstars on wards.... Impressive FOK, self directed but always struggle on exam and
- Constantly questions themselves
- Catastrophizes when they don't know something
- Seeks constant reassurance

65

The Anxiety Spiraler- what you might find

- Different from the overwhelmed
 - This isn't inertia, its non stop anxiety
- Test anxiety
 - Long history of underperforming on exams
- Direct observation
 - Catastrophizing
 - Second guessing



66

THE ANXIETY SPIRALER- FIXES

1. Outside help and support
 - A. Therapy
 - B. Beta blockers
2. Simulating exam day conditions
3. Simulating pre-exam condition
4. Test taking tips
 - A. Stick with gut
 - B. Cover up answer options on multiple choice questions
 - C. First pass through a block- only complete the questions you are most certain about

67

The Anxiety Spirarler- More resources

- Key citations

Cassady JC, Johnson RE. Cognitive test anxiety and academic performance. *Contemp Educ Psychol*. 2002.

- Putwain DW. Test anxiety and academic achievement. *Educ Psychol Rev*. 2007.
- Artino AR et al. Anxiety and self-regulated learning in medical students. *Med Educ*. 2012.

- Additional reading

- LeBlanc VR. The effects of acute stress on performance. *Acad Med*. 2009.

68

RECAP and TAKEHOMES

- **First principle-** Create an environment where learners feel comfortable to share concerns
- **Second Principle-** High Sensitivity approach THROUGHOUT - cast a wide net but...
- **Third Principle-** Individualize the treatment by identifying the possible underlying issue
- **Fourth Principle-** Phenotypes
 - The Overwhelmed
 - The Unmotivated
 - The Missing Foundation
 - The Overloader
 - The Passive Learner
 - The Anxiety Spiraler