Pediatrics® Board Review

2025 EDITION

15th Edition
Your EFFICIENCY BLUEPRINT to
Passing The Pediatric Boards

YOUR SUCCESS BLUEPRINT
TO PASSING THE PEDIATRIC BOARDS

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Massive Online Community • Board-Focused Content
Efficient Learning So You Can Enjoy Life And Have More Fun!

Written by Ashish Goyal, MD

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INTRODUCTION TO THE "EASY" PBR EXPERIENCE! (Read This!!!)

Hi there! I'm Ashish Goyal, the author and creator of Pediatrics Board Review (PBR). I've had the privilege of guiding thousands of pediatricians through their board exams. As a double-boarded physician living on a remote landmass, I've seen my work impact pediatricians nationwide.

More than just study materials, PBR is a system designed to **limit overwhelm, give clear direction, and maximize efficiency**. You'll be given the **essential information** needed to ace the boards, without all of fluff. The results speak for themselves and demonstrate that PBR is ideal for **first-timer test-takers and those who are at high risk of failing**.

The key to our success has been the **PBR Certification System**. The system is built around **clear and concise information and guidance**. The concise information is available in both **hardcopy and digital formats**, and the guidance tells you exactly how to use the resources, and wehen. All you have to is follow the checklist.

This **multimodal and formulaid approach** has not only been shown to **enhance learning and retention**, but it also places a **strong emphasis on test-taking strategies**—a focus I've been pioneering for over a decade to achieve seemingly impossible results, such as helping **one pediatrician who passed on his 10th attempt and another pediatrician finally find success on her 11th attempt**.

PBR is the ONLY pediatric review to offer this approach. It was created for first-time test-takers to help them pass easily, but has made miracles happen for those who have previously failed.

Our knowledge base resources include a Core Study Guide, a Q&A book, online editions of our books, an audio course, a video course, and a Virtual Atlas of Pediatric Pictures. Information is **presented in the same order** so your efforts are maximized for efficiency.

Our "success accelerator" resources include live ASK THE EXPERT webinars, ASK THE EXPERT question portals for every chapter in the Core Study Guide, Personalized Study Schedules created for you by Team PBR, Blueprints for Success based on your risk profile, an Online Test-Taking Strategies Course, a Live Test-Taking Strategies & Deep Study Course, a private online community, and much more.

PBR is tailored for a wide range of needs – from **residents** needing to increase ITE scores to **first-time ABP exam** takers to, to **repeate test-takers**, to pediatricians preparing for the **recertification exams** and those in need of **CME/MOC credits**.

More than just study materials, PBR is an **integrated system** offering **content, test-taking skills, personal guidance**, and **passionate community support** to help you **cement knowledge and surpass your expectations**. Our alumni's success demonstrates that **our system is all you need** to pass your exams.

PBR's first-time pass rate for the ABP initial certification exam is estimated at **98%**, which is significantly higher than the national average of **81-84%**.

In short, Team PBR and I aim to help you *get* board certified and *stay* board certified. We're passionate about what we do, and we're always here to help. Please reach out if you need anything along your journey!

All the best,

Ashish & Team PBR

WHAT CHALLENGES IS PBR SYSTEM SOLVING FOR YOU?

EFFICIENCY THROUGH SYSTEMS AND INNOVATION

Most board review books and courses simply hand you a book and say, "good luck." That's how I studied for the USMLE exams, the pediatric board exam (twice) and the internal medicine board exam. **I was completely isolated!** After purchasing thousands of dollars of board materials, I was left to go through the books and video courses with no real guidance, no feedback from my peers, and absolutely no advice from the authors (besides a one-page preface).

NO MORE ISOLATION

Because of how excruciatingly painful that was, **I've created a community of pediatricians for you to study with and a blueprint** of what to study, how to study it and how to do so **EFFICIENTLY**!

GUIDED TO SUCCEED

ALL of PBR's resources are created with your *time* in mind. I've aimed to solve these questions over the years:

* Will the resource be **easy to use**?
* Will it provide **more value** than existing resources AND provide that value in a **more streamlined** fashion?
* Can we make the resource **easily accessible via smartphones and tablets**?
* Will the resource **reinforce the core concepts** laid out in the PBR and in the Q&A book **instead of overwhelming** you with new concepts?
* Can we make the resource **portable** (e.g., audio or video?) so that it can be used at times when a physician, or a mom, or a dad, or a gym-enthusiast, would not normally be able to study?
* Can we teach you how to **become a better studier** and maximize your time in front of the books **through Deep Study**?
* Can we assist by creating Personalized Study Schedules for you that **map out your study time**?
* Can we help you **become a better test-taker** through courses on test-taking strategy?
* Can we create **an easy-to-follow formula for success**?

PBR is a system unlike anything you have ever experience before in your medical career. The Core Study Guide is written in easy-to-understand language and provides you with hundreds of time-saving memory aids. The online systems allow for one-click access to hundreds of high-yield images across the web. The Q&A book has some of the highest yield and most board-relevant questions available.

You also have a ready-made study group of hundreds of pediatricians to help you EFFICIENTLY blow past trouble spots in your studying. Plus, your questions, requests for clarification, and submissions of potential errors are all used to create a Corrections & Clarifications Guide that is released annually to the entire PBR community right before the initial certification exam to give you a boost in your knowledge base and understanding of the materials.

All of these efficiency-focused systems **SAVE YOU OVER 100 HOURS OF TIME** and give you **flexibility in your life to enjoy your family, your friends, or to reinvest that time** into repetition of the PBR material.

A critical component of ANY individualized board review plan is to go through the study material MULTIPLE times. **PBR is concise, makes the learning manageable,** and will allow you to feel confident on your test day because of well-prepared you are for your exam.

WHAT IS THE BEST BUNDLE FOR ME?

→ PGY1 – PGY2 (IN-TRAINING EXAM PREPARATION)

Your main goal should be exposure to board-relevant content. I recommend that you either get the **Ultimate Bundle Pack + MP3 Bundle** or the **ALL ACCESS PASS**. If you want to sign up for multiple years to ensure access through the date of your exam, email us to get a big discount. For group discounts, visit www.pbrlinks.com/GROUPS.

→ INITIAL CERTIFICATION EXAM PREPARATION (PGY3 & HIGHER)

In general, the **NO BRAINER** and the **VIP BUNDLE** are the best bundles. The No Brainer is the one that most low-risk initial certification exam takers enroll into. It gives you everything you need to develop your fund of knowledge while also providing our introductory Online Test-Taking Strategies Course to help you learn test-taking strategies. You also get up to three 90-Day Personalized Study Schedules created for you by Team PBR.

→ WHAT IS YOUR RISK PROFILE? IF YOU DON'T KNOW... YOU COULD BE IN TROUBLE.

Your plan of attack MUST be based on how likely you are to pass or fail. What is your risk profile? If you don't know, please visit www.pbrlinks.com/RISK-CALCULATOR immediately and find out.

For **LOW-RISK** test-takers, the **ALL ACCESS PASS** is also a very good option. It focuses on a multimodal learning experience to develop your fund of knowledge and gives you access to our ASK THE EXPERT live webinars and online question portals. This bundle does not focus on test-taking strategy, and it only offers one 90-Day Personalized Schedule. The assumption is that you tend to do very well on exams, you've never failed any medical board exam, and you are very good with time management.

For **MODERATE-RISK** test-takers, the **NO BRAINER** or the **VIP BUNDLE** would be the bundles to choose from. The No Brainer includes the All Access Pass, the Online Test-Taking Strategies Course, and it also offers three Personalized Study Schedules created by Team PBR. **However**, this exam is not like any other medical board exam you have taken, and implementing the teachings and strategies from the VIP Bundle (discussed below) will ensure that you pass! So, it's my belief that the "insurance" is worth it.

For **HIGH-RISK** test-takers, the **VIP BUNDLE** is the right choice. It includes the No Brainer and a seat in one of our Live Test-Taking Strategies & Deep Study Courses. These courses help you with advanced test-taking strategies and allows you to break through the plateau that you will reach if you only use our Online Test-Taking Strategies Course. The Deep Study lectures are often called "life changing" because they help you become a MUCH better manager of your time, your energy, your life's priorities, and your focus. The VIP BUNDLE also includes Group Deep Dive calls to help you understand PBR's best practices and to help you break through barriers during your board prep.

→ MOCA-PEDS ASSESSMENT QUESTIONS

You **do not** need the PBR Core Study Guide and Q&A Book. They are good supportive resources, but we have a very inexpensive **MOCA-PBR Study Guide & Test Companion** that is specifically created to help you pass your quarterly questions. Every year, we create 1-page topic summaries to cover ALL of the ABP Learning Objectives and Featured Readings for General Pediatrics in concise, 3-page summaries. If we do our job right, you will pass without needing to study anything else!

→ MOC EXAM (4-HOUR, PROCTORED RECERTIFICATION EXAM)

This is a smaller, easier version of the initial certification exam. For most board-certified pediatricians, the **Ultimate Bundle Pack + MP3 Bundle** or the **ALL ACCESS PASS** are sufficient. If you are someone who has struggled with standardized exams in the past, then you should enroll into the **NO BRAINER** bundle.

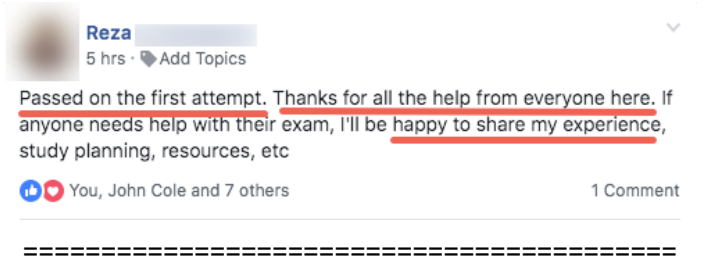
Still not sure? Contact us and we'll guide you further!

WHAT ARE THE 7+ RESOURCES THAT YOU HAVE ACCESS TO?

The **ALL ACCESS PASS** and the **NO BRAINER** are by far the most popular memberships for anyone taking the initial certification board exam. If you have one of these, **please make sure you take advantage of all of these resources!** If you are at moderate or high risk of failing, please also read the previous page because the **VIP Bundle** might be the right one for you!

1. **PBR'S COMMUNITY!** This includes Ashish Goyal, "Team PBR," PBR's summertime webinar content experts, and the **MEMBERS-ONLY DISCORD GROUP**. **JOIN THE INVITE-ONLY DISCORD GROUP NOW**! Do not study in isolation! You have a community of pediatricians to support you. **The COMMUNITY aspect is one of the most valuable components of the PBR system**. Studying for a board exam can be GRUELING, but having others to lean on for clarification, advice or just some moral support can make all the difference in your studying experience. Just have a look!

PRIOR PRIVATE COMMUNITY COMMENTS FROM BEFORE WE RECENTLY SWITCHED TO DISCORD



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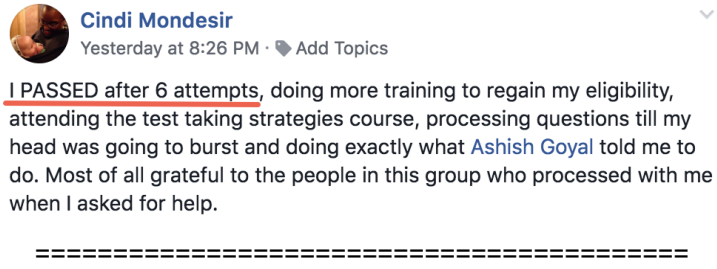

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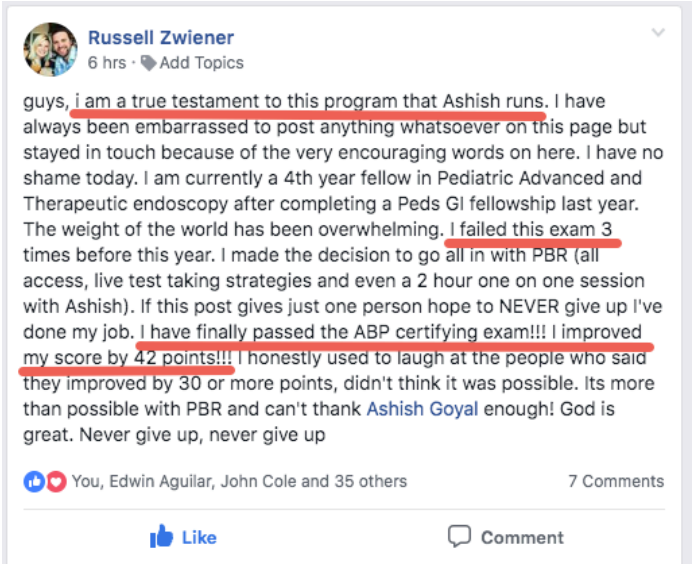

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5 hrs · Add Topics

I PASSED!!!! I failed three times then found out that my job would only allow me to take it one more time before letting me go. And if that wasn't stressful enough I found out I was pregnant. Studying with a full time job, 3 kids and one on the way was awful but I pushed through. I took that test 37 weeks pregnant and thankfully my baby held tight. Finally I thank god I'm able to say I am board certified. Thank you PBR #wonthedoit

You, John Cole and 25 others 7 Comments

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10 hrs · Worcester, MA, United States

Made it!!! Thank you Ashish, PBR staff and Facebook crew for your help and support with the Boards!!!

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Carolyne

20 hrs

Passed! Thank you Ashish and PBR crew!

Visit the following link to join our community: www.pbrlinks.com/community

2. **HARDCOPY PBR CORE STUDY GUIDE**: YOU WILL LOVE YOUR "PBR!" It is at the center of your success blueprint. Carry it everywhere, highlight it, draw pictures, create mnemonics and add notes to help you cement the 2500+ MUST-KNOW topics in this book. After your exam, I promise you that you will MISS IT!
3. **HARDCOPY PBR Q&A BOOK**: KNOW this book! It is NOT a random collection of questions. The material should be considered CORE material for you to study over and over again. Carry it around and mark it up! Make sure you review this book as many times as you review the Core Study Guide.
4. **ONLINE VERSIONS OF THE PBR CORE STUDY GUIDE**: All 2500+ topics are available in a scrolling PDF style format and in a topic-by-topic, **searchable** format. Keep this open and use the **one-click**

image links while you study or after each two-hour block of studying. It's **iPhone/smartphone compatible, iPad/tablet compatible and desktop compatible**.

5. **ONLINE VERSION OF THE PBR Q&A BOOK**: Have a few minutes while at work? Open the scrolling PDF version of the Q&A book and go through one or two questions.
6. **PBR WEBSITE**: The website has a TREMENDOUS amount of valuable content. Each article was written to help address a need expressed by pediatricians. Read as many of the articles as you can! There is also a TOOLS section where you can find links to **discounted pediatric board review question banks**.
7. **PBR'S TEST-TAKING STRATEGIES**: Physicians are not taught HOW to take tests. **GOOD pediatricians with sound clinical reasoning WRONGLY believe that** a board exam is a measure of one's knowledge base, and thus a measure of one's abilities as a clinician. That is completely false.

   Exams require mastery of the English language, mastery of pacing, mastery of your emotional state during an exam, and an understanding of the **deceptive tactics** employed by question-writers to create **seemingly possible yet blatantly WRONG answer choices**.

   PBR's **ONLINE TEST-TAKING STRATEGIES & COACHING COURSE** (included in the No Brainer bundle) offers **insights into this "board game."** You will stop viewing question as miniature patients and start viewing them as miniature riddles. Riddles with concrete rules and strategies to help you reach the correct answer quickly (**even when you often lack the clinical knowledge!**). Understanding the rules of the game will completely change your outlook on how to prepare for the exam and how to use board review questions for PRACTICE instead of content. **I HIGHLY recommend the PBR Test-Taking Strategies & Coaching Course for anyone who is taking the boards, but especially for those who are "at risk." This includes you if:**

   - You have failed this exam at least once
   - You typically score below the national average on your board exam scores
   - You have failed ANY USMLE Step exam
   - You were classified as "at risk" during residency based on your in-training exam scores
   - You are more than 1 year out of residency

   The course helps you understand the **techniques and skills** associated with answering board-style questions correctly. **We've helped MANY pediatricians finally pass the boards after failing multiple times, including ONE, TWO, THREE, FOUR, FIVE, SIX, SEVEN, NINE, and TEN times!** So, helping you should be easy.

   To get just a taste of how you can increase your board scores immediately, and to learn a few of the rules to the "board game," click here and read a PBR article I wrote titled, "***3 Strategies to Skyrocket Your Score!***" - www.pediatricsboardreview.com/**techniques**

   Also, visit **www.pediatricsboardreview.com/strategy** and watch a FREE test-taking strategies session right now.

TEST-TAKING STRATEGY COURSE MEMBER TESTIMONIALS

(FROM MEMBERS OF OUR ONLINE COURSE AND/OR OUR LIVE COURSE)

*Ashish, I did it. I can't thank you enough for creating an amazing system to keep me on track with my studying. And the $2000 for the **live weekend** test taking course was well worth it. Doing the technique during the test kept me focused and allowed me to eliminate wrong answers. Thank you for all the great advice, sticking to the material, memorize, memorize, memorize then practice practice practice. **After 4 failed attempts**, it was exhilirating to finally read the words, "we are PLEASED to announce you PASSED!" I will definitely recommend your program. God Bless*

- Dr. Yessenia Castro-Caballero, Board Certified Pediatrician

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I believe I broke the record taking this test 10 times!!!! I finally passed on the 10th… I appreciate sincerely all your help, I have cried cried all day today, after too many years and thousands of dollars spent, finally this is in the past now. Thank you so much.

- Dr. Pablo Chagoya

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*I PASSED finally!!!!!!!!!!!! So relieved and it's all because of you!! I would not have done it without the **live courses**... Thank you Ashish!!! You are the best!!*

Frannie
Your devoted PBR fan :)

*- Dr. Frances Liu, Board-Certified Pediatrician who **increased her score by 18 points after failing 3 times***

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*Definitely helped to get a better understanding of the "board game" that Ashish mentions. **I'm sure I've fallen prey to those** traps **in the past**.*

Also, knowing the types of questions and the algorithm to figuring out how to spend my time answering the questions-- never would have thought about the Hybrid approach to just reading the last line of the vignette for "this/these" questions.

Really didn't know that I shouldn't be spending time reading through the whole vignette... or doing the "top to bottom" approach!

Overall it was great and I really appreciate you taking the time and effort putting this together and making sure that we can succeed our first time around.

*Helped immensely with reading/understanding the "English" of the questions - **I actually would've gotten one example question wrong in the past had I not used the AaCNI mnemonic***

***I had very little time to prepare for the boards...** The core study guide helped me focus on topics that were high yield on the exam. In addition, **the strategies taught by Ashish were very helpful and is what I believe helped me PASS**. I would highly recommend the PBR for anyone needed to review in a short period of time. **It is worth every penny**!*

- Dr. Darlene Melk, Board Certified Pediatrician

Ashish, this is Russ Zwiener... ***The weight of the world has been lifted! I have PASSED the 2018 ABP certifying exam. I improved my score by 42 points and passed by 35. Tears of joy are wonderful.*** *No Thank you could ever be sufficient for all the support and guidance over the past couple of years. Thank you again and please let me know if I could ever help with PBR in any way!!*

Board Certified Pediatrician
VIP Bundle Member
"Deep Dive" call with Ashish
42-Point Increase
3 Prior failed attempts

The first time, I didn't finish... I landed a 166. The next year I joined PBR and went over the book 3 times. I should've taken off two weeks prior, but only managed one. I earned a 179. Heart breaking. But how could I give up when I only needed one point. So this year ***I went over the book at least 5 more times. I did the ATL live test-taking strategies training and learned how to process through choosing the most correct answers.*** *I arranged to have at least 3 hrs of deep work everyday and did a chapter a day plus prep questions from that section. Two mos before the exam I did med study practice blocks of 84 questions timed to practice randomized subjects.* ***This time I got a 208...*** *The tears of relief...really I can't describe it as intensely as we felt it. So much time, work, money, defeat I had felt...finally redeemed.* ***The sacrifice my family made, finally we could leave purgatory and move on!*** *... Thank you PBR.*

Dr. Samantha
Board Certified Pediatrician
All Access Pass Member
Live Test-Taking Strategies & Deep Study Course Member
29-Point increase
2 Prior failed attempts

Ashish and Team. Today is the best day ever. I had to do many things to get here. ***You gave me the tools, and my confidence back. The test taking strategies changed my approach to questions. It was clear, consistent and concise. I approached each question the same way. It took me 10 years to figure out how to take this test.*** *The personalized schedule kept me focused and on task. You helped me overcome my biggest challenge in my career. I passed with a 192. I am finally board certified after 10 years and I now have more options available to me. I can keep my family together.* ***I have conquered my biggest nemesis and it feels great!*** *You are awesome.*

Dr. Cynthia Mondesir
Board Certified Pediatrician
All Access Pass Member
Live Test-Taking Strategies & Deep Study Course Member
"Deep Dive" call with Ashish
26-Point Increase
6 Prior attempts

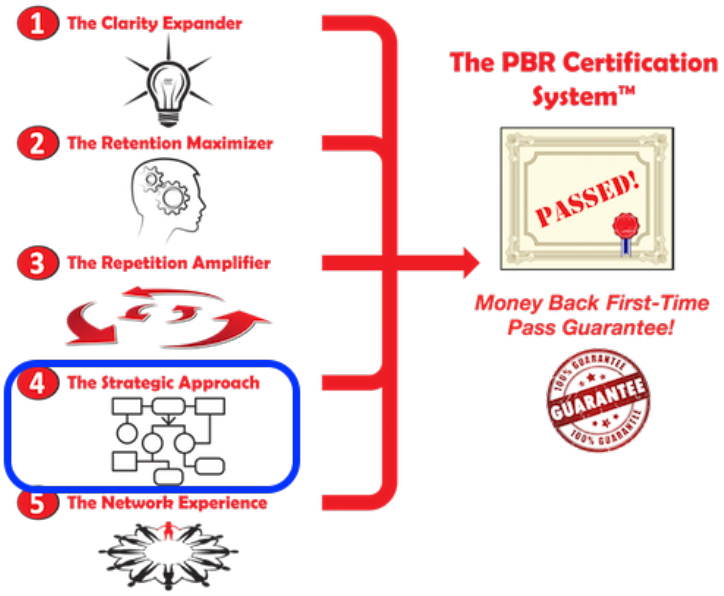
** All testimonials are by real people, and may not reflect the typical purchaser's experience, and are not intended to represent or guarantee that anyone will achieve the same or similar results.*

The time that you spend learning <u>how</u> to use test-taking strategies to increase your scores will be the HIGHEST yield time of your board prep. The overall time investment is as little as 8-16 hours, but the skills you learn will be used on EVERY single question that you come across. Is there a single chapter in this book that can guarantee you the same benefit?

THE ANSWER IS "NO!"

① Signup for Your FREE Test-Taking Strategy Session Now

www.pediatricsboardreview.com/strategy



② Use the ONLINE Test-Taking Strategies Course

Go through the online course, do independent work, increase your skill, and reach a plateau.

www.pediatricsboardreview.com/strategy

③ Attend the LIVE Test-Taking Strategies & Deep Study Course

Come to the LIVE course, get mentored, maximize your test-taking strategy skills, BREAK THROUGH your plateau, and learn Deep Study techniques to maximize your "book time" too.

www.pediatricsboardreview.com/live-tts

DID YOU KNOW THAT I FAILED THE BOARDS?

I took the ABP initial certification exam the year that I graduated from residency. **I used multiple study guides to prepare**. Because there was so much information in front of me (print and video), **I only got through everything once**.

I felt okay going into the exam. I thought, "I've been through the MCAT, three USMLE exams and an Internal Medicine board exam. I did fine in residency, and I studied really hard for two months. I'm *sure* I'll be fine."

Coming out of that exam room on test-day, I felt nauseous. I realized that I might have just failed my first medical board exam, ever! **I was upset with myself for getting so scattered with all of those different study materials**, but I was also annoyed because **I still couldn't think of a single resource that I could use as a primary study guide the next time around**.

I went home and made notes about **how I would study differently** if I had failed. What topics would I concentrate on? What topics just don't seem to be "testable"? What information is a waste of time to study?

When the results finally came, I failed. I estimate that I **failed by seven to nine questions. I made key strategy changes** based on my previous experience. I studied for hundreds of hours while still working a full-time job. I **focused on efficiency, solid mnemonics for memorization and I stopped trying to learn "all of pediatrics."**

You never feel "great" coming out of a board exam, but the second time around I felt like I had a fighting chance. **My score increased by 160 points on the old passing scale, and I estimated a pass by about 37–39 questions!** Pretty soon, I even received another kind of letter from the ABP. **The American Board of Pediatrics asked ME to write questions for the THEM!!!**

I was really just happy to pass. Failing **the first time had cost me extra time, money, and energy** that I would have preferred to spend with my loved ones.

Prior to creating the Pediatrics Board Review experience, I was ashamed that I had failed. Now, **I've taken a horrible experience, and I've created something that is helping residents and pediatrician across the country**. I've also realized that **failing the boards did not mean that I was a bad pediatrician**. Nor did passing by such a wide margin mean that I am a great pediatrician.

I'M JUST AN AVERAGE PERSON WHO DID EXTREMELY WELL ON THE EXAM… AND THEN TOOK MY NOTES AND SYSTEMS AND TURNED THEM INTO THE PBR. No matter who you are, I know that you can pass your exam too. That's why PBR comes with a **100% Money-Back First-Time Pass Guarantee**.

It's the easiest, most EFFICIENT, and only integrated board review *SYSTEM* to help you PASS the pediatric boards. So, rest assured that by joining the PBR family, you're already on the right track to success.

JUST FOLLOW THE EFFICIENCY BLUEPRINT!

THE PBR EFFICIENCY BLUEPRINT

The pediatric initial certification exam has **one of the highest failure rates of any medical board exam**. I URGE you to follow just a few of my simple but CRITICAL recommendations as you go through your board review experience. ***ESPECIALLY #1***!

1. **PLEASE STICK TO ONE PRIMARY STUDY GUIDE - the PBR!** Spreading yourself too thin by reviewing multiple resources is the ***BIGGEST MISTAKE*** you can make. **I've gone through thousands of emails, interviews and surveys**. It's clear that this one, single recommendation that will increase your chances of board success more than anything else I can say.

   This is a **key similarity amongst pediatricians who failed** the boards but then went on to pass using the PBR system. So please **do not spend your time going through other books, video courses or expensive live board review courses**. **Go through the PBR books** (Core Study Guide + Q&A Book) **and the PBR companion products** (videos, MP3s, digital picture atlas, webinars) exclusively and give yourself a seamless, multimodal approach.

2. Approach your PBR material by first simply SEEING all of the PBR content in the Core Study Guide **and** Q&A Book. Spend about 60–90 seconds per page to simply SEE everything that you will need to learn so that you have an idea about the type of knowledge you'll need to acquire in order to pass this exam. **This should take you a full day**. **DO NOT spend time writing notes of any kind during this process.** Do NOT treat the Q&A Book like other questions. This is CORE content.

   During your first official read, leave no stone unturned. Crosscheck anything that confuses you. Create mnemonics, notes and drawings in the margins so that you understand EVERYTHING. Make sure that you will NEVER have to go outside of the PBR for additional knowledge or clarifications again. If you get stuck on a concept, reach **out to your peers in the PBR Community** (www.pbrlinks.com/**community**)! If you think you've found an error, notify us through our special error submission link (www.pediatricsboardreview.com/**error**). **This will help you maintain your PACE and promote EFFICIENCY**! When crosschecking, ONLY go outside of PBR briefly for possible errors or confusion. That's it! **Do NOT go down the black hole of GOOGLE**! If after 5 minutes you're still stuck, submit your question through the ASK THE EXPERT portal for that chapter and move on!

   Your second time should be MUCH faster if you are using my highlighter system. Do NOT let your curiosity of non-PBR topics distract you. As you break up your studying time with questions, you WILL want to look up new topics and crosscheck facts between the PBR and PREP®. DO NOT DO IT! It's a guaranteed waste of precious time that could be spent on the HIGHEST YIELD resources that you will have at your disposal to pass the board exam: PBR's.

   Your third, fourth and fifth times through the PBR content should strictly focus on adding more information into your long-term memory through **repetition**, through the use of mnemonics, and through the use of **MULTIMODAL studying**. Use audio, video, webinars, study buddy sessions, etc. Just use *something* to mix things up because it's been **proven to increase learning**! Use the audio course everywhere, and use the video course in a later "recapture" round (more on this in the members' area).

   Again, you must resist that urge to look up extraneous information and you must **focus on QUALITY study time**. Ensure that your reading is focused on LEARNING and REMEMBERING the concepts. Do not simply read for the sake of reading, and do not study when you're exhausted or irritable.

   Your primary goal is to pass the exam. As long as you KNOW everything from the Core Study Guide + Q&A Book, **you will have enough information in your brain to easily pass as long as you also have good test-taking strategy**. **However, if you try to learn "all of pediatrics"** you will get

overwhelmed and probably **fail the exam**. Map out the right number of hours based on your risk profile (more on this coming up) and hold yourself accountable.

3. **Use PBR's Q&A book as additional, new CORE material. Also use it to get familiar with very high-yield topics and questions**. The format is short and to the point without too much extra information. The questions will help you understand what types of key findings you need to identify on your practice questions and on your exam. Please remember that **the Q&A book is considered CORE CONTENT**. You need to KNOW IT COLD! Do NOT treat the PBR questions like PREP® questions.

4. **Go through at least 1000 practice questions.** Don't go through them all at once (much more on this in the schedule outlines below). As you go through the questions, **work on your timing**. If you can average about 1 minute and 15 seconds per question, you will be fine for the boards. Do not try to understand why every single incorrect answer is wrong. **Just focus on the correct answer, and if your answer is wrong, figure out WHY it's wrong.** Skip explanations about all of the other answer choices.

   When evaluating WHY you answered a question wrong, figure out if it was because of a **CONTENT problem** or if it was due to a **TECHNIQUE problem**. Even if you "think" you're sure, trust me, it could still be a TECHNIQUE problem, and you must get help – www.pediatricsboardreview.com/**strategies**.

   Did you answer a question incorrectly because of a CONTENT issue? Meaning, you had a knowledge deficiency? If so, was the content in the PBR? If the answer is "yes" then you MUST know that information. If the answer is "no" then do NOT worry about it! Do NOT start looking at Nelson's, Harriet Lane, Google, UpToDate, etc. **It's a black hole that you must avoid** because it will only overwhelm you, and it will keep you from the two main goals of **knowing the PBR CONTENT COLD** and **PRACTICING tons of questions** to master your test-taking technique!

   Remember, the AAP writes PREP®, the ABP writes the boards. Going through **three to four years of PREP®** is great, but keep in mind that the resource is great for **CME**. Any single year of PREP® questions is ***not*** designed to be a stand-alone study guide for the ABP exam. The questions are EXCELLENT for practicing and mastering your test-taking technique, but your highest-yield information will come from the PBR study guides and systems. If you need MORE practice questions, you can get discounted practice questions by visiting www.pediatricsboardreview.com/tools.

   Did you answer a question incorrectly because of a TECHNIQUE issue? Did you add extra information and assumptions to the question or the answers that led you to the wrong answer? Did you spend too much time on a question even though it was clear that you didn't have the knowledge to answer it? **Did the question-writer trick you with a distractor?** Did the question writer trick you with an English question instead of a clinical question? Did you get anxious or nervous under a timed mock exam? **Did you often get stuck between seemingly similar answer choices?** Are you still confused about why the answer you chose is wrong?

   Make notes about the kinds of issues you're having and try to figure out solution and strategies to avoid similar pitfalls in the future. If you notice that TECHNIQUES-BASED PROBLEMS creeping in over and over again, or you don't know what I mean by "technique," you need to **seek out help through the PBR Test-Taking Strategies & Coaching course at** www.pediatricsboardreview.com/**strategies**.

5. **EXTREMELY Important Test Day Tips**: PLAN to be successful. You will find two links below. The first breaks down the number of questions, time per block, etc. for your exam. The second is **a list of excellent PBR articles**.

   www.pediatricsboardreview.com/**examday**

   www.pediatricsboardreview.com/category/**test-day-tips**

STUDY SCHEDULE: Resident? First-Time? Failed? MOC? MOCA? WE'VE GOT YOU TAKEN CARE OF!

We have a TON of guidance on how you can schedule your study time. Since PBR is of benefit to pediatricians at all different levels, I've tailored my recommendations accordingly below.

EVERYONE MUST recognize the **difference between clinical practice and what the ABP would want you to do on the exam**. The exam is filled with answer choices that sound like they would be great options in practice, but unless you know what "the book" says, you will have to simply roll the dice.

For anyone taking the **Initial Certification exam**, recognize that the pass rates are DRAMATICALLY LOWER than the USMLE Step Exams. **In 2023, the first-time pass rate for US and Canadian medical students taking the USMLE Step 1 was approximately 92% while the pass rate for the ABP initial certification exam was only 82%**! **Our members' pass rate for first-time test takers of the ABP exams is estimated to be > 98%! So, stay focused on PBR!**

ARE YOU A RESIDENT? Simply familiarizing yourself with everything in the PBR content before you graduate will dramatically increase your chances of passing the boards.

While on subspecialty rotations, READ and KNOW the associated PBR chapter. While on general inpatient or outpatient rotations, focus on the rest of the book, and take just 15 minutes per day to read the QUICK and high-yield topics about your patients. Pace yourself so that you can get through the material at least once per year. That's it! If you do that, your in-training scores will skyrocket, and you will DESTROY the boards.

ARE YOU TAKING THE INITIAL EXAM FOR THE FIRST TIME? If your PBR risk assessment shows that you are a low-risk test-taker, that likely means you're a first-time test-taker, you're taking the exam immediately after residency, and you have **never come close to failing** a medical board exam (above average board scores). Visit the following PBR article for a detailed study schedule:

www.pediatricsboardreview.com/**Schedule**

HAVE YOU EVER FAILED A MEDICAL BOARD EXAM (OR COME CLOSE)? If your PBR risk assessment shows that you are at moderate or high risk of failing the boards, you were likely categorized as being "at risk" of failing based on your in-training exam scores, you may have failed a medical board exam (ANY medical board exam) previously, or you generally score **below the national average on your board exams**. Visit the following PBR article for detailed instructions on how you can avoid failing your pediatric boards:

www.pediatricsboardreview.com/**Schedule-Failed**

ARE YOU STUDYING FOR MOCA-PEDS? For the "at home," MOCA-Peds questions, the plan is simple. Use the **MOCA-PBR Study Guide & Test Companion**. Go through our concise summaries of the most current year's Learning Objectives in detail one time. It may only take you a single day! Since MOCA-PBR is setup to be an efficient test companion to help you with your open book exam, keep it open as you do your MOCA-Peds questions. Review your MOCA-PBR study guide once per quarter. That's it!

www.pediatricsboardreview.com/**MOCA**

ARE YOU STUDYING FOR THE MOC? If you are taking the pediatric recertification exam, then your goal should be to get through the PBR materials at least twice and to do at least 550 practice questions. Did you know that you may have access to **200 FREE ABP questions**. Go through them!

www.pediatricsboardreview.com/**MOC**

PBR MEMORY AIDS - USING MNEMONICS AND PEGS

MNEMONICS: Mnemonics are memory aids that assist in helping you recall something. They are used throughout this study guide to help you study in a more focused and **EFFICIENT** manner. Not all of them will work for you, but many will. At the time of the exam, you WILL use many of the mnemonics in this book to help you answer questions. If you're lucky, you might even get a smile on your face as you think about me acting like a bit of a fool in some of the videos from the **PBR Online Video Course** (www.pediatricsboardreview.com/**videos**).

PEGS: Memory "pegs" are typically used to help you remember a list of items. By having 20 pre-memorized pegs that represent the numbers 1–20, you can easily "peg" items to those numbers. For example, in the PEG system outlined in this guide, a CAT symbolizes the number 9 (since cats are said to have "nine lives").

So, if you are trying to memorize a grocery list of 10 items and one of those items is a gallon of milk, then the 9th item could be tied to an image, or a story, about a cat. It could be as simple as visualizing a funky looking BLACK CAT that has white legs drinking from an orange bowl of MILK. The white legs and orange bowl are simply thrown in to add color and imagination. Other strategies would include the use of disproportional size, the use of action, or the use of sound. The crazier the image, or story, the better!

Please note that some of the pegs in this guide will be used in the high-yield mnemonics in this book. Please look through them a few times to see if you can get the hang of it. If you can, then you might even be able to start creating some of your OWN fun and interesting mnemonics. If you cannot, it's okay. Move on since there are only a handful of mnemonics that use one of the pegs listed here. Plus, if I *do* use a peg, I usually try to remind you of the peg association in the book.

Do you have ideas on how to make the pegs or mnemonics in this book more useful?

Please consider sharing your thoughts in the private, members' only area of the **PBR Community** You can also submit them directly to us for consideration through our errors and clarifications portal:

www.pediatricsboardreview.com/**ERROR**

TWENTY PEGS

#	USE THIS PEG	DESCRIPTIONS AND EXPLANATIONS OF PEGS
1	TREE TRUNK	Imagine the number 1 looking like a huge, brown tree trunk with limbs full of green foliage sitting at the top of a lush, green hilltop.
2	LIGHT SWITCH	A light switch has 2 positions (ON & OFF). Use a switch OR a bulb for "2".
3	STOOL	Imagine a dark, cherry wood stool with 3 legs.
4	CAR	Cars have FOUR doors and FOUR wheels.
5	GLOVE or HAND	A glove has 5 fingers. Consider making Michael Jackson's shiny glove your peg for the number FIVE.
6	GUN	Another name for a gun is a 6-shooter (since guns used to only hold 6 bullets). GUNS also kill people and put them "6 feet under" the ground.
7	DICE or CARDS	Lucky number 7! Think Vegas, think craps, think gambling with dice or cards!
8	ICE SKATE	Ice skaters are known for performing a move called the figure 8. Eight also rhymes with skate.
9	CAT	Ever heard of the phrase, "Cats have nine lives"?
10	BOWLING BALL or BOWLING PINS	The goal of bowling is to knock down 10 pins.
11	AMERICAN FOOTBALL or GOAL POST	In American football, a field goal occurs when a football is kicked through two, white, vertical uprights (the goal post). A goal post looks like the number 11.
12	EGGS	Eggs usually come in a carton that contains a dozen (12) eggs.
13	HOCKEY MASK	Unlucky number 13 and the unlucky day/movie *Friday the 13th*. The main character in the movie *Friday the 13th* is Jason, a hockey-mask-wearing killer.
14	ROSE or CHOCOLATE HEART	February 14th is Valentine's Day! So, think of a long-stemmed, red ROSE or perhaps a big CHOCOLATE HEART.
15	PAYCHECK	You get to give the IRS a huge chunk of your PAYCHECK every single year on TAX-DAY! APRIL 15th. Welcome to healthcare. ☺
16	DRIVER'S LICENSE	Age at which you get a driver's license. Other pegs to consider include CANDLES, CANDY, or a BIRTHDAY CAKE for "Sweet SIXTEEN."
17	MAGAZINE	There is a teen magazine called "SEVENTEEN."
18	VOTING BOOTH	Age when you become a legal adult in the U.S. and are allowed to VOTE.
19	KNIGHTING	Imagine a "KNIGHTING" ceremony (sounds like 19) or a KNIGHT.
20	CIGARETTES	A pack of CIGARETTES has 20 cigarettes in it.

There are TONS of mnemonics throughout PBR. Many will seem brilliant. Others may not work for you at all. If that happens, please CREATE YOUR OWN. It's initially intimidating but gets much easier with time.

Click here to read PBR's article on mnemonics: **www.pbrlinks.com/MNEMONICS**

GETTING THE MOST OUT OF THE PBR FORMAT

* **GRAY** HIGHLIGHTING: In the PBR hardcopy resources, gray highlighting is used over a word, phrase or chapter title to feature content that you **MUST KNOW**! These are very high-yield topics and are likely to be seen on the exam as an answer choice. PBR's **online** books may have this content in **red text** or yellow highlighting.

* **DOUBLE TAKE**: You will LOVE THIS! A "DOUBLE TAKE" alert accompanies topics that are in the book multiple times. Medicine ties together. Ordinarily, that results in flipping back and forth between chapters. Double Take is a PBR-specific system used to **increase efficiency** by reducing the flipping back and forth between related (or similar) topics. Most of these topics tend to be very high yield.

* **NAME ALERTS**: 

Many disease names sound very similar (e.g., Condyloma Lata versus Condyloma Acuminata, or Shwachman-Diamond Syndrome versus Diamond-Blackfan Anemia). NAME ALERTS serve as reminders to look for these subtle differences.

* **ABBREVIATIONS**: Some disorders are discussed using their abbreviations while others are discussed with their proper names. When searching for a topic online you should do a search for both. If you encounter an unfamiliar acronym, try this tool: www.**AcronymFinder**.com

* **MNEMONICS**: If you're much smarter than me, you don't need these. If you have an average memory, like me, you MUST learn to take advantage of memory aids. They can dramatically **increase your efficiency** as you journey to retain thousands of bits of information. The PBR mnemonics may or may not work for you, but many of them **should** serve as excellent examples of the various **types** of memory aids you can begin to create. **As a tip, always use as much action, color, exaggeration and "crazy" as possible**.

* **PEARLS**: These are bits of information that help tie key concepts together for you. Members LOVE THEM! Here's a PEARL for you. ☺ There are only a finite number of ways that the ABP can test you on a disease process. Some PEARLS will show you how information could be presented on the exam.

PBR ERRORS

Are there errors in the PBR? Of course there are! But I also update the PBR every year with new recommendations and guidelines. I'm able to do this because of YOUR support. If you notice ANY error in the PBR materials (e.g., incorrect spelling, grammar, incomplete sentence, contradictory information, etc.), **PLEASE visit the link below to submit the potential error OR visit the corresponding ASK THE EXPERT portal and submit the potential error there.**

www.pediatricsboardreview.com/**ERROR**

Please DO NOT email individual errors or clarification requests to me. It's WAY too overwhelming. If you have MULTIPLE possible errors, send us a Word document. I LOVE the members who do that!!

Also, because it's impossible for me to respond to every submission individually, but we do address almost every submission in our ASK THE EXPERT webinars. Also, I will likely release the annual **PBR CONTENT & CLARIFICATION GUIDE** to all active PBR members (FREE) 1-2 weeks before the exam. While this is not a "guaranteed" service, it's something I've done every single year since 2011. Your submissions drive this process and allow me to provide you with updated pediatric knowledge year after year so that you can ace your boards.

PBR TOPIC CLARIFICATION OR CONFUSION

If you are struggling with a concept, get help from the members' only area in our **PBR Community or the ASK THE EXPERT portals!** The community is EXTREMELY active (especially starting around July of every year). If you find a concept explained poorly and think the PBR needs a revision, feel free to use the error portal to bring it to my attention:

www.pediatricsboardreview.com/**ERROR**

PBR IMAGE LINKS

The image links in the PBR lead to PHENOMENAL images throughout the web! BUT these images are located on NON-PBR websites. Some websites go out of business. When this happens, we simply need to replace the image. Typically, no more than 2% of the links within PBR are "bad." We have an awesome system that allows us to change the link on our end, but we need your help when a link "dies." **Simply submit any "bad link" through the portal below and we'll take care of it!**

www.pediatricsboardreview.com/**BADLINK**

PBR & AVSAR – THE NON-PROFIT CONNECTION

WHAT IS AVSAR? I started a non-profit organization, named AVSAR Inc., at the age of 27 to help support existing non-profit organizations that were already doing great work in slum areas.

After medical school, I spent one year volunteering in the slums of Mumbai. The need for help was profound and conditions were shocking. Six-year-old children worked as child laborers, using their small, agile fingers to make beautifully detailed handiwork. Others spent their days looking for recyclables in garbage dumps.

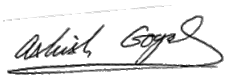
I bonded with these children. I then created a non-profit organization under the U.S. IRS, called AVSAR. We recruited volunteers from around the world (college students, dentists, doctors, MBA students) to "help where the help was needed." My personal success stories included the creation of an efficient Western-style clinic for child laborers and the establishment of an adolescent sex-education curriculum.

AVSAR helped thousands of people, but the core volunteer program was shut down in my last year of residency due to lack of funding and my 80-hour workweeks. Even so, the projects and systems created by volunteers live on and **continue** to help thousands more every year.

In order to re-launch AVSAR, we needed funding. Through Pediatrics Board Review Inc. (a private company) I donated over $50,000 to AVSAR before ever paying myself a penny.

It's because of my passion for helping people that I created AVSAR, and the passion drives me to help pediatricians through the PBR **EXPERIENCE**.

I hope that you're able to use the many resources within the PBR *Certification System* and the PBR community to EFFICIENTLY study and pass your exam. I very much look forward to being a part of your success. Now let's get started!



PRODUCT REGISTRATION

As mentioned on the PBR site, our first-time pass guarantee applies to anyone taking an ABP initial or recertification exam for the first time. “Money Back” requests may be made within 30 days of the score release date. The original PBR purchase must have been made at least 45 days prior to the exam. Submission of the product registration form is required for the money back pass guarantee and the form must be submitted within 90 days of your purchase and before you take the exam. For complete details, please visit:

www.pediatricsboardreview.com/guarantee

Visit the following link to register your product(s):

www.pediatricsboardreview.com/register

If you made an official purchase that was initiated through the PBR website but resulted in your purchase being processed through Amazon.com, or another authorized distributor of PBR resources, please contact us through www.pediatricsboardreview.com/contact so that you can send us a copy of your receipt.

CHAPTER LIST

DETAILED TABLE OF CONTENTS

Chapter 6: DERMATOLOGY

GENERAL DERMATOLOGY

CONTACT DERMATITIS, A DIAPER RASH

Contact dermatitis is a diaper rash that **spares** the inguinal folds. Treat with more frequent diaper changes and a topical barrier, such as zinc oxide.

(DOUBLE TAKE) CUTANEOUS CANDIDIASIS, A DIAPER DERMATITIS

Cutaneous candidiasis, a diaper dermatitis, can occur secondary to a contact dermatitis or recent antibiotic use. It presents as a beefy red rash with papular satellite lesions. This rash goes **into the inguinal folds**. Use a KOH prep to confirm diagnosis, and treat with a topical antifungal, such as nystatin or clotrimazole.

IMAGE (includes satellite lesions): www.pbrlinks.com/CUTASCAN1

(DOUBLE TAKE) ATOPIC DERMATITIS (ECZEMA)

In babies, atopic dermatitis (eczema) SPARES the diaper folds/flexural surfaces (but not in older kids). It is **PRURITIC** and LICHENIFIED. Food allergies CAN exacerbate eczema. The contribution of early food ingestion to the development of atopic dermatitis is controversial. Eggs, fish, milk, peanut, soy, wheat and strawberries are the foods thought to possibly contribute, but delaying their introduction doesn't help. Positive skin and RAST tests for foods are not predictive, either. Treatment options include emollients and topical steroids. Avoid use of steroids in areas where the skin is thin. Use the lowest potency steroids that work. Non-steroidal treatment options include topical calcineurin inhibitors (tacrolimus and pimecrolimus) and topical PDE4 inhibitors (crisaborole). Watch for superinfection if the eczema is not improving with appropriate therapy.

IMAGE: www.pbrlinks.com/ECZEMA1

NUMMULAR ECZEMA

Nummular eczema refers to coin-shaped eczematous lesions usually on the **extensor** surfaces of extremities. Lesions are **uniform**, without any central clearing. Lesions may ooze, crust, or have a scaling pattern. Treat with steroids.

IMAGE: www.pbrlinks.com/NUMMULAR1

MNEMONIC: Imagine that you are standing with your arms in abduction, and you are balancing silver COINS that are **UNIFORM in color** (without central clearing) on the BACK of both of your arms (**extensor surface**).

(DOUBLE TAKE) ECZEMA HERPETICUM

Eczema herpeticum is a potentially life-threatening disseminated herpes (HSV) infection occurring at sites of skin damage, including sites of eczema. Look for HSV Vesicles + Crusted Lesions. Even if a description is not given of a vesicular rash, have a high index of suspicion for a rash "**not improving with steroids and/or antibiotics**." Diagnose with HSV PCR or a viral culture, but do not delay treatment. A Tzanck smear can support the diagnosis. Treat by **STOPPING** topical steroids and/or immunosuppressants and starting **Acyclovir**.

IMAGE: www.pbrlinks.com/ECZEMAHERPE1
IMAGE: www.pbrlinks.com/ECZEMAHERPE2
IMAGE: www.pbrlinks.com/ECZEMAHERPE3

SEBORRHEIC DERMATITIS (AKA CRADLE CAP)

Seborrheic dermatitis (AKA cradle cap), is a **NONpruritic**, inflammatory, flaky rash with white to yellow scales that usually forms in oily areas (e.g., scalp). It is often seen in the first two months of life. After that, it's not very common until adolescence. You may treat with topical antifungal agents or mild steroids. The skin may be left with hypopigmented areas, especially in the folds. If asked to name the hypopigmented areas, choose PITYRIASIS ALBA.

IMAGE: www.pbrlinks.com/SEBORRHEIC1

PSORIASIS

Psoriasis is a **very well-defined,** red, flaky rash covered with **silver**-white patches, called plaques. It can also be described as thick and scaly (like seborrheic dermatitis). It sometimes results in punctate bleeding when scales are removed (this is called the Auspitz sign). It can occasionally be limited to the diaper area, in which case it goes **into the inguinal folds**. Topical steroids are the mainstay of treatment. For the face, use topical calcineurin inhibitors (tacrolimus or pimecrolimus). For severe disease, or disease not responding to steroids, use phototherapy, methotrexate or etanercept.

GUTTATE PSORIASIS

The "guttate" in guttate psoriasis means "drop like" and describes the shape of these discrete psoriatic lesions. This can be preceded by a **Group A Strep** (pyogenes) infection.

IMAGE: www.pbrlinks.com/GUTTATE1

(DOUBLE TAKE) LANGERHANS CELL HISTIOCYTOSIS (LCH) = HISTIOCYTOSIS X

Langerhans Cell Histiocytosis (LCH), AKA Histiocytosis X, is a **PAPULAR** rash that is sometimes associated with petechiae. The rash is located **in the folds** (inguinal folds, supra-pubic folds, perianal area). It can resemble eczema, but the petechiae or PAPULES should guide you towards this diagnosis. LCH is a type of **cancer**. You may be shown a lytic bone lesion (possibly of the skull). Diagnose by skin biopsy. LCH can also be associated with DIABETES INSIPIDUS. Treat by removing the lesion and giving steroids, ± chemotherapy.

PEARLS: Do not confuse this with Wiskott-Aldrich (WiXot**T**-Aldrich, X-linked, low IgM, high IgA, TIE = Thrombocytopenia, small platelets, Infections, and Eczema). Also, if they describe an eczema or seborrheic dermatitis type of rash in a patient with high urine output, LCH is your diagnosis.

IMAGE: www.pbrlinks.com/LANGERHANSCELL1
IMAGE: www.pbrlinks.com/LANGERHANSCELL2
IMAGE: www.pbrlinks.com/LANGERHANSCELL3

RASHES THAT SPARE THE INGUINAL FOLDS

Eczema and Contact Dermatitis should be high on your differential for rashes that spare the inguinal folds.

PRURITIC RASHES

Consider atopic dermatitis/eczema, HSV, scabies, tinea, or Varicella (VZV) in your differential of any pruritic rashes.

KERATOSIS PILARIS

Keratosis pilaris forms due to an overgrowth of the horny skin. It can look similar to eczema and may have a mild erythematous background. No treatment is needed.

IMAGE: www.pbrlinks.com/KERATOSIS1
IMAGE: www.pbrlinks.com/KERATOSIS2

IMAGE: www.pbrlinks.com/KERATOSIS3

LICHEN SCLEROSUS

Lichen sclerosus is a chronic, inflammatory, dry, white, and somewhat scaly rash that is usually found in the genital area. There is no thickening or sclerosis. There are usually no symptoms, although a small percentage of patients have pruritis. Look for a picture of labia with a rash.

IMAGE: www.pbrlinks.com/LICHENSCLEROSUS1

LICHEN STRIATUS

Lichen striatus is a rash that looks like eczema, but is linear or papular and can follow the Lines of Blaschko.

IMAGE: www.pbrlinks.com/LICHENSTRIATUS1
IMAGE: www.pbrlinks.com/LICHENSTRIATUS2
IMAGE: www.pbrlinks.com/LICHENSTRIATUS3
IMAGE: www.pbrlinks.com/LICHENSTRIATUS4

ALLERGIC CONTACT DERMATITIS, A TYPE IV HYPERSENSITIVITY SKIN RASH

Allergic contact dermatitis is a Type IV hypersensitivity skin rash that requires a **prior exposure**, and tends to be pruritic. See if the location of the rash is in an area where a nickel-containing belt buckle, earring, necklace, or other jewelry could have been. A rash may present even after **years** of wearing the irritant. The rash from nickel exposure is more erythematous and can become lichenified. The classic example of Type IV reactions is the rash of **poison ivy**, poison oak, and poison sumac. A contact dermatitis from these plants will not spread once the affected area is washed with soap and water. The fluid from within the vesicles **cannot** spread the rash. This reaction is a Type IV Cell Mediated Hypersensitivity Reaction, and is called a **Rhus** reaction (from the old genus name of poison ivy, Rhus radicans). The rash is vesicular and may be in a linear configuration (where the leaves rubbed across the skin).

* **PEARL**: First exposure may take 1 week to develop the rash as helper T cells proliferate and "remember" the agent. After that, the rash may develop within **hours** of exposure. "No wonder I had to go through the 2-step PPD before starting as an attending!"

* **PEARL**: REMINDERS: A PPD and the skin testing of Candida, Mumps, and Tetanus are all Type IV reactions.

* **MNEMONICS:**

  - "LEAVES OF THREE, LET THEM BE!" (poison ivy and poison oak have three leaflets)
  - Type IV reaction: I + V = the Roman numeral IV = 4, and the 4th letter in the alphabet is **D** = PP**D** or C**D4**
  - I + V also should you remind you of poison **IV**y.

* **IMAGE:** www.pbrlinks.com/ALLERGICCONTACT1
* **IMAGE:** www.pbrlinks.com/ALLERGICCONTACT2

(DOUBLE TAKE) BIOTIN/BIOTINIDASE DEFICIENCY

Biotin and biotinidase deficiencies may present with a RASH + ALOPECIA + **NEUROLOGIC SIGNS** (ataxia, coma, etc.). Patients may also have lactic acidosis. Treat with biotin.

MNEMONIC: Imagine the rusted TIN MAN from *The Wizard of Oz* walking with an ATAXIC gait as he SCRATCHES the rusty RASH off his arm. Notice that he has NO HAIR!

PAPULAR URTICARIA

Papular urticaria is a rash due to hypersensitivities to the insect bites of bedbugs, fleas, and mosquitoes that results in edema, erythema, and pruritis. It presents in **RECURRENT CROPS**. It tends to come and go, wax and wane every few weeks or months. Some lesions may be umbilicated. Treat by removing the offending agent (fleas, lice, bedbugs, or outside insects).

PEARL: You may not be given the history of a specific insect or exposure.

MNEMONIC. "CROPular Urticaria." Where do you find insects? In CROPS, of course!

IMAGE: www.pbrlinks.com/PAPULAR1

VITILIGO

Vitiligo results in depigmented macules. Look for a "salt and pepper" type of pattern of re-pigmentation. It is often associated with HALO NEVI.

IMAGE: www.pbrlinks.com/VITILIGO1

(NAME ALERT) ICHTHYOSIS VULGARIS 

Ichthyosis vulgaris is a rash that resembles FISH SCALES. It is often seen in atopic dermatitis patients. You may attempt treatment with ammonium lactate or alpha-hydroxy-acid containing agents. The name alert is for lamellar ichthyosis and harlequin ichthyosis.

IMAGE: www.pbrlinks.com/ICHTHYOSIS1

(NAME ALERT) LAMELLAR ICHTHYOSIS (AKA COLLODION BABY) 

Lamellar ichthyosis (AKA collodion baby) is noted at the time of birth in newborns. A thin, transparent film is noted on the body. Eyelashes are missing. Eyelids seem everted (ectropion). The name alert is for harlequin ichthyosis and ichthyosis vulgaris.

IMAGE: www.pbrlinks.com/LAMELLAR1
IMAGE: www.pbrlinks.com/LAMELLAR2
IMAGE: www.pbrlinks.com/LAMELLAR3

(NAME ALERT) HARLEQUIN ICHTHYOSIS 

Harlequin ichthyosis presents with a newborn that looks much more abnormal than lamellar ichthyosis. The covering is hard ("armor-like") and horny. Movement is restricted. Prognosis is poor comparatively. The name alert is for lamellar ichthyosis and ichthyosis vulgaris.

IMAGE: www.pbrlinks.com/HARLEQUIN1

PYODERMA GANGRENOSUM

The etiology of pyoderma gangrenosum is unknown, but it is known to be associated with other systemic diseases such as Crohn's. Lesions are described as deep, bluish, necrotic, and boggy-looking ulcers.

IMAGE: www.pbrlinks.com/PYODERMA1
IMAGE: www.pbrlinks.com/PYODERMA2

(DOUBLE TAKE) ECTHYMA GANGRENOSUM

Ecthyma gangrenosum is usually a sign of a **PSEUDOMONAS** infection and possibly sepsis in an immunocompromised patient, especially **LEUKEMIA**! Look for a **neutropenic** patient with black, necrotic, ulcerative lesions with surrounding erythema and edema. These lesions are often located in the groin/diaper area.

IMAGE: www.pbrlinks.com/ECTHYMA1

GRANULOMA ANNULARE

Granuloma annulare is a chronic skin condition with an annular (circular) lesion occuring **under the skin's surface**. It may be slightly pruritic. There are **no scales**.

PEARL: This looks kind of like ringworm, but there is **NO SCALING**! Keep this in mind any time you see Tinea as an answer choice.

IMAGE: www.pbrlinks.com/GRANULOMA1

PITTED KERATOLYSIS

Pitted keratolysis is a condition in which there is **pitted** skin in areas of pressure. There will probably be a history of **strong foot odor**.

IMAGE: www.pbrlinks.com/PKERATOLYSIS1

(DOUBLE TAKE) DERMATOMYOSITIS

Dermatomyositis results in a heliotropic, violaceous rash in malar area. Gottron's Papules (erythematous, shiny, pruritic papules over the metacarpals) may be present. Patients will have proximal weakness and possible telangiectasias near the nail folds. Diagnose with a **MUSCLE BIOPSY.** The **CK LEVEL WILL BE HIGH**. These patients can also get calcinosis cutis.

PEARL/REMINDER: Duchenne Muscular Dystrophy also has elevated CK levels.

IMAGE: www.pbrlinks.com/DERMATOMYOSITIS1
IMAGE: www.pbrlinks.com/DERMATOMYOSITIS2
IMAGE: (calcinosis cutis) www.pbrlinks.com/DERMATOMYOSITIS3

STEVENS-JOHNSON SYNDROME (SJS) and TOXIC EPIDERMAL NECROLYSIS (TEN)

Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) are on a spectrum. They are differentiated by body surface area (BSA). SJS is diagnosed if < 10% of the BSA is involved, and TEN is the diagnosis if > 30% of body surface area is involved. Anything in between is called SJS/TEN. Look for bullae or erosions followed by hemorrhagic crusting. There may be severe blistering and a Nikolsky sign (separation of epidermis with firm pressure) or the presence of the Asboe-Hansen sign (spread of a blister laterally when pressure is applied). It is a full thickness rash similar to a burn. Skin lesions may look like a BULLSEYE or TARGET lesion, with the center described as DARK, DUSKY, or VIOLACEOUS. The target CAN be a blister or vesicle. At least two mucous membranes must be involved (most commonly the lips and eyes). If the eyes are involved, this is an ocular emergency!

MEDICATION ASSOCIATIONS: Aromatic seizure medications, penicillins, NSAIDS, and **sulfa** drugs. The rash usually occurs within 2 months of starting the medication.

MNEMONIC: Imagine Stevens and Johnson as two very arrogant hunters. They went TARGET shooting one day in an area that said, "Beware of BULLS." They learned their lesson the hard way when a BULL came out of nowhere and did some target practice of his own.

ERYTHEMA MULTIFORME (EM)

Erythema multiforme (EM) is an acute, immune-mediated condition with target lesions +/- mucosal involvement. It was previously thought to be on the spectrum of SJS/TEN, but that is no longer the case. Distinguishing erythema multiforme minor from erythema multiforme major is not straightforward, so that terminology is not likely to be tested. IF you are tested on the terminology, pick minor if the patient is not toxic. Both minor and major have tiny **target** lesions (probably dusky in the middle). Sometimes you have to use your imagination to envision the target. Lesions may just look a little darker on the inside of the lesion than the outside. Lesions usually start on the hand and/or feet and THEN progress to the trunk. There will be 0–1 mucous membranes involved (if more, then it may be a case of SJS or TEN). Possible etiologies include HSV, Mycoplasma, and Syphilis.

IMAGE: www.pbrlinks.com/ERYTHEMULTI1
IMAGE: www.pbrlinks.com/ERYTHEMULTI2
IMAGE: www.pbrlinks.com/ERYTHEMULTI3
IMAGE: www.pbrlinks.com/ERYTHEMULTI4

(DOUBLE TAKE) NEONATAL LUPUS

The baby does NOT have lupus. Neonatal lupus occurs in children of mothers with SLE due to fetal exposure to **maternal SLE-related antibodies**. It is rare. Findings may include increased LFTs, petechiae, rash, scaling, thrombocytopenia, **third degree AV heart block with bradycardia,** or hydrops fetalis (fluid accumulation in two or more fetal compartments usually due to heart failure). Diagnose by sending maternal **Anti-Ro** or anti-La antibodies (AKA anti-SS-A or SS-B).

IMAGE: www.pbrlinks.com/NEONATALLUPUS1

RASHES WITH CENTRAL CLEARING (PEARL)

Hives/urticaria, Rheumatic Fever ("jonEs" = E. Marginatum = MARGINs progress to give central clearing), Tinea (raised border/ringworm)

RASHES WITH CENTRAL DARKENING/TARGET LESIONS (PEARL)

SJS/TEN ("target shooting, bull"), Brown recluse spider bite (see Emergency Medicine), Lyme Disease/Borrelia/Erythema Migrans

URTICARIA/HIVES

Urticaria (hives) is a pruritic rash due to an allergic exposure. Pink center with a more erythematous border. Giving histamine blockers (both H1 & H2) may be helpful.

IMAGE: www.pbrlinks.com/URTICARIA1
IMAGE: www.pbrlinks.com/URTICARIA2

SCLERODERMA

Scleroderma patients have thickened skin with an ivory or waxy, appearance. Affects girls more frequently. The limited form is more common than the systemic form in children (located at one site only). Lesions may initially be painful and tender. Skin is often hard and may have a linear appearance. Treat with topical lubricants for limited cases. May have to use steroids or other immunosuppressives in more severe cases.

IMAGE: www.pbrlinks.com/SCLERODERMA1
IMAGE: www.pbrlinks.com/SCLERODERMA2

DERMOID CYSTS

Dermoid cysts are saclike growths present at birth. They are like teratomas in that they can contain hair and teeth. They are often associated with tufts or sinuses. They grow slowly and can get infected, so most of them should be REMOVED. Especially those in sensitive areas, including the face or nasal area. They will require imaging before removal.

IMAGE: www.pbrlinks.com/EPIDERMOIDCYSTS1
IMAGE: www.pbrlinks.com/EPIDERMOIDCYSTS2
IMAGE: www.pbrlinks.com/EPIDERMOIDCYSTS3

EPIDERMOID CYSTS (AKA EPIDERMAL CYSTS)

These cysts are benign and are very common. They are flesh-colored nodules with a black punctum (black dot) that develop at one month of age or later.They often occur on pressure sites (buttocks, back, etc).

COMEDONAL ACNE

Think of comedonal acne as an OBSTRUCTIVE process that creates white heads and black heads. Treat with a RETINOID keratinolytic agent. You may also prescribe benzoyl peroxide.

PEARL: An answer with topical retinoic acid + benzoyl peroxide twice daily is probably WRONG. Benzoyl peroxide inactivates traditional retinoids (tretinoin), so one should be used at night, and the other in the morning (or at least with some time in between). Newer retinoids, like adapalene and tazarotene, are more stable and may be used at the same time.

INFLAMMATORY ACNE

Inflammatory acne is differentiated from comedonal acne by its RED BASE.

* **Minor cases**: If the acne is localized with small lesions, use a TOPICAL antimicrobial agent, such as Benzoyl peroxide, Clindamycin or Erythromycin. Retinoic acid topicals are also included in most regimens.

* **Severe cases**: If large, nodular, or in multiple areas, use ORAL antibiotics. First line is Tetracycline, Doxycycline, or Erythromycin. Minocycline is a second line agent. These antibiotics provide a bactericidal and an anti-inflammatory effect. You may also try oral contraceptive pills (OCPs) in females for their anti-androgen effects. If all else fails, use ISOTRETINOIN.

ISOTRETINOIN

Isotretinoin is a miracle drug that fights sebum production and bacteria, while also decreasing inflammation and comedonal acne. But it is **TERATOGENIC**, so obtain TWO negative pregnancy tests before starting the medications. Also, patients must use TWO forms of birth control starting one month before starting the medication and until one month after. In addition, they should have monthly pregnancy tests.

PEARL: Acne can begin as early as 8 years of age. If the boards present a 7-year-old child with what looks like acne, CONSIDER ANOTHER DIAGNOSIS! Consider exogenous steroid use, precocious puberty, and TUBEROUS SCLEROSIS.

(DOUBLE TAKE) APHTHOUS ULCERS

Aphthous ulcers are painful lesions found within the oral mucosa (buccal mucosa, lips, and tongue) with a grayish-white base and a rim of erythema. These can occur in isolation or in association with Behcet's or Shwachman-Diamond syndrome.

IMAGE: www.pbrlinks.com/APHTHOUSULCERS1
IMAGE: www.pbrlinks.com/APHTHOUSULCERS2

TEETH ISSUES

TOOTH TIMELINE

Tooth appearance follows a timeline. All anterior teeth are present (eight of them) by about 12 months. Primary teeth are typically fully erupted by age 30 months. Some children do not have teeth by 1 year of age, so reassurance is okay. For ABP questions, they will be more focused on **abnormal-looking teeth**.

PEG TEETH

Peg teeth refers to teeth that are smaller than usual. Sometimes they are tapered and look like fangs. This usually affects the lateral incisors and is associated with INCONTINENTIA PIGMENTI and HYPOHIDROTIC ECTODERMAL DYSPLASIA.

IMAGE: www.pbrlinks.com/PEGTEETH1
IMAGE: www.pbrlinks.com/PEGTEETH2

HUTCHINSON TEETH

Hutchinson teeth are found in CONGENITAL SYPHILIS. These children have teeth that are smaller and more widely spaced. They also have notches on the biting surfaces.

IMAGE: www.pbrlinks.com/HUTCHTEETH1
IMAGE: www.pbrlinks.com/HUTCHTEETH2

TETRACYCLINE TEETH STAINING

If tetracycline is used at a young age, teeth can end up having yellow, brown, or blue band-like stains. Avoid tetracycline until patients are at least 8 years of age.

IMAGE: www.pbrlinks.com/TETRATEETH1

FLUOROSIS

Fluorosis is the mottled discoloration of teeth due to excess fluorine use during tooth development (up to age 8).

IMAGE: www.pbrlinks.com/FLUOROSIS1

AVULSED TEETH

Do not reimplant avulsed primary (baby) teeth to avoid harming developing permanent teeth. Reimplant permanent teeth ASAP, ideally within one hour. Store the tooth in balanced salt solution, milk, saliva (inside cheek), or, as a last resort, water until implantation occurs.

VASCULAR & PIGMENTED LESIONS

PEARL/MNEMONIC: HEMANGIOMAS are different from VASCULAR MALFORMATIONS (e.g., Port Wine Stains/capillary malformations). VASCULAR MALFORMATIONS tend to have much more associated morbidity. You might say that **VM**s are **V**ery **M**orbid in comparison.

IMAGE: (slideshow on birthmarks) www.pbrlinks.com/VM1

HEMANGIOMAS

Hemangiomas are an abnormal build-up of blood vessels. They eventually self-involute but are dangerous during PROLIFERATION PHASE. They are otherwise benign. They usually look red, but can appear blue if

deep (CAVERNOUS HEMANGIOMAS). Proliferation is greatest during the first 6 months, and lesions are largest around 1 year of age. Lesions start to involute around 2 years of age and disappear by 5–10 years of age. If in a benign area, they can be left alone. If in a more sensitive area (near the eyes, ears, nose, throat, or spine), they may require medical treatment with propranolol (first line drug). Second line therapies include systemic steroids, pulsed dye laser therapy and surgery.

COMPLICATIONS: If located in the beard area, look for airway issues. If near the eye, it's okay as long as there is no problem with VISION. Those near the ears, nose, and lips can be troublesome if they ulcerate. If in the lumbosacral area, there is concern for spinal dysraphism (incomplete fusion of a raphe, especially the neural folds/tube). High output congestive heart failure (CHF) can occur due to large, or multiple hemangiomas.

IMAGE: www.pbrlinks.com/HEMANGIOMAS1
IMAGE: www.pbrlinks.com/HEMANGIOMAS2

(DOUBLE TAKE) PHACES SYNDROME

A diagnosis of PHACES syndrome requires a large hemangioma in the face/neck area PLUS one of the following defects:

* **P**osterior fossa malformation (DANDY WALKER)
* **H**emangioma. Often in the distribution of the Facial Nerve. Look for a large **segmental** hemangioma on the **FACE**. Segmental refers to what looks like a nerve distribution (segmented by normal skin in between).
* **A**rterial cerebrovascular anomaly: Including STROKES
* **C**ardiac anomalies: Especially COARCTATION OF THE AORTA
* **E**ye anomalies: MICROPHTHALMIA, STRABISMUS
* **S**ternal defect

* **IMAGE**: www.pbrlinks.com/PHACES1

(DOUBLE TAKE) KASABACH-MERRITT SYNDROME

In Kasabach-Merritt syndrome, there are large, congenital vascular tumors. They are not true hemangiomas but can cause a severe CONSUMPTIVE COAGULOPATHY (in the form of **thrombocytopenia** and the consumption of coagulation factors) and death. It is most common in infants.

IMAGE: www.pbrlinks.com/KASABACH1
IMAGE: www.pbrlinks.com/KASABACH2

PEARL: Look at the above images closely. Make sure you look closely at images so that you do not get this vascular tumor confused with hemihypertrophy.

MNEMONIC:

- >---< is used by many of us when recording CBC results.

↓---<ASSABACH = low platelets, risk of bleeding and death

NEVUS SIMPLEX

A nevus simplex is a **S**almon colored lesion often called a **S**tork bite or **S**almon patch. They blanch on pressure and tend to be on the midline or symmetrical (e.g. on both eyelids). These fade with time and are benign. Do not get this term confused with Nevus FLAMMEUS (AKA PORT WINE STAIN).

PEARL: These BLANCH with pressure.

IMAGE: www.pbrlinks.com/NevusSimplex1
IMAGE: www.pbrlinks.com/NevusSimplex2

PORT WINE STAINS (PWS) (AKA NEVUS FLAMMEUS)

Port Wine Stains (PWS), AKA nevus flammeus, are **CAPILLARY** malformations. They tend to be unilateral and segmental, not crossing the midline. They start as pink/flat lesions that become dark red-purple. They then progress to being thick/raised in adulthood. These **P**WSs are **P**resent at birth and are **P**ERMANENT. They are benign if noted in isolation. If noted on the face, they can be associated with glaucoma (increased intraocular pressure that can present as a red eye).

IMAGE: www.pbrlinks.com/PORTWINE1
IMAGE: www.pbrlinks.com/PORTWINE2

PEARL: They grow in proportion to the child and tend to occur in a segmental distribution respecting the midline.

MNEMONIC: Glaucoma is a concern if a PWS is noted in the facial area. Is that why Mikhail Gorbachev wore glasses? Because he has that big FLAME on his head?

STURGE-WEBER SYNDROME (SWS)

The Sturge-Weber Syndrome (SWS) includes the following findings: Port Wine Stain (PWS or NEVUS FLAMMEUS) + **EYE/TRIGEMINAL NERVE DISTRIBUTION** + INTRACRANIAL VASCULAR MALFORMATION (look for with **MRI**) +/- glaucoma +/- Seizures +/- cognitive deficits.

MNEMONICS: "p**WS** = s**WS**"… Ever heard of a basketball player named Chris WEBBER? Think WEBBER = Sports = **ESPN (I know it's a stretch).**

* **E**YE - glaucoma
* SWS
* PWS
* **N**EUROLOGIC issues: Developmental delay, Seizures

CAPILLARY MALFORMATION ASSOCIATIONS

(DOUBLE TAKE) KLIPPEL-TRENAUNAY SYNDROME 

Klippel-Trenaunay syndrome is associated with AV fistulae, causing skeletal or limb OVERGROWTH (hemihypertrophy). Patients with Klippel-Trenaunay have Port Wine Stains and overgrowth of tissue, bones, and soft tissue. Look for unilateral limb overgrowth and CHF.

* **IMAGE**: www.pbrlinks.com/KLIPPELTRENAUNAY1
* **(DOUBLE TAKE) PEARL**: Hemihypertrophy images on the pediatric exam should very quickly clue you in to a few disorders. Highest on your differential should be Beckwith-Wiedemann Syndrome, then Klippel-Trenaunay, then Russell-Silver Syndrome, and then possibly Proteus Syndrome.
* **MNEMONIC**: From now on, say CRIPPLE-**T**. Think of these patients as having a CRIPPLING disorder in which they have one HUGE leg that prevents them from getting around.
* **NAME ALERT:** KLIPPEL-FEIL SYNDROME. This is a completely different disorder. Look for a Torticollis-like photograph (due to fused cervical vertebrae).

IMAGE: www.pbrlinks.com/KLIPPELTRENAUNAY2

(NAME ALERT) KLIPPEL-FEIL SYNDROME

Klippel-Feil Syndrome results in a torticollis-like appearance and results from fused cervical vertebrae. Patients will likely have a short, webbed neck, limited range of motion at the neck, and possibly other anomalies. Etiology is unknown. The "Name Alert" is because this is a completely different disorder from Klippel-Trenaunay Syndrome (limb overgrowth due to AV fistulae).

IMAGE: www.pbrlinks.com/KLIPPELFEIL1 (View images and move on!)

CONGENITAL MELANOCYTIC NEVUS

Congenital melanocytic nevi are commonly referred to as moles. They may present at birth or within the first few months of life. They are generally benign but carry an increased risk of MELANOMA if there are multiple moles (more than three) or if they are > 20 cm. They are associated with spinal dysraphisms and Dandy Walker Syndrome (fossa abnormality).

MCCUNE-ALBRIGHT SYNDROME (AKA POLYOSTOTIC FIBROUS DYSPLASIA)

McCune-Albright syndrome (AKA Polyostotic Fibrous Dysplasia) findings include **IRREGULAR** café-au-lait **MACULES** (either > 3 cm or multiple), **PRECOCIOUS PUBERTY**, BONE PROBLEMS (fractures, cranial deformities), and possibly other endocrine issues (hyperthyroidism). It can cause fractures of long bones and bowing of arms.

IMAGE: www.pbrlinks.com/MCCUNE1

MNEMONIC: Call it **MACULE** Albright Syndrome from now on.

TUBEROUS SCLEROSIS

Tuberous sclerosis is AUTOSOMAL DOMINANT. Look for at least 2 of the following features:

* ASH LEAF SPOTS: These are hypOpigmented lesions, which can be seen with a Woods Lamp. You need at least **3** on the body to help make the diagnosis.

- **IMAGE**: www.pbrlinks.com/TUBERSCLERO1
- **IMAGE**: www.pbrlinks.com/TUBERSCLERO2

* SHAGREEN PATCH (hypERpigmented plaque that can be rough/thick and papular)

- **IMAGE**: www.pbrlinks.com/TUBERSCLERO3
- **IMAGE**: www.pbrlinks.com/TUBERSCLERO4

* ANGIOFIBROMAS (AKA ADENOMA SEBACEUM or SEBACEOUS HYPERPLASIA)

- **PEARL**: Often misdiagnosed as acne. LOOK FOR SPARING OF THE FOREHEAD.
- **IMAGE**: www.pbrlinks.com/TUBERSCLERO5

* PERIVENTRICULAR OR CORTICAL TUBERS: Usually associated with INFANTILE SPASMS or seizures

* CARDIAC RHABDOMYOMAS: Look for a kid with arrhythmias!

* RENAL ANGIOMYOLIPOMA

MANAGEMENT OF TUBEROUS SCLEROSIS: Most of the management has to do with seizures/infantile spasms and cardiac arrhythmias.

- **MNEMONIC**: Imagine a TUBULAR bazooka shooting out WHITE LEAVES. The leaves have DANCING (seizing) tics on them!

- **MNEMONIC**: ASH is typically GRAY/WHITE/HYPOPIGMENTED, whereas a "PATCH of GREEN" is typically DARKER/HYPERPIGMENTED.
- **MNEMONIC**: **ASHES** come from burned WOOD. A Woods lamp is needed to see them.

NEUROFIBROMATOSIS I (NF1)

Neurofibromatosis I (NF1) is an AUTOSOMAL DOMINANT disorder involving the SKIN, BONES, and NERVOUS SYSTEM. Diagnose with at least **2** of the following:

* First-degree relative has the disease

* Neurofibromas

* Lisch Nodules in the iris (they look like mini neurofibromas)

- **IMAGE**: www.pbrlinks.com/NF1

* Optic nerve gliomas. This is the neurologic component.

* 6 **REGULAR** café-au-lait macules. As they get older, the SIZE **DOES** MATTER. If prepubertal, these are > 5 mm, if postpubertal, > 15 mm. Ten years of age is a good cutoff. These macules can be present at birth. Children can have an increase in the **size and number** as they age. Therefore, it is very important that they have regular follow-up, especially if there is a family history of the disorder. As a side note, children can also get pheochromocytomas or renal artery stenosis, so the BP should be monitored regularly.

* Scoliosis or bony abnormalities

* Axillary or inguinal freckling

* **MNEMONIC**: (FOR NF-1) SKIN + "ORTHO" + **N**EURO issues = **S.O.N. This is NF ONE, SON (or daughter!**)!!!

NEUROFIBROMATOSIS 2 (NF2)

(Low-yield topic). Neurofibromatosis 2 (NF2) findings include nonmalignant tumors of the nervous system, especially acoustic nerve tumors (AKA neuromas or schwannomas). These can cause tinnitus or even hearing loss. Patients can also have eye tumors, cataracts, retinal problems, spinal cord tumors, and meningiomas. Look for a family history.

PEARL: Tuberous Sclerosis and Neurofibromatosis are both AUTOSOMAL DOMINANT, BUT they both have a HIGH RATE OF NEW MUTATIONS. Do not exclude these from your differential if they mention that the patient's parents do not have the disorder.

INCONTINENTIA PIGMENTI

Incontinentia pigmenti is a severe X-linked DOMINANT disease that results in DEATH for all MALES before birth. If presented with this as an answer choice in a living patient, make sure the vignette refers to a FEMALE patient. There are four stages of this disorder. It starts with the inflammatory vesicular phase, followed by a verrucous phase, followed by the hyperpigmentation phase noted along the **lines of Blaschko**, and finally followed by a phase in which the hyperpigmentation disappears. This can leave atrophy or hypopigmentation behind.

SYSTEMIC ASSOCIATIONS: **DELAYED DENTITION**, intellectual disability, paralysis, **PEG teeth,** and seizures.

IMAGE: www.pbrlinks.com/INCONTINENTIA1
IMAGE: www.pbrlinks.com/INCONTINENTIA2
IMAGE: www.pbrlinks.com/INCONTINENTIA3

IMAGE: www.pbrlinks.com/INCONTINENTIA4

MNEMONIC: As WOMEN age, they tend to have more "INCONTINENTs." Incontinentia = Female patient. Imagine a WOMAN on the ground having a SEIZURE. She becomes INCONTINENT of urine, which streams down her PEG legs and creates black-and-white LINEAR SKIN LESIONS. PEG refers to PEG TEETH.

HYPOHIDROTIC ECTODERMAL DYSPLASIA

Hypohidrotic ectodermal dysplasia is a condition related to INCONTINENTIA PIGMENTI, but this can occur in boys. It is associated with HYPOHIDROSIS, decreased sweating, which can lead to hyperthermia; HYPOTRICHOSIS, sparse hair, so no eyebrows/lashes; DELAYED TOOTH ERUPTION; and DEFORMED/PEG TEETH.

IMAGE: www.pbrlinks.com/HED1
IMAGE: www.pbrlinks.com/HED2

INFECTIOUS SKIN CONDITIONS

(DOUBLE TAKE) ECTHYMA GANGRENOSUM

Ecthyma gangrenosum is usually a sign of a **PSEUDOMONAS** infection and possibly sepsis in an immunocompromised patient, especially **LEUKEMIA**! Look for a **neutropenic** patient with black, necrotic, ulcerative lesions with surrounding erythema and edema. These lesions are often located in the groin/diaper area.

IMAGE: www.pbrlinks.com/ECTHYMA1

STREPTOCOCCAL INFECTIONS OF THE GROIN

Streptococcal infections of the groin or perineum are associated with pain with stooling, pruritis, redness, and possibly a fissure. Unlike zinc deficiency, there is **no desquamation**. If vaginal or vulvovaginitis, look for a history of vaginal discharge. Diagnose by culturing the area. Treat with amoxicillin, penicillin (PCN), or a first generation cephalosporin. Risk factors include abuse and previous instrumentation. Look for a history of recent antibiotics in case the discharge is due to Candida.

(DOUBLE TAKE) CUTANEOUS CANDIDIASIS, A DIAPER DERMATITIS

Cutaneous candidiasis, a diaper dermatitis, can occur secondary to a contact dermatitis or recent antibiotic use. It presents as a beefy red rash with papular satellite lesions. This rash goes **into the inguinal folds**. Use a KOH prep to confirm diagnosis, and treat with a topical antifungal, such as nystatin or clotrimazole.

IMAGE (includes satellite lesions): www.pbrlinks.com/CUTASCAN1

BULLOUS IMPETIGO/STAPH SCALDED SKIN SYNDROME (SSSS)

Bullous impetigo, or Staph Scalded Skin Syndrome (SSSS), is a spectrum of the same disease.

* **IMPETIGO**: Look for honey-colored crusting lesions and bullae. Non-bullous impetigo will look similar but without vesicle/bullae (more oozing/crusting).
    - **IMAGE:** www.pbrlinks.com/SSSS1
    - **IMAGE:** www.pbrlinks.com/SSSS2
    - **IMAGE:** www.pbrlinks.com/SSSS3
* **SSSS**: A very painful and red rash in which large, thin blisters are the result of an exotoxin. There is "**sheet-like"** skin loss/separation. This looks very superficial compared to impetigo. Obtain a BIOPSY to prove that

it is SSSS and NOT Stevens-Johnson Syndrome (SJS) or Toxic Epidermal Necrolysis (TEN), both of which have deeper/dermal involvement.

- **IMAGE**: www.pbrlinks.com/SSSS2
- **PEARL**: Lesions are **NOT** in the eyes or mouth but may be **around** the eyes and mouth (as opposed to SJS/TEN, which may be IN the eyes and mouth).

STAPHYLOCOCCUS EPIDERMIDIS

Staphylococcus epidermis is the most likely answer if you are presented with a premature baby that has a skin infection.

CELLULITIS

Cellulitis is defined as a well-demarcated area of erythema, edema, and induration secondary to an infection. It may be associated with bullae. For treatment, start with a **1st generation cephalosporin such as Cefazolin or Cephalexin** as your first line agent.

TINEA CORPORIS

In tinea corporis, a thin, circular lesion with a RAISED border, CENTRAL CLEARING and a LEADING EDGE (scale at the leading/expanding border) is noted. The ring of the "ringworm" looks like a worm. Treat with antifungal creams such as clotrimazole, ketoconazole, terbinafine, or luliconazole.

IMAGE: www.pbrlinks.com/TCORPORIS1
IMAGE: www.pbrlinks.com/TCORPORIS2
PEARL: Although tinea corporis and granuloma annulare can have a similar appearance, remember that granuloma anuulare has no scale, whereas tinea corporis has lots of scale.

TINEA VERSICOLOR (AKA PITYRIASIS VERSICOLOR)

Tinea versicolor results in hypopigmented OR hyperpigmented macules. It's caused by MALASSEZIA FURFUR. Lesions may fluoresce under Woods lamp. Treat with topical selenium sulfide lotion/shampoo (1-2.5%) or zinc pyrithione 1% shampoo. Second line treatment includes oral itraconazole or fluconazole, but NOT oral griseofulvin (use that for T. capitis).

IMAGE: www.pbrlinks.com/TVERSICOLOR1
IMAGE: www.pbrlinks.com/TVERSICOLOR2
IMAGE: www.pbrlinks.com/TVERSICOLOR3

PITYRIASIS ROSEA

Pityriasis rosea presents as oval, parallel lesions with THICK scales. Look for a herald patch (first lesion). It is associated with winter and spring. Lesions are often in a "Christmas tree pattern." Treat with light exposure.

IMAGE: www.pbrlinks.com/PITYRIASIS1

PEARL: Unlike secondary syphilis, there are no lesions on the palms/soles.

MOLLUSCUM CONTAGIOSUM

Molluscum contagiosum results in flesh-colored, pearly papules that are dome-shaped and **umbilicated**. It is caused by the POX virus. NO treatment is needed, but sometimes you may use cryotherapy or topical cantharidin, podophyllotoxin, imiquimod, or potassium hydroxide.

IMAGE: www.pbrlinks.com/MOLLUSCUM1

MNEMONIC:

molluscUMbilicated Papules
O
X

(DOUBLE TAKE) HUMAN PAPILLOMA VIRUS (HPV)

Human papilloma virus (HPV) causes VERRUCA VULGARIS (warts). They can be on the hands, knees, and feet, and in the anogenital region. If genital, the condition is referred to as CONDYLOMA ACUMINATA. Genital human papilloma virus is considered to be an STD. In fact, HPV is considered the most prevalent STD of all. Only a small percentage of patients carrying HPV develop warts. More than 90% of infections are from HPV 6 or HPV 11, which are NOT likely to induce cervical cancer. The risk of cervical cancer **is increased** depending on the subtype (**16 and 18 are most commonly associated with cervical cancer**). Anogenital warts can be due to maternal-fetal transmission and may not present until 3 years after birth! BUT if you note anogenital warts AFTER 3 years of age, think SEXUAL ABUSE. Lesions are NOT tender but easily bleed with minimal trauma. Treat with self-applied topical podophyllotoxin or imiquimod. Treatment with cryotherapy or podophyllin is done by a physician.

PEARL: Cervical cytology (Pap test) is not recommended until 21 years of age for an average-risk asymptomatic woman.

IMAGE: www.pbrlinks.com/HPV1 (Acuminata)
IMAGE: www.pbrlinks.com/HPV2

MNEMONIC: Don't get confused with molluscum. hp**V** = **VV**arts/Warts = **V**erruca **V**ulgaris = **V**enereal **VV**arts/Warts. "**VV**arts on your hands or knees? It's probably from those darn **V**'s!"

MNEMONIC: The HPV 16 & HPV 18 strains are the two you should remember (associated with the highest risk of cervical cancer): Imagine an adolescent couple. Their birthdays are on the same day, 7/1 (Zodiac of CANCER). The boy is turning 18, and he's excited to finally VOTE. His girlfriend is turning 16, and she's excited because she'll finally get her DRIVER'S LICENSE now that she's celebrating her SWEET SIXTEENTH. As they go to blow out the BIRTHDAY CAKE candles, you notice that she has **VV**arts on her lips! It turns out he also has **VV**arts, but his are **V**enereal (anogenital).

NAME ALERT: 

An "**A**" in **A**cuminata looks like a flipped "**V**," which may help you remember that a diagnosis of Condyloma **A**cuminata represents an hp**V** infection. The "**L**" in Condyloma **L**ata should remind you that you are dealing with syphi**L**is.

CONDYLOMA LATA 

Condyloma lata is found in secondary syphi**L**is = White-gray, coalescing papules. These appear much more FLAT than Condyloma Acuminata.

IMAGE: www.pbrlinks.com/CONDYLOMA1

NAME ALERT: An "**A**" in **A**cuminata looks like a flipped "**V**," which may help you remember that a diagnosis of Condyloma **A**cuminata represents an hp**V** infection. The "**L**" in Condyloma **L**ata should remind you that you are dealing with syphi**L**is.

HERPES SIMPLEX VIRUSES 1 & 2 (HSV 1 & 2)

Herpes simplex viruses 1 and 2 are similar. HSV-2 is usually an STD usually affecting the genitals, while HSV-1 most commonly affects the mouth (gingivostomatitis) but can appear in other sites as well.

Initial infections are often asymptomatic but can be relatively severe with very painful lesions, fever, and lymphadenopathy. Look for multiple painful ulcers or vesicles on the labia or penis (HSV-2) or in and around the mouth (HSV-1). The vesicles are CLUSTERED on an ERYTHEMATOUS BASE. Lesions can also be ULCERATIVE. Diagnose by obtaining HSV PCR or a viral culture. The Tzanck smear is not specific for HSV. Treat with ORAL Acyclovir x 7 days (not topical). Treat babies with **IV** Acyclovir.

HSV becomes latent after the primary infection and can reactivate later. Recurrent infections tend to be less severe and of shorter duration than primary ones. Pain often precedes the appearance of lesions. Patients **DO** shed virus during secondary infections.

IMAGE: www.pbrlinks.com/HSVII1

PEARL: HSV-1 can be associated with a very painful infection called a HERPETIC WHITLOW (typically of a thumb or finger).

IMAGE: www.pbrlinks.com/HSVII2

HERPES SIMPLEX VIRUS ENCEPHALITIS (HSV ENCEPHALITIS)

A question about herpes simplex virus encephalitis (HSV encephalitis) would likely mention fever, seizures, and possibly a CT finding in the **temporal lobe**. Treatment is STAT **IV acyclovir, followed by a lumbar puncture** to obtain fluid for PCR testing. An EEG might show PLEDs (periodic lateralizing epileptiform discharges).

(DOUBLE TAKE) HERPES SIMPLEX VIRUS GINGIVOSTOMATITIS

Herpes simplex virus gingivostomatitis presents with oral and perioral/vermillion border lesions/vesicles. Gingiva is friable and malodorous. There is associated lymphadenopathy. Usually caused by HSV-1. Can treat with oral acyclovir. Treat immunocompromised hosts with IV acyclovir.

IMAGE: www.pbrlinks.com/HSVSTOMATITIS1

(DOUBLE TAKE) ECZEMA HERPETICUM

Eczema herpeticum is a potentially life-threatening disseminated herpes (HSV) infection occurring at sites of skin damage, including sites of eczema. Look for HSV Vesicles + Crusted Lesions. Even if a description is not given of a vesicular rash, have a high index of suspicion for a rash "**not improving with steroids and/or antibiotics**." Diagnose with HSV PCR or a viral culture, but do not delay treatment. A Tzanck smear can support the diagnosis. Treat by **STOPPING** topical steroids and/or immunosuppressants and starting **Acyclovir**.

IMAGE: www.pbrlinks.com/ECZEMAHERPE1
IMAGE: www.pbrlinks.com/ECZEMAHERPE2
IMAGE: www.pbrlinks.com/ECZEMAHERPE3

(DOUBLE TAKE) BLUEBERRY MUFFIN RASH DIFFERENTIAL DIAGNOSIS

Blueberry muffin rash represents extramedullary hematopoiesis. Differential diagnosis for blueberry muffin rash includes TORCH infections (including syphilis), hematologic disorders (hereditary spherocytosis, hematologic disease of the newborn, twin-to-twin transfusion), vascular disorders (like multiple hemangiomas) and malignancies (neuroblastoma, congenital rhabdomyosarcoma, Langerhans cell histiocytosis, congenital leukemia cutis).

IMAGE: www.pbrlinks.com/BLUEBERRY1
IMAGE: www.pbrlinks.com/BLUEBERRY2

SCABIES

Scabies presents as linear, papular, erythematous, pruritic, vesicular, and crusting lesions most often seen in areas with **CREASES** (wrist, groin, webbing of fingers). You may see burrows. Treat the entire family with permethrin overnight (8-14 hours) from neck to toe and wash off the next morning for the entire family. Re-treat the patient 7-10 days later because eggs can hatch up to 10 days later. Try topical steroids or antihistamines for symptomatic cares in the interim. An alternative treatment is oral ivermectin due to ease of administration in older children.

PEARL: Unlike papular urticaria, lesions are not in crops.

IMAGE: www.pbrlinks.com/SCABIES1

PEDICULOSIS CAPITIS (AKA HEAD LICE)

Pediculosis capitis (AKA head lice) results in nits/ova of the lice at the hair shafts, especially in the occipital area. Treat with permethrin. The patient may have more symptoms at night when lice tend to be more active. Itching is from the bites. Similar to scabies, **repeat permethrin again in 7–10 days** because eggs can hatch up to 10 days later. Oral ivermectin is also a possible treatment, especially if the lice are found to be resistant to the topical treatments.

PEARL: African American children are much less likely to get head lice per the CDC. So think twice about selecting head lice in the answer for board questions that include an African American child.

IMAGE: www.pbrlinks.com/HEADLICE1

PEDICULOSIS PUBIS (AKA PUBIC LICE or CRABS)

Pediculosis pubis (AKA pubic lice or crabs) is an infection in the groin that results in red, crusted suprapubic macules and possibly bluish-gray dots. There is a STRONG ASSOCIATION with sexual abuse in children.

IMAGE: www.pbrlinks.com/CRABS1

THE "ERYTHEMA" RASHES

ERYTHEMA NODOSUM

For erythema nodosum, look for **PAINFUL**, shiny, red to bluish skin lesions in a patient with a history of a chronic disease or on certain medications. Associations include Crohn's Disease, Ulcerative Colitis, Drugs (oral contraceptives and sulfa drugs), Infections (Yersinia, EBV, Tuberculosis, fungal infections), and Sarcoidosis.

MNEMONIC: For this shiny skin finding, use CUDIS (kind of like CUTIS, which means skin) to help you remember the following associations: **Crohn's**, **U**C, **D**rugs, **I**nfections, and **S**arcoidosis.

IMAGE: www.pbrlinks.com/ERYTHEMA-N1
IMAGE: www.pbrlinks.com/ERYTHEMA-N2
IMAGE: www.pbrlinks.com/ERYTHEMA-N3

(DOUBLE TAKE) ERYTHEMA CHRONICUM MIGRANS

Erythema chronicum migrans (AKA erythema migrans) is caused by BORRELIA BURGDORFERI, the spirochete that causes LYME DISEASE. Look for a large, flat lesion **(> 5 cm) that is annular and has a red border. It is located at the tick bite site in about 75% of patients. The classic description is a "bulls eye" lesion.** The rash shows up 1–2 weeks after the bite. Titers may still be negative during this period. Borrelia is transmitted via the Ixodes deer tick. Oral **doxycycline** is usually the first-line treatment for Lyme disease, including for arthritis, disseminated erythema migrans, a palsy (BELL'S PALSY), or neuropathy. For children

under 8 years old, doxycycline is safe to use for up to 21 days. Use **amoxicillin** for children < 8 years old who need treatment for longer than 21 days. **IV ceftriaxone** is preferred for unstable or hospitalized patients, such as patients with encephalitis or symptomatic **CARDITIS**, or for **RECURRENT** arthritis if the patient has failed doxycycline therapy. Arthritis is usually located at the large joints (especially the **knees**). Diagnosing using labs is often difficult. Obtain **Lyme antibody titers**. If these are positive, confirm with a Western blot. Lyme Disease is often a **clinical diagnosis** (for example, if you see erythema migrans, TREAT).

* **IMAGE**: (BULLSEYE LESION) www.pbrlinks.com/ERYTHEMA-C1

* **IMAGE**: (BELL'S PALSY) www.pbrlinks.com/ERYTHEMA-C2

* **SIDE NOTES**

- BELL'S PALSY: Unilateral facial nerve paralysis (CN VII). It is often idiopathic.
- The Jarisch-Herxheimer reaction results in fever, chills, hypotension, headache, myalgia, and exacerbation of skin lesions during antibiotic treatment of a bacterial disease (typically spirochetes). This is due to large quantities of toxins released into the body. It is classically associated with syphilis but can also occur with Lyme disease. It may only last a few hours.

* **MNEMONICS**:

- From now on, think/say borreLIYME. "Don't ever throw a borreLIYME to MY GRANny!" Or, "Don't ever borre-LIE to MY GRANny." borreLIYME = Borrelia. MY GRANny = Migrans.
- Imagine that BULL'S EYES are made of two bright neon-green LIMES! This should remind of you of the classic description.
- Imagine squeezing LYME into a CAN = **C**arditis, **A**rthritis, and **N**euritis.

(DOUBLE TAKE) ERYTHEMA MARGINATUM

- Erythema marginatum is a transient, erythematous, macular and light colored. It is described as being "SERPENTiginous" (snakelike) and the **MARGIN**s are noted progress as the center clears. It is part of the Jones criteria for Rheumatic Fever.
- **IMAGE**: www.pbrlinks.com/ERYTHEMA1

MNEMONIC: The **E** in **E**rythema is part of the **E** in jon**E**s, and the name **MARGIN**atum should remind you to look for an interesting description of the rash's **MARGIN**s. Erythema **MARGIN**atum.

(DOUBLE TAKE) ERYTHEMA INFECTIOUSUM

Erythema infectiosum IS an INFECTIOUS rash!!! It is caused by Parvovirus B19. It is also called Fifth Disease Look for erythematous facial flushing of the cheeks (sometimes described as "slapped cheeks" appearance). The extremities will have diffuse macular (or morbilliform) erythema (especially on the extensor surfaces) referred to as "lacy" or "reticular." Diagnose with Ig**M** titers. (There is no culture or rapid antigen available.)

PEARLS: The rash occurs AFTER the slapped cheeks rash (often a week later). Patients may also have knee or ankle pain. Parvovirus B19 infection can result in **APLASTIC CRISIS**. Intrauterine exposure can result in **hydrops fetalis**.

MNEMONIC: infectio**5**u**M** = FIFTH disease = "Five fingers." Imagine a cheek being SLAPPED with FIVE fingers covered by a white LACY glove with a red M on the back of it (extensor surface). M = Ig**M** titers.

MNEMONIC: ParVoVirus B19: From now on, say/think "par**V**o**V**irus **V**19." **V = Roman numeral 5**!

ERYTHEMA TOXICUM NEONATORUM

See in next section (Newborn Rashes).

ERYTHEMA MULTIFORME

See the Stevens-Johnson syndrome section for more information on erythema multiforme. Look for *target lesions*.

THE NEWBORN RASHES

MILIARIA RUBRA

Look for very superficial vesicles that are easily ruptured in a case of miliaria rubra. This occurs due to obstruction of sweat glands and is also called "prickly heat rash."

IMAGE: www.pbrlinks.com/MILIARIA1

MNEMONIC: Miliaria sounds like malaria, which is usually found in hot countries where you sweat!

MILIA

Milia are small, pearly inclusion cysts that look like little white heads. There's NO associated erythema. If milia are on the nose, they can be very easy to confuse with SEBACEOUS HYPERPLASIA.

IMAGE: www.pbrlinks.com/MILIA1
IMAGE: www.pbrlinks.com/MILIA2

SEBACEOUS HYPERPLASIA

In sebaceous hyperplasia, pinpoint white-yellow papules appear on the nose and central face. There is NO associated erythema. It results due to maternal androgen exposure and is benign.

IMAGE: www.pbrlinks.com/SEBACEOUSHYPERPLASIA1
IMAGE: www.pbrlinks.com/SEBACEOUSHYPERPLASIA2

ERYTHEMA TOXICUM NEONATORUM

Erythema toxicum neonatorum is seen in up to 50% of newborns and consists of **erythematous macules** with raised central lesions (papules **or** vesicles). This is usually seen at birth or by DOL 2. It is a benign rash with an unknown etiology. It usually disappears by DOL 7. Diagnose by noting eosinophils on microscopy.

IMAGE: www.pbrlinks.com/ERYTHEMA-T1

MNEMONIC: Although the name "TOXICum" suggests otherwise, this is a NON-toxic rash resulting in non-toxic looking babies.

MNEMONIC: This is an **E**arly, **E**rythematous, "**E**osinophilled" rash called **E**rythema tox**EEE**cum.

TRANSIENT NEONATAL PUSTULAR MELANOSIS

Transient neonatal pustular melanosis is more common in **African-American kids**. This is a benign rash with NO associated erythema. It starts in utero and is PRESENT AT BIRTH. It resolves within a few days but can leave hyperpigmented macules for a while. Diagnose by examining contents and looking for **PMNs** on Tzanck smear.

IMAGE: www.pbrlinks.com/TRANSIENT1
IMAGE: www.pbrlinks.com/TRANSIENT2

MNEMONICS: Transient neonatal PUStular melanosis should remind you of the PMNs on the Tzanck smear in the PUS-like contents of these PUStules. MELANosis should make you think about dark-skinned individuals (AA kids) and the dark macules that can be left behind.

NEONATAL ACNE (AKA NEONATAL CEPHALIC PUSTULOSIS)

Neonatal acne (AKA Neonatal Cephalic Pustulosis) occurs within the **first month** of life and resolves by 4 months of age. Look for inflammatory pustules on the cheeks and forehead without comedones. This is a benign rash that requires no treatment.

IMAGE www.pbrlinks.com/NCP1

MNEMONIC: NEONATal = FIRST MONTH OF LIFE!

INFANTILE ACNE

Infantile acne looks like typical pubertal acne, but it is found in babies. Onset is usually around 2–3 months of age, and it is due to androgenic stimulation. There can be COMEDONES (whiteheads and blackheads). The rash can resolve in a few weeks or it can take up to a year to resolve.

MNEMONIC: INFANTile = Infants. Don't choose this if the baby is 4 weeks old.

IMAGE: www.pbrlinks.com/INFANTILE1

LIVEDO RETICULARIS (AKA CUTIS MARMORATA)

Livedo reticularis (AKA cutis marmorata) presents as a mottled, reticulate patterned rash and may be described as a lacy rash. It is benign and resolves by 1 month.

IMAGE: www.pbrlinks.com/LIVEDO1
IMAGE: www.pbrlinks.com/LIVEDO2

PEARL: If the baby is healthy and without any concerning symptoms, choose this. If not, consider sepsis in your differential.

ALOPECIA & HAIR FINDINGS

ALOPECIA AREATA

In alopecia areata, there are round/well-circumscribed area(s) of alopecia. Alopecia can be on the scalp or in other areas. Hairs at the periphery of the areas are short, **pluckable**, and may resemble an **exclamation point!**

IMAGE: www.pbrlinks.com/ALOPECIA-A1
IMAGE: www.pbrlinks.com/ALOPECIA-A2
IMAGE: www.pbrlinks.com/ALOPECIA-A3

ALOPECIA TOTALIS

Alopecia totalis is the loss of all hair on the HEAD.

IMAGE: www.pbrlinks.com/ALOPECIA-T1

ALOPECIA UNIVERSALIS

Alopecia universalis is the loss of all hair on the entire BODY. There is usually a **SYSTEMIC** etiology such as hypothyroidism, a nutritional deficiency, or even lupus (SLE).

(DOUBLE TAKE) ZINC DEFICIENCY

Breastfeeding helps with zinc absorption. If a child begins having medical problems once weaned from breast milk, consider zinc deficiency in your differential. Zinc deficiency causes a **SCALY and EXTREMELY ERYTHEMATOUS** dermatitis in the perioral and perianal area (**around the natural orifices**) that can DESQUAMATE. The rash is sometimes described as erosive and eczematous. It can also be associated with ALOPECIA and poor taste.

* **MNEMONIC**: Poor taste, huh? Have you ever had Zinc lozenges? They are disgusting! It's probably a good thing that you have hypogeusia when you are eating Zinc lozenges!

* **IMAGE**: www.pbrlinks.com/ZINC1
* **IMAGE**: www.pbrlinks.com/ZINC2
* **IMAGE**: www.pbrlinks.com/ZINC3
* **IMAGE**: www.pbrlinks.com/ZINC4

* **PEARLS:**

- CROHN'S DISEASE: If a Crohn's patient is suffering from diarrhea, they may have zinc deficiency since Zn is lost in the stool.
- (DOUBLE TAKE) STRICT VEGETARIANS AND VEGANS may be susceptible to multiple nutritional deficiencies, including deficiencies in IRON, ZINC, CALCIUM, and VITAMIN B12. Vegans avoid all animal-derived products (including milk and eggs). B12 deficiency can result in megaloblastic anemia, vitiligo, peripheral neuropathy, and even regression of milestones.
    - **MNEMONIC**: Did you know giraffes are vegetarian? Imagine a giraffe standing in Times Square reaching its long neck into the sunroof of a FUZZY CAB that has green, grass-like seats and fuzzy floor mats. FUZZY CAB = FeZi CaB12!

(DOUBLE TAKE) ACRODERMATITIS ENTEROPATHICA

Acrodermatitis enteropathica is an inherited condition (autosomal recessive) in which there is a zinc transport defect. It can result in **alopecia**, diarrhea, failure to thrive (FTT), and the **rash** of zinc deficiency.

IMAGE: www.pbrlinks.com/ACRODERMATITIS1

(DOUBLE TAKE) BIOTIN/BIOTINIDASE DEFICIENCY

Biotin and biotinidase deficiencies may present with a RASH + ALOPECIA + **NEUROLOGIC SIGNS** (ataxia, coma, etc.). Patients may also have lactic acidosis. Treat with biotin.

MNEMONICS: Imagine the bio-TIN MAN from *The Wizard of Oz* walking with an ATAXIC gait as he SCRATCHES his bare arm (NO HAIR)! Also, think of biotin as bio**7**in to remember that this is vitamin B7.

TELOGEN EFFLUVIUM

Telogen effluvium is a form of acute hair shedding that occurs diffusely. Instead of patches, you see "thinning" of the hair. The hair that is shed can be recognized by a small bulb of keratin on the root end. It was too young to shed. This is often related to a psychological or medical stressor. Treat with REASSURANCE because the hair will grow back.

IMAGE: www.pbrlinks.com/TELOGEN1
IMAGE: www.pbrlinks.com/TELOGEN2

TINEA CAPITIS (AKA RINGWORM)

Tinea capitis (ringworm) results in broken hair that looks like "**black dot alopecia."** There is often inflammation, and this condition can be associated with a kerion (a raised spongy lesion). Treat with GRISEOFULVIN. You do not need any baseline labs.

IMAGE: www.pbrlinks.com/TINEACAPITIS1
IMAGE: www.pbrlinks.com/TINEACAPITIS2

TRICHOTILLOMANIA

Trichotillomania is a body-focused repetitive behavior in which patients pull out their hair. (This may be on a location other than the scalp.) Look for loss of hair in an irregular pattern (not a nice circle). Also, the irregularly shaped patches will contain incomplete hair loss in which you will see hair of **differing lengths.**

IMAGE: www.pbrlinks.com/TRICHOTILLOMANIA1
IMAGE: www.pbrlinks.com/TRICHOTILLOMANIA2

(DOUBLE TAKE) ESSENTIAL FATTY ACID DEFICIENCIES

Essential fatty acids include **LINOLEIC ACID** and alpha-linolenic acid. Deficiency results in alopecia, a scaly dermatitis, and **thrombocytopenia**. Treat with IV lipids.

MNEMONIC: Imagine a fish whose red SCALES are shaped like HAIRY PLATELETS. As the fish struggles to find food, it becomes SKINNIER and skinnier (malnourished) and the hairy platelets begin to fall off. What's left is a SKINNY (fat-free), BALD, and THROMBOCYTOPENIC fish!

APLASIA CUTIS CONGENITA

In aplasia cutis congenita, there is a congenital absence of the skin in an area. It is usually in a single location (most often the scalp) but can be in multiple areas. After the lesion heals and scars, a BALD SPOT is left behind. Aplasia cutis can be associated with underlying spinal dysraphisms and underlying skull defects.

IMAGE: www.pbrlinks.com/APLASIACUTIS1
IMAGE: www.pbrlinks.com/APLASIACUTIS2

PEARLS: Look for the HAIR COLLAR SIGN. This is a hairless area with a collar of dense hair at the edges. If given a picture of a scalp with the hair collar sign, get an MRI.

IMAGE: www.pbrlinks.com/APLASIACUTIS3

Hope You've Enjoyed It!

A Few [CRITICAL] Reminders

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Ashish & Team PBR

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