

# Getting the MOST out of YOUR Academic Half Day

Brenda Shinar  
Cheryl O'Malley

10,000 hours of deliberate  
practice





# Do the math....

- Intern call months:
  - 65 hours/wk X 8\* months (35 weeks) as an intern = 2275 hrs
  - Intern non-call months:
    - 40 hours/wk X 13 weeks = 520 hrs
- Senior call months:
  - Next 2 years 52 weeks of call X 65 hrs/wk = 3380 hrs
  - Senior non-call months:
    - 46 weeks X 40 hrs = 1840 hrs

TOTAL hours in residency = 8015 hrs in 3 years

# More Math...

- 10,000 hours – 8015 hours  
= 1985 hours left to be an expert
- Over 3 years = 661 hours per year
  - = 108 minutes per day of deliberate reading!

108 minutes

# It is a job!



# Job Description

## Your Job

- To provide excellent care to patients today
- To engage in deliberate practice to prepare yourself to take excellent care of patients when unsupervised in the future.







Dr. Bob Raschke

Dr. Edwin Yu

# Top 8 Barriers (and solutions) to being the SMARTY pants you dream of...

Dr. Amandeep Khurana

Dr. Your Name Here!

# The Top 8 Barriers

8. I'm just a bad test taker no matter how much I study.

# “I’m a bad test taker.”

- **Test Anxiety or Attention**
  - Evaluation and treatment is available!
  - If this is NOT your problem, then its one of the following...
- **Poor Study Skills and Habits**
  - I’m a bad test taker = I don’t know the answers
  - Many subjects are hard to learn and take considerable effort with appropriate study strategies
- **Inflated self-assessment of knowledge, skill, or ability**
  - **Most students are very poor at “meta-cognition” or knowing what they know!**
  - **It is very hard to correct an inflated sense of knowledge...**
  - **The key indicator of this problem is that you don’t do well on the test!**

# The Top 8 Barriers

7. My fellowship goals are more important than learning internal medicine.
8. I'm just a bad test taker no matter how much I study.

“My fellowship goals are more important than learning internal medicine.”

- Study and take an elective in your WEAKEST area.
- Fellowships are looking for well rounded fellows with excellent baseline GIM knowledge.
- Study it when you are on that rotation, be engaged and ask thoughtful questions.
- “Discipline is doing something you hate with the zeal and tenacity as if you loved it...”

# The Top 8 Barriers

6. I learn best by doing questions rather than reading.
7. My fellowship goals are more important than learning internal medicine.
8. I'm just a bad test taker no matter how much I study.

“I learn best by doing questions rather than reading”





# The Top 8 Barriers

5. The board exam is far away and I work best under pressure.
6. I learn best by doing questions rather than reading.
7. My fellowship goals are more important than learning internal medicine.
8. I'm just a bad test taker no matter how much I study.

“The Board Exam is far away and I work best under pressure”

- You always have a deadline!
- Weekly AHD articles/objectives
- Monthly MKSAP questions on electives (due 7 DAYS after finishing elective rotation)
- Timely completion is linked to your day off at BUMC-P

# The Top 8 Barriers

4. My medical knowledge is fine. (I don't know what I don't know).
5. The board exam is far away and I work best under pressure.
6. I learn best by doing questions rather than reading.
7. My fellowship goals are more important than learning internal medicine.
8. I'm just a bad test taker no matter how much I study.

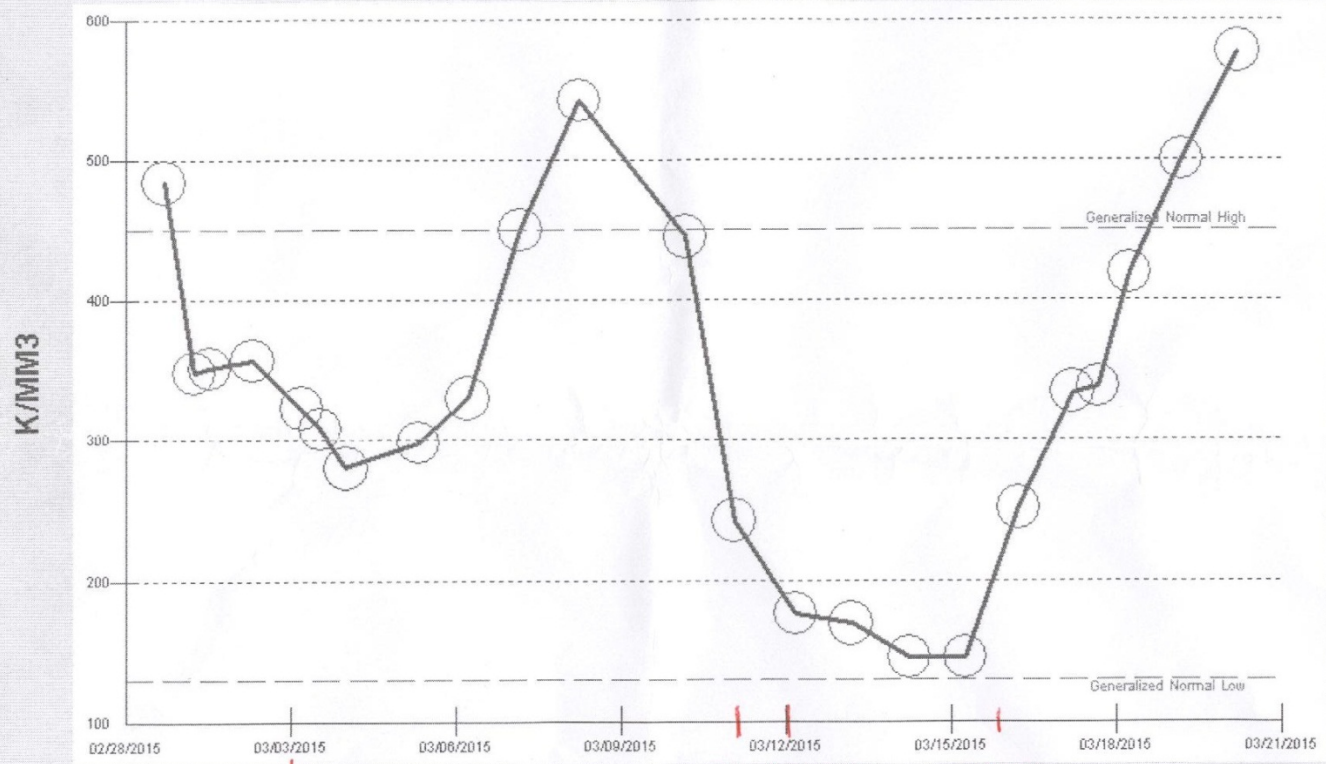
“The faculty haven’t said anything bad about my medical knowledge, it must be fine.”

## Board Pass Calculator

[http://www.r-calc.com/administrator/calculatorPreview.aspx?isGrid=0&mobile=0&isTemp=0&calculator\\_id=de409368-643f-4f71-b96e-b040cb7478bf](http://www.r-calc.com/administrator/calculatorPreview.aspx?isGrid=0&mobile=0&isTemp=0&calculator_id=de409368-643f-4f71-b96e-b040cb7478bf)



### Platelet



start  
heparin  
infusion  
d/t DVT/PE

d/c heparin  
~3/11 ?  
IVC filter  
on 3/12

SubQ  
heparin  
5,000 u

# The Top 8 Barriers

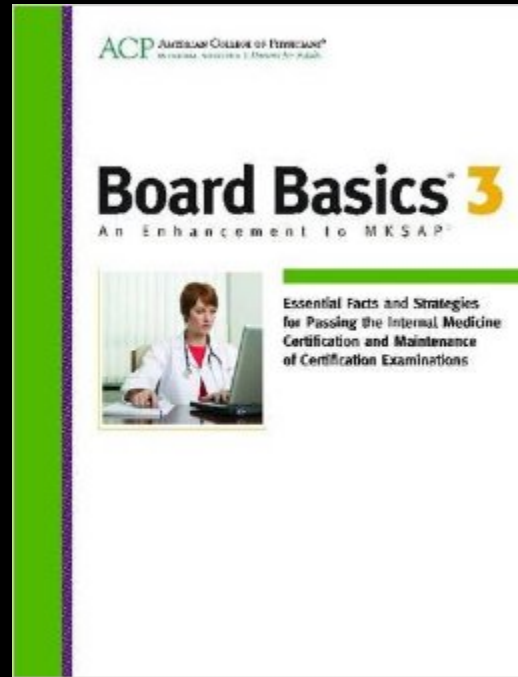
3. I don't know how to make the knowledge stick.
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# “I don’t know how to make the knowledge stick.”

- Make your reading active!
  - *What do I already know about this topic?*
  - *What should I get out of this? (objectives)*
- Apply it- anything!
- Teach it!
- Take notes!
- Study your notes!
  - Before the end of the month test...
  - Before the ITE exam...



# Review and grow your notes

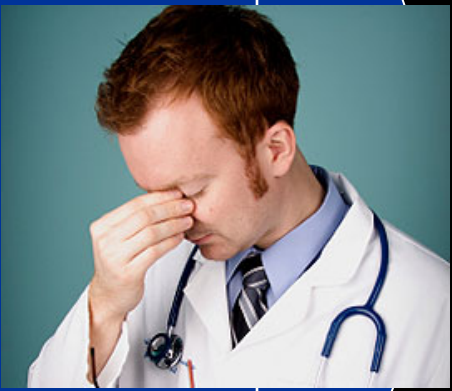


# The Top 8 Barriers

2. There is too much to read and I am not sure where to start or how to get organized.
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# “There is too much to read and I don’t know how to get organized”

Call Months	Non-Call Months
<p>Your patients-            Read whatever is handy/answers your ?.            What else do you need to consider in the differential? Does this fit the typical illness script? Does our treatment match the current recommendations? If not, why?</p>	<p>Your patients-</p> <ul style="list-style-type: none"> <li>• MKSAP content for that topic</li> <li>• Daily discussions with the subspecialty attendings</li> </ul>
<p>Other: am report prep (seniors), teaching topics on rounds **</p>	<p>Rotation assignments</p>
	<p>Clinic articles</p>
<p>Academic ½ day weekly readings – What do you already know about the topic? What is the minimum that should you know (objectives)?</p>	<p>AHD readings: Objectives due?</p>
<p>Journal Club Grand Rounds Articles</p>	<p>Journal Club Grand Rounds Articles</p>



Medical knowledge

Context

Experience

Patient's story

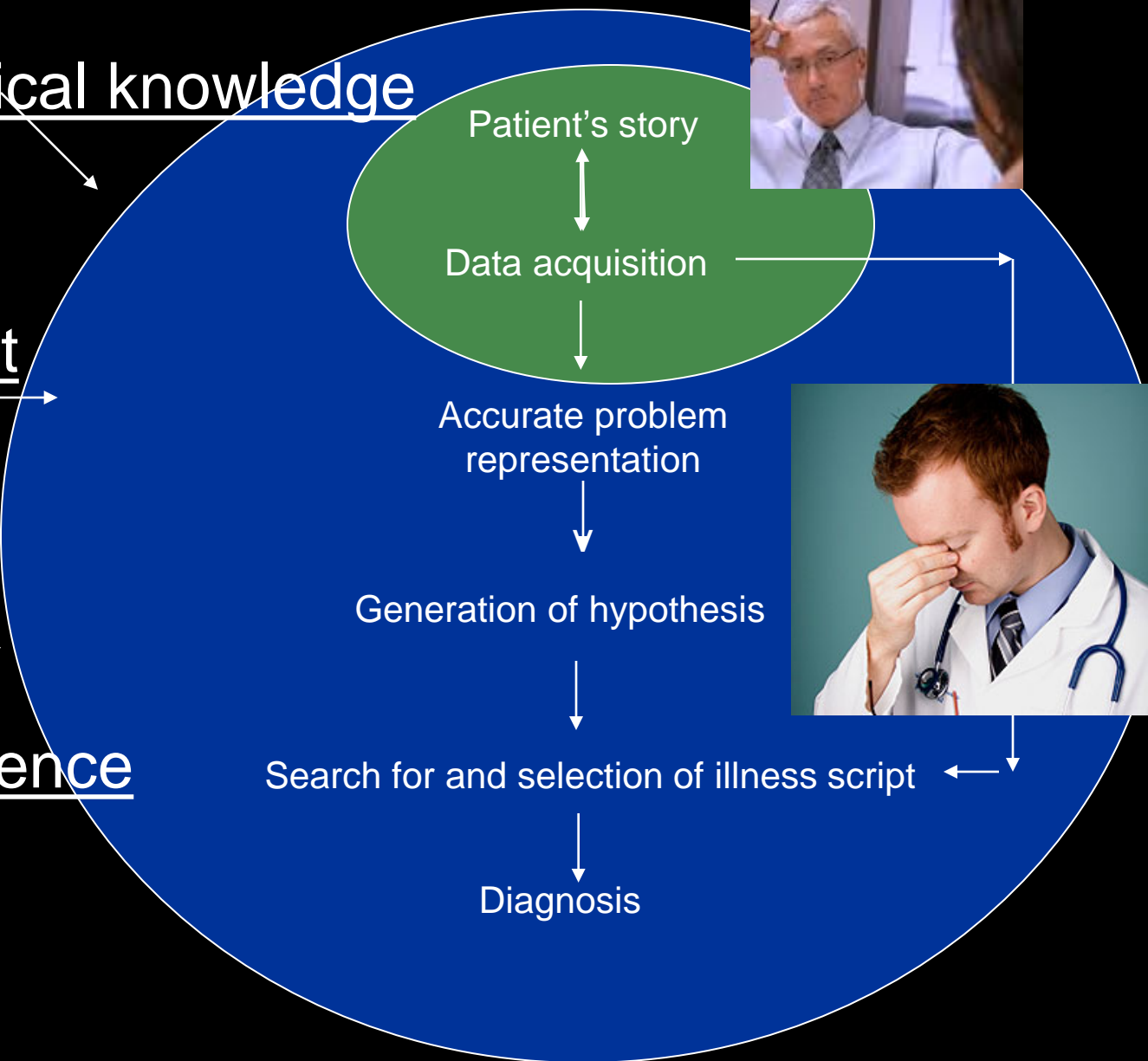
Data acquisition

Accurate problem representation

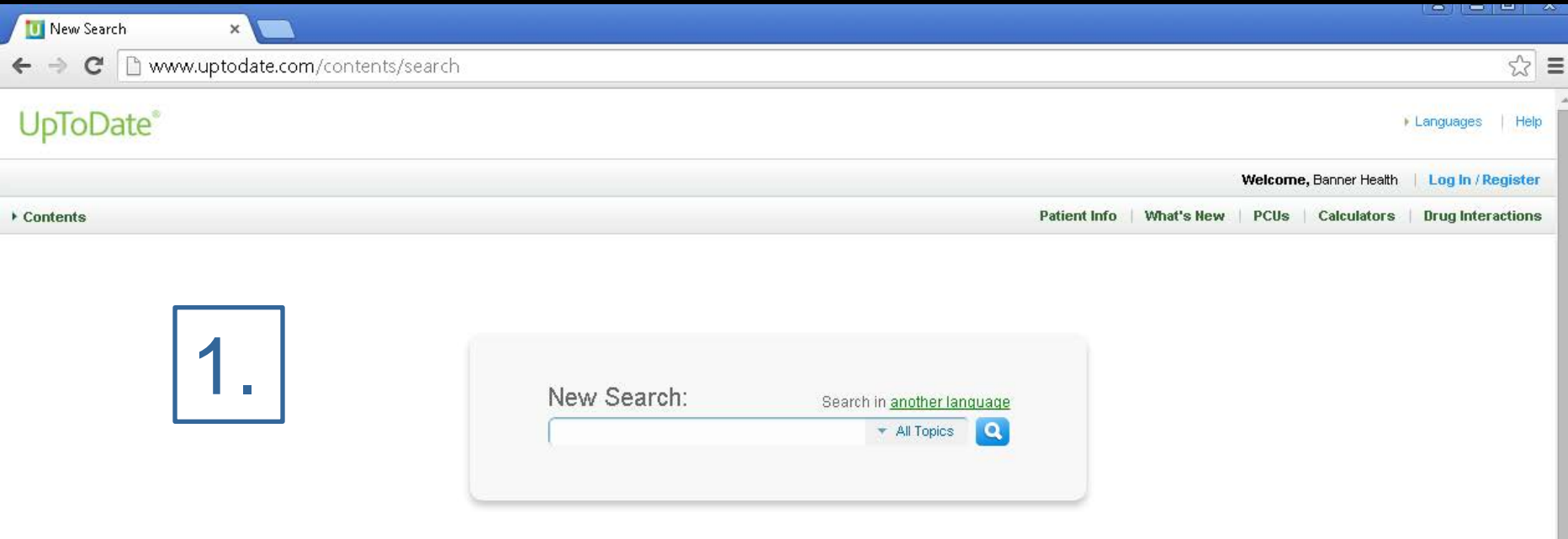
Generation of hypothesis

Search for and selection of illness script

Diagnosis



# Read about your patients



1.

New Search: [Search in another language](#)  
All Topics

2. Review referenced studies

3. Look up your own search



# Read the content

The screenshot displays the MKSAP 16 website interface. At the top left, the ACP American College of Physicians logo is visible, along with the text "ACPPHYSICIAN®" and "INTERNAL MEDICINE | Doctors for Adults". The user is logged in as "Hello, cwmalley" and has options for "Log out" and "My Account". The main navigation bar includes "Home", "Topics", "Questions", and "Submit list".

The user's name "Hello, Cheryl O'Malley" is shown, with a link to "not you? Sign in with your account". A large banner for "MKSAP 16 Medical Knowledge Self-Assessment Program" features three main navigation buttons: "Take a Tour", "Access the Topics" (circled in blue), and "Answer Questions".

On the right side, a "How Do I?" section provides help topics:

- Simulate an exam
- Submit for CME or ABIM MOC
- Sync my answers with the apps
- View errata and revisions

A button labeled "View All Help Topics" is located below the list.

At the bottom left, a "Custom Quiz" section indicates "No Quiz Found" and offers a "Create a new custom quiz" option with a "Create a Quiz" button. At the bottom right, a section for "MKSAP 16 Apps" describes the availability of apps for various devices and includes a "Learn About the Apps" link.

# Answer 100 Questions → Submit

The screenshot displays the MKSAP 16 (Medical Knowledge Self-Assessment Program) website. At the top, the ACP American College of Physicians logo is visible on the left, and user information 'Hello, cwmalley' with 'Log out' and 'My Account' links is on the right. Below the header, the MKSAP 16 logo and 'Medical Knowledge Self-Assessment Program' are prominently displayed. A navigation menu includes 'Home', 'Topics', 'Questions', and 'Submit list'. A user greeting 'Hello, Cheryl O'Malley' is shown with a 'Sign in with your account' link. A central panel features three main action buttons: 'Take a Tour', 'Access the Topics', and 'Answer Questions', with the latter circled in blue. To the right, a 'How Do I?' section lists help topics: 'Simulate an exam', 'Submit for CME or ABIM MOC', 'Sync my answers with the apps', and 'View errata and revisions', with a 'View All Help Topics' button below. The bottom section includes a 'Custom Quiz' area with a 'Create a Quiz' button and an 'MKSAP 16 Apps' section with a 'Learn About the Apps' button.

ACP AMERICAN COLLEGE OF PHYSICIANS®  
SPECIAL MEDICAL EDUCATION | Doctors for Adults

Hello, cwmalley Log out My Account

**MKSAP 16**  
Medical Knowledge Self-Assessment Program®

Home Topics Questions Submit list

Hello, Cheryl O'Malley not you? Sign in with your account »

**MKSAP 16**  
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- Take a Tour
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How Do I?

- Simulate an exam
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View All Help Topics

Custom Quiz:  
No Quiz Found  
Create a new custom quiz.  
Create a Quiz

MKSAP 16 Apps  
Apps for iPhones, iPads, Android phones & tablets, and PCs & Macs  
Learn About the Apps

# Academic Half Day

- Review the objectives
- Read the articles \*(new “Read by QxMD” App folder “B-UMCP Academic Half Day”)
- Prepare answers to the objectives
- Review and talk about during your daily work
- Attend conference and listen
- Review and talk about in your daily work
- Return to the objectives, articles and video as needed





Goodsamim.com

“Gsphoenixim”

# My Study Schedule 2015-2016

- Graduating Seniors need to have **FINISHED** by the time of the Awesome review in May!
- PGY1 and 2 → just make progress every month!
- MKSAP questions are due 7 days after a non-call month is over.



# The Top 8 Barriers

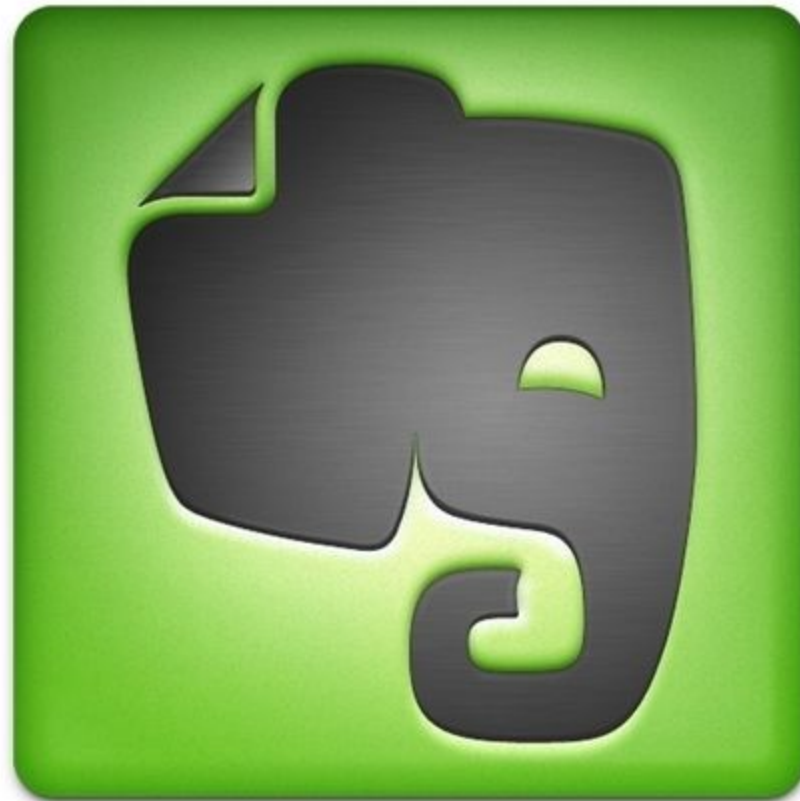
1. Patient care counts as studying and I just worked a 12+ hour day.
2. There is too much to read and I am not sure where to start or how to get organized.
3. I don't know how to make the knowledge stick.
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“Patient care counts as studying and  
I just worked a 12+ hour day”

- We know!!
- Find little islands of time in your day
- Have something handy all the time
- Use it and refer to it
- Slow and steady WINS the race!
- You **ALWAYS** have time for what is important to you.

# Study Journal Using **Evernote**

By Nick Thomson





TEXT



PHOTOS



REMINDER



LIST



CHAT

Work Chat

View >

Notes

All 67 >

Gram Stain Interpretation

1/10/15

Hyponatremia

5/29/15

Heart Failure Article

2/21/15

Notebooks

All 13 >

Tags

All 85 >

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Find Notebooks

+ New Notebook

Academic Half-Day  
2 notes

Cardiology  
15 notes

Dermatology  
2 notes

Differential Diagnoses  
1 note

Endocrinology  
13 notes

Gastroenterology  
2 notes

Hematology Oncology  
2 notes

Infectious Disease  
2 notes

Internal Medicine  
15 notes

Nephrology  
5 notes





APRIL 2015

Options

### STD Treatment

4/27/15

for 10-14 days or procaine penicillin, 2.4 million units IM daily plus probenecid, 500 mg PO four times daily, both for 10-14 days

IM = intramuscularly; IV = intravenously; PO = orally.

\*Penicillin is the only effective antimicrobial agent for treatment of syphilis at any stage in pregnancy; therefore, pregnant penicillin-allergic patients should be desensitized and treated with the

JANUARY 2015

### Gram Stain Interpretation

1/10/15

#### MINIMUM COMPETENCY-EVERYONE

MOLOGY REPORTED	ORGANISM IMPLIED
-positive cocci clusters	Staphylococcus
-positive cocci pairs/chains	Streptococcus
-positive cocci	Staphylococcus/Streptococcus
-positive rod	Any Gram-positive rod
-negative diplococci	Neisseria/Moraxella
-negative coccobacilli	Haemophilus/Bacteroides
-negative rod	Any Gram-negative rod

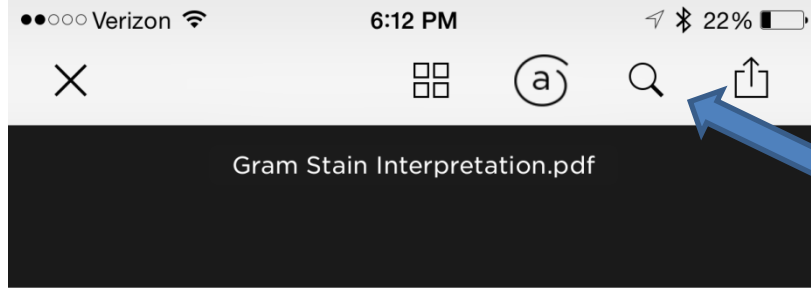


# Gram Stain Interpretation

📄 Infectious Disease >



BACTERIAL MORPHOLOGIES LEVEL I MINIMUM COMPETENCY-EVERYONE	
MORPHOLOGY REPORTED	ORGANISM IMPLIED
• Gram-positive cocci clusters	Staphylococcus
• Gram-positive cocci pairs/chains	Streptococcus
• Gram-positive cocci	Staphylococcus/Streptococcus
• Gram-positive rod	Any Gram-positive rod
• Gram-negative diplococci	Neisseria/Moraxella
• Gram-negative coccobacilli	Haemophilus/Bacteroides
• Gram-negative rod	Any Gram-negative rod
• Yeast cells	Yeast, usually Candida
• Yeast cells with pseudohyphae	Candida, not C. glabrata
• OTHER FINDINGS-LEAVE FOR REVIEW	



interpretation [microbiology | generalist]

## Interpretation of Gram Stains for the Nonmicrobiologist

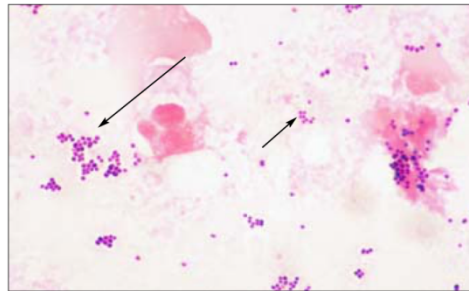
Joan Barenfanger, MD, MMB, ABMM, and Cheryl A. Drake, SM(ASCP)

From the Department of Laboratory Medicine, Memorial Medical Center, Springfield, IL

- ▶ Guidelines for the interpretation of Gram stains
- ▶ Normal flora in respiratory secretions
- ▶ Normal flora in the female genital tract
- ▶ Presumptive identification of microorganisms from Gram stain
- ▶ Correlation of findings

Laboratories everywhere are being asked to do more with less. To enable the laboratory to offer increased services over an expanded period of time, many technologists with little experience in microbiology are now asked to perform and read Gram stains. Interpretation of Gram stains is notoriously difficult for nonmicrobiologists because such interpretation requires multiple observations and the judgment that comes with years of experience. This article offers objective criteria for interpreting the most commonly encountered Gram-stained specimens.

An adequate examination of a Gram-stained smear includes observing numerous representative fields. The fields containing neutrophils yield the most useful information. A minimum of 1 minute should be spent examining a smear; after that, judgment is needed. Obviously, a smear from the cerebrospinal fluid (CSF) with neutrophils deserves more time than an acellular smear. Similarly, more time should be spent on a specimen that was obtained



||1a| Staphylococci: gram-positive cocci in the tetrads (short arrow) and clusters (long arrow) as well as the nonspecific singles and pairs.

by an invasive technique than on one that was easy to obtain. Generally, only 1 morphotype (bacteria with a certain Gram stain and shape, eg, gram-negative bacilli) is seen in a sterile site. For instance, only gram-negative diplococci are expected in a patient's CSF, not gram-negative diplococci as well as gram-positive cocci. If both of these morphotypes are seen, most likely the problem is over- or underdecolorization.

The problem with decolorization must also be considered when the shape

of the organism does not "fit" the Gram stain. Please refer to Images 1a through 1j for Gram stains of characteristic morphotypes (all images  $\times 100$  oil except G and J). For instance, gram-positive cocci seen in tetrads and clusters or in long chains are highly characteristic of staphylococci and streptococci, respectively [T1] [1a] [1b], but may appear gram-negative because of overdecoloration. Similarly, classic gram-positive diplococci are lancet-shaped or pointed at the outside ends [T1] [1c]. If gram-positive diplococci flattened at the out-

laboratorymedicine> july 2001> number 7> volume 32



# Derm Algorithm

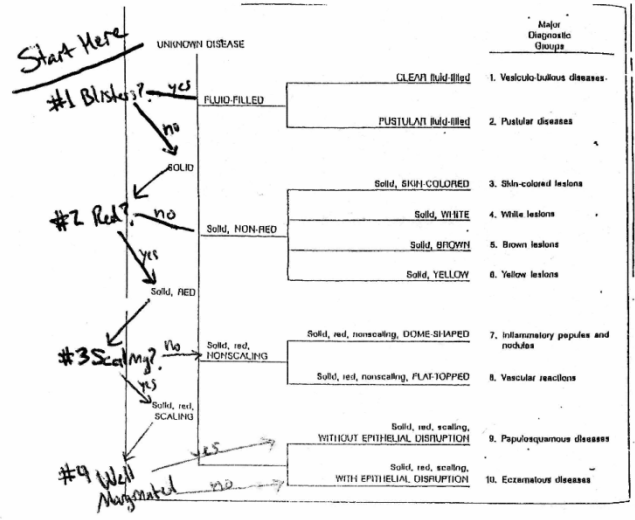
📄 Dermatology >



**Tap to Download**

Doc.pdf  
1015.1 KB

# EVALUATING A SKIN LESION



**Macule** — < 2 cm diameter area of color change, with no palpable substance.

**Patch** — > 2 cm diameter macule.

**Papule** — Palpable mass < 1.5 cm diameter.

**Nodule** — Spherical enlargement of a papule > 1.5 cm diameter.

**Plaque** — Flat-topped palpable lesion > 1.5 cm diameter. Papule that is enlarged to 2 dimensions.

**Wheal** — Eczematous papule on plaque. Noninoculated fluid.

**Vesicle** — Fluid-filled papule < 1.5 cm diameter.

**Bulla** — > 1-1.5 cm vesicle.

**Pustule** — Vesicle packed full of pus (may or may not be sterile).

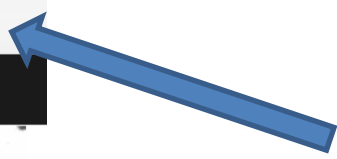
**Excoriations** — Scratchmarks.

**Lichenification** — Thickening secondary to chronic rubbing or scratching (seen only in eczematous diseases).

- Location / Distribution
- Size / Color
- Border / Margination
- Primary Lesion
- Secondary characteristics (scale, crust, excoriation)



Doc.pdf



- I. Vesiculo-Bullous Diseases
  - A. Vesicular disease
    1. Herpes simplex
    2. Varicella-zoster
    3. Vesicular linae pedis
    4. Dyshidrotic (pompholyx)
    5. Scabies
    6. Dermatitis herpetiformis
  - B. Bullous disease
    1. Poison-ivy-type contact dermatitis
    2. Bullous impetigo
    3. Erythema multiforme bullosum (Stevens Johnson syndrome)
    4. Pemphigoid
    5. Pemphigus
- II. Pustular Diseases
  - A. True (soft pustules)
    1. Acne vulgaris
    2. Rosacea (acne rosacea)
    3. Bacterial folliculitis
    4. Fungal folliculitis
    5. Candidiasis
    6. Systemic bacterial infection (eg. gonorrhea)
  - B. Pseudo-pustules (See white papules, Group IV)
- III. Skin-Colored Lesions
  - A. Keratotic (rough-surfaced lesions)
    1. Warts: verruca vulgaris, paronychia and plantar warts
    2. Actinic keratosis
    3. Seborrheic keratosis
    4. Corns and calluses
  - B. Nonkeratotic (smooth lesions)
    1. Warts: genital warts, flat warts (with or without ulceration)
    2. Basal and squamous cell carcinomas
    3. Epidermoid ("sebaceous") cysts
    4. Lipomas
    5. Molluscum contagiosum
    6. Nevus: Intra-dermal
- IV. White Lesions
  - A. White patches and plaques
    1. Pityriasis alba
    2. Pityriasis (lilvae) versicolor
    3. Vitiligo
    4. Postinflammatory hypopigmentation
  - B. White papules
    1. Milia
    2. Keratosis pilaris
    3. Molluscum contagiosum
    4. Sebaceous gland hyperplasia
- V. Brown Lesions
  - A. Brown macules
    1. Freckles
    2. Lentigenes
    3. Nevus: junctional
- B. Brown papules and nodules
  1. Nevus: compound and intradermal
  2. Seborrheic keratosis
  3. Melanoma
- C. Brown patches and plaques
  1. Cafe-au-lait patches
  2. Postinflammatory hyperpigmentation
  3. Giant congenital nevus
- D. Generalized hyperpigmentation
  1. Secondary to systemic disease
  2. Secondary to medication
  3. Postinflammatory hyperpigmentation
- VI. Yellow Lesions
  - A. Smooth yellow lesions
    1. Xanthelasma
    2. Xanthoma lipoidica diabeticorum
    3. Sebaceous gland hyperplasia
  - B. Rough yellow lesions
    1. Actinic keratosis
    2. Atypical crusted lesion (see vesiculo-bullous diseases, eczematous and insect bites)
- VII. Inflammatory Papules and Nodules
  - A. Nonscaling red papules
    1. Insect bites
    2. Cherry angiomas
    3. Spider angiomas
    4. Granuloma annulare
    5. See nonconfluent papules, Group IX
  - B. Nonscaling red nodules
    1. Furuncles
    2. Inflamed epidermoid cysts
    3. Hidradenitis suppurativa
    4. Erythema nodosum
- VIII. Vascular Reactions
  - A. Nonpurpuric (blanchable) lesions
    1. Toxic erythema: axanthema, medications, photosensitivity
    2. Urticaria: infection, medications
    3. Erythema multiforme
    4. Cellulitis (erysipelas)
  - B. Purpuric lesions
    1. Vasculitis (PMN type, palpable purpura)
    2. Actinic ("sensitive") purpura
    3. Petechiae and ecchymoses secondary to medications
- IX. Papuloquamous Diseases
  - A. Prominent plaque formation
    1. Pityriasis vulgaris
    2. Tinea: corporis, capitis, pedis and cruris
    3. Lupus erythematosus: discoid type
    4. Parapsoriasis-mycosis fungoides
  - B. Nonconfluent papules
    1. Pityriasis rosea
    2. Lichen planus
    3. Syphilis: secondary
    4. Psoriasis: guttate type

Continued

- X. Eczematous Diseases
  - A. Excoriations prominent
    1. Atopic dermatitis (neurodermatitis, lichen simplex chronicus, infantile eczema)
    2. Dyshidrotic eczema
    3. Stasis dermatitis
    4. Tinea: cruris, capitis, pedis
    5. Psoriasis in atopic individuals
    6. Candidiasis
  - B. Little or no excoriation
    1. Seborrheic dermatitis
    2. Contact dermatitis
    3. Xerotic (asteatotic) eczema
    4. Impetigo
- C. Eczematous reaction pattern (seen with more than one of the above eczematous diseases)
  1. Hand and foot eczema
  2. Diaper dermatitis
  3. Nummular eczema
  4. Exfoliative erythrodermatitis
  5. Autoeczematization (auto-sensitization, "Id" reaction)



Close

# Note Details



Add Tag



Updated: Today Created: Today

Large empty grid area for note content.



Tap here to add location

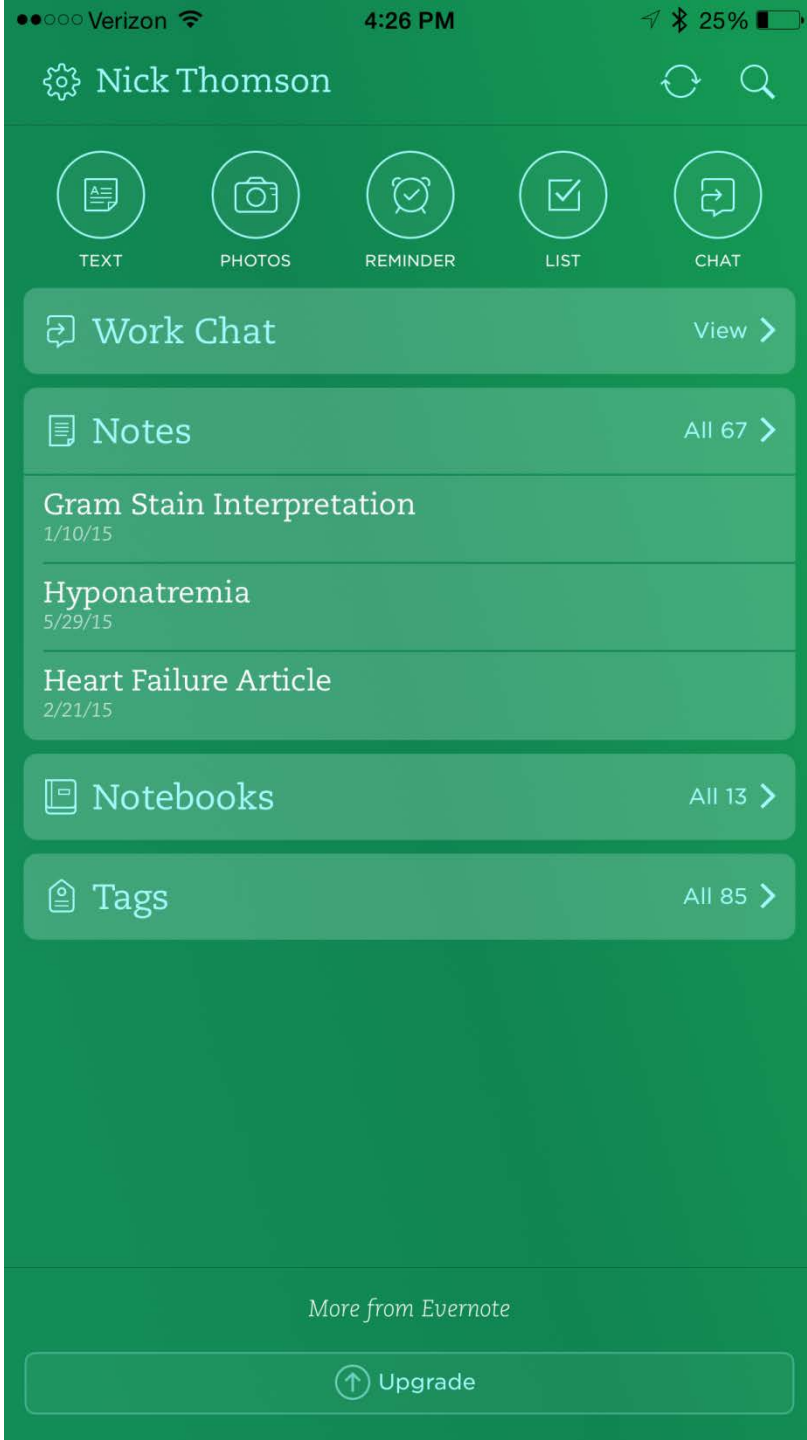
I The You

Q W E R T Y U I O P

A S D F G H J K L

↑ Z X C V B N M ↵

123 🌐 🗣️ space return





Back

Tags

Edit

Find Tags

Sort

A

A-Fib

A-Flutter

A1c

ABG

ACC

Acid base

AHA

Alcoholic He...

Algorithm

Aortic Stenosis

Arthritis

Atrial Flutter

A  
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B

B12

BPPV

Breast Cancer

Bridging

C

CAD

Cervical

CHADS2

Chest pain

Colon

Colonoscopy

COPD



TEXT



PHOTOS



REMINDER



LIST



CHAT

Work Chat View >

Notes All 67 >

Gram Stain Interpretation  
1/10/15

Hyponatremia  
5/29/15

Heart Failure Article  
2/21/15

Notebooks All 13 >

Tags All 85 >

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Upgrade

Cancel

New Note

Save

Untitled note

Internal Medicine >



Tap to edit



- TEXT
- PHOTOS
- REMINDER
- LIST
- CHAT



Work Chat View >

Notes All 67 >

Gram Stain Interpretation  
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Notebooks All 13 >

Tags All 85 >

More from Evernote

Upgrade



Photos



Ideas for Nick while girls are gone

### Capturing

- sweep garage
- deep clean bbq grill
- replace air filters



Place documents on a contrasting background.

Cancel



Save

- TEXT
- PHOTOS
- REMINDER
- LIST
- CHAT

Work Chat View >

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More from Evernote

Upgrade

- TEXT
- PHOTOS
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- LIST
- CHAT

Work Chat View >

Cancel Reminder Save All 67 >

Gram 1/10/15



Hypor 5/29/15

Heart 2/21/15

All 13 >

All 85 >

Do your dictations Mike Pham!

 Tue, Jul 7, 2015 

Sat Jul 4	7	15	
Today	8	30	
Mon Jul 6	9	45	
<b>Tue Jul 7</b>	<b>10</b>	<b>00</b>	<b>AM</b>
Wed Jul 8	11	15	PM
Thu Jul 9	12	30	
Fri Jul 10	1	45	

More from Evernote

Upgrade



TEXT



PHOTOS



REMINDER



LIST



CHAT



Work Chat

View >

Notes

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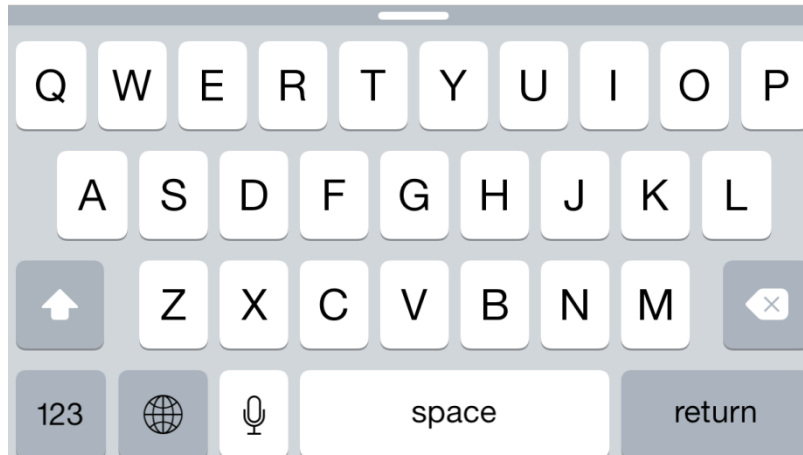
Internal Medicine >



- Do academic Halfday Objectives
- Do MKSAP Questions
- Run 30 miles |



A





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To: kurt

CONTACTS



**Kurt Olson**  
kurtolson@me.com

FIND CONTACTS



**Gmail**  
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# Miscellaneous

- Syncs across multiple devices
- Accessible on any computer using website
- Easily save and organize Academic Halfday Articles/Objectives
- Can easily share articles/notes/thoughts with Wards Teams














# Notability



\$3.99

All Notes	383
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-  **Calcium kidney stones - NEJM**  
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-  **BPH - NEJM 2012**  
Created Jan 27, 2015, 9:25 PM
-  **Erectile Dysfunction - NEJM 2007**  
Created Jan 27, 2015, 8:49 PM
-  **Chronic Kidney Disease - AAFP 2012**  
Created Jan 19, 2015, 10:11 PM
-  **Hematuria - AAFP 2013**  
Created Jan 13, 2015, 10:51 AM
-  **JNC-8**  
Created Jan 12, 2015, 9:38 PM
-  **GRF**  
Created Jan 5, 2015, 8:58 PM
-  **Hyperkalemia- AAFP 2006**  
Created Jan 5, 2015, 8:57 PM
-  **Urinalysis**  
Created Jan 5, 2015, 8:49 PM
-  **Diuretics Diagram**  
Created May 6, 2014, 12:32 AM
-  **Diuretics**  
Created May 6, 2014, 12:29 AM

REVIEW ARTICLE

# The Diagnosis of Glomerular Diseases

## Acute Glomerulonephritis and the Nephrotic Syndrome

Michael P. Madaio, MD; John T. Harrington, MD

**R**apid and efficient diagnosis of diseases presenting as acute glomerulonephritis and/or nephrotic syndrome is critical for early and appropriate therapy aimed at preservation of renal function. Although there may be overlap in clinical presentation, and some patients present with clinical features of both syndromes, this analysis serves as an initial framework to proceed with serologic testing and/or pathologic confirmation en route to final diagnosis. Efficient and timely diagnosis is essential in these situations because progression to end-stage renal disease may result if the underlying disease is not promptly treated.

*Arch Intern Med.* 2001;161:25-34

Glomerular injury leads to impairment of the selective filtering properties of the kidney and reduction in the glomerular filtration rate (GFR).<sup>1,3</sup> Consequently, blood constituents normally excluded from the urinary space pass into the urine and are excreted. The nature and severity of the defect (ie, underlying disease and pathologic lesion) determine the quantity of red blood cells (RBC), white blood cells, and proteins lost in the urine and the extent of functional impairment.<sup>4</sup> These variables determine the clinical presentation. While the GFR is reduced initially in many patients, the severity, reversibility, and progression of disease are dependent on many factors, including the nature, location, and extent of the insult and the renal and systemic response to glomerular injury.<sup>3,4</sup> Prompt recognition of the cause of glomerular disease results in a more rational, safer, and effective therapeutic approach. Early diagnosis is especially important in patients with fulminant disease, where delay in treatment greatly reduces the likelihood of a beneficial response.<sup>4,5</sup>

In this review, we delineate our approach to the diagnosis of acute glomer-

ular injury in adults, focusing on glomerulonephritis and nephrotic syndrome. Our intent is to provide a framework that will enable efficient and timely diagnosis. A few introductory points warrant particular emphasis. We do not discuss the evaluation of asymptomatic abnormalities discovered on routine urinalysis (ie, isolated hematuria and/or non-nephrotic-range proteinuria). The clinician should be aware that these manifestations may represent less severe forms of the full-blown entities. **However, there are many nonglomerular causes of isolated hematuria and proteinuria that must also be considered in these situations,** and the reader is referred to recent reviews of these entities.<sup>2,6-12</sup>

Although our approach distinguishes between nephritic and nephrotic states (the two classic clinical presentations of acute glomerular injury), many of the underlying diseases can produce nephritis or nephrotic syndrome. Furthermore, this distinction is not always easily made in individual patients. For example, some patients present with nephrotic-range proteinuria and active urine sediments, whereas others present with nephritic-range proteinuria and acute renal failure. In some instances the clinical presentation represents the initial manifestation of an acute disease, whereas in others the physician initially detects a more chronic

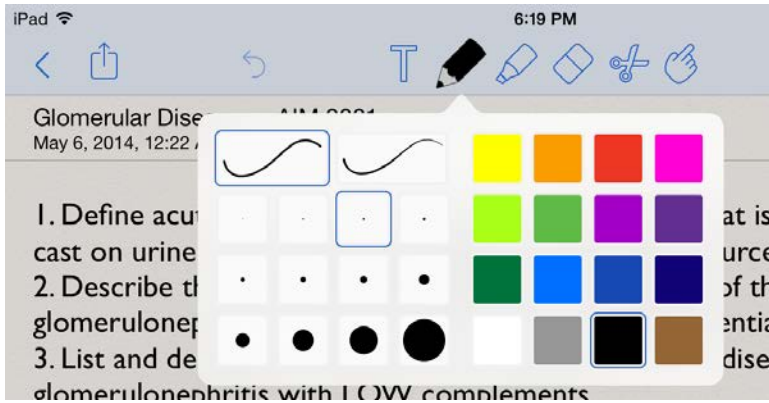
*From the Renal Electrolyte and Hypertension Division, Department of Medicine, University of Pennsylvania, Philadelphia (Dr Madaio), and the Nephrology Division, Department of Medicine, New England Medical Center and Tufts University School of Medicine, Boston, Mass (Dr Harrington).*

iPad 6:19 PM

Glomerular Diseases  
May 6, 2014, 12:22 AM

1. Define acute glomerulonephritis and cast on urine microscopy
2. Describe the initial approach to the diagnosis of acute glomerulonephritis
3. List and describe the differential diagnosis of acute glomerulonephritis with LOW complements





6:18 PM 72%

Glomerular Diseases - AIM 2001  
May 6, 2014, 12:22 AM

1. Define acute glomerulonephritis; know the finding that is equivalent to RBC cast on urine microscopy that suggests a glomerular source of bleeding.
2. Describe the initial serologic and imaging evaluation of the patient with acute glomerulonephritis and how it helps to focus the differential diagnosis.
3. List and describe several systemic and primary renal diseases that cause a glomerulonephritis with LOW complements.
4. List and describe several systemic and primary renal diseases that cause a glomerulonephritis with NORMAL complements.
5. Describe the clinical complex referred to as the "nephrotic syndrome."
6. List and describe several systemic and primary renal diseases that cause the nephrotic syndrome.
7. Describe the work up indicated for a patient with nephrotic syndrome.

**\*PIGN** but Staph can do it, too!

- H10 Strep infxn (2 wks after pharyngitis, 3 wks after skin infxn)
- Hx edema, hematuria, proteinuria, HF, (rarely hemoptysis)
- Urine: dysmorphic rbc's, rbc casts, proteinuria (sub-nephrotic or nephrotic), ↓UNa
- Low C3, ASO+, infrequently + strep ex

**\*Low complement states:**

- Post-strep (C3↓)
- Endocarditis - osteo. GN
- SLE (C3 + C4)
- Cryoglobulinemia
- MPGN

**\*Palm-Renal Syndromes**

- RPGN
- Endocarditis (acute or subacute process)
- Wegener's (ANCA)
- Renal v. thrombosis
- Goodpasture's (ANCA)
- (MMP) - Post-infectious AGN
- SLE

**\*Proteinemia (massive) → hypercoagulable → PE + RVT → pulm edema Hx, flank pain, hematuria**

**Tx Generally:**

- Pulse steroids (methyl pred 1g W 15d)
- Cyclophosphamide vs Rituximab
- 1% plasmapheresis if severe dx, hemoptysis...

**\*RPGN**

3 types

- linear deposition
- im. complex deposition
- pauci-immune (GPA, MPA)

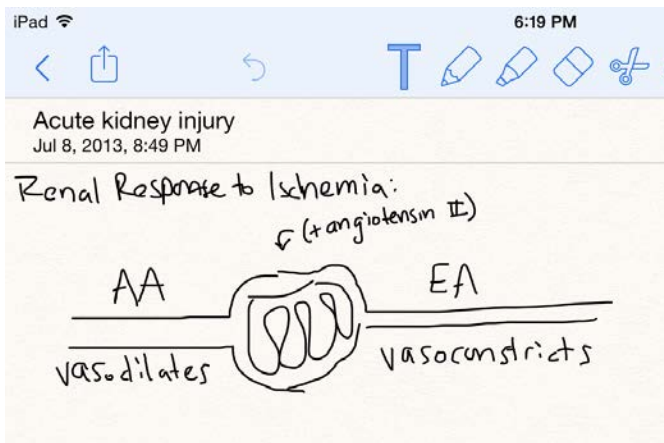
- 2% of all GN
- Mean: 50s-60s, M:F 2:1
- Prodromal illness/viral
- otherwise same px as PIGN but can be more insidious
- the more crescents seen on bx, the ↓ prognosis / ↑ ESRD risk

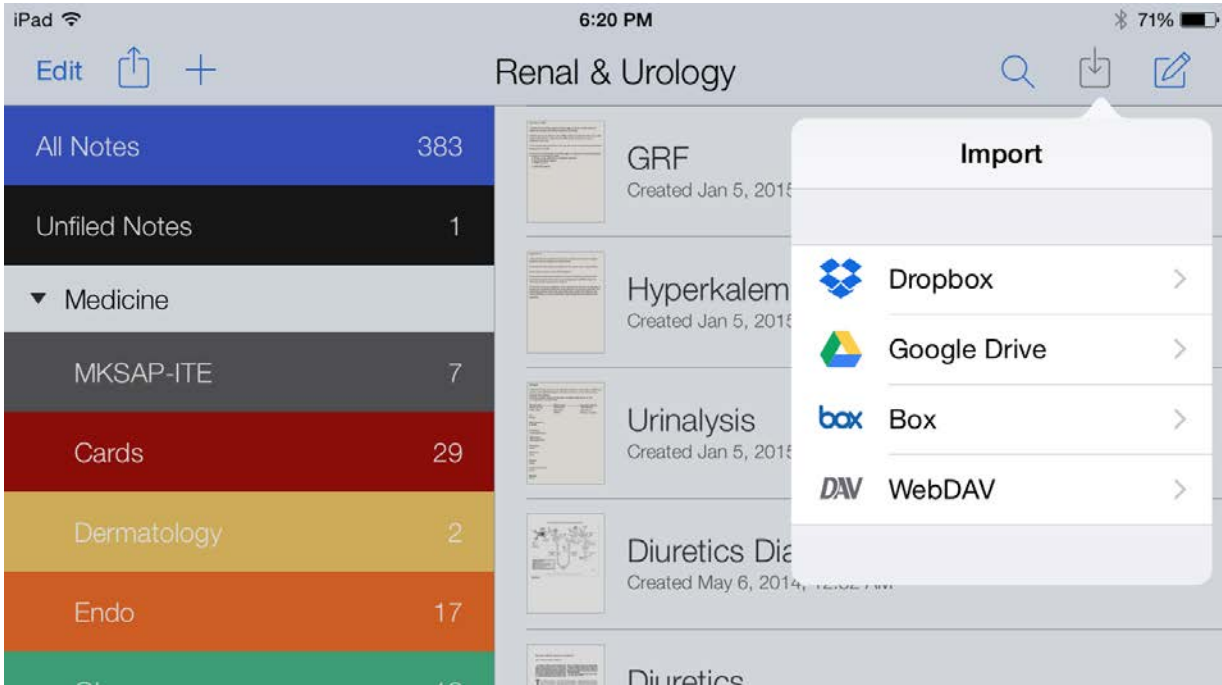
**REVIEW ARTICLE**

**The Diagnosis of Glomerular Diseases**

Acute Glomerulonephritis and the Nephrotic Syndrome

Michael P. Madala, MD; John T. Harrington, MD





# Impressions

- About you
- About the program
- About our profession