

# Joint CME/MOC Providership



American Society for  
Gastrointestinal Endoscopy



North Carolina Society of Gastroenterology Annual Meeting 2023

# Medical Education in the Age of Social Media

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ASSISTANT PROFESSOR OF MEDICINE  
TRANSPLANT HEPATOLOGIST



# DISCLOSURES

Non-financial: Co-founder of Liver Fellow Network (medical education website)

# Objectives

By the conclusion of this talk, participants should:

- 1) Know the different social media platforms used for medical education
- 2) Gain tips on how to effectively learn through social media
- 3) Understand the downsides to the use of social media in medical education

# Earlier this week...



**Hersh Shroff**  
@HershShroff

Question for [#livertwitter](#): is there a good rationale for splitting up ursodiol into 2-3 doses throughout the day (vs. once daily dosing)? Doesn't exactly make sense to me from a PK perspective (long half-life). Does it have to do with side effects?

[@LiverFellow](#) [@LiverQs](#)

5:52 PM · Feb 14, 2023 · 11.5K Views



**Brian T Lee MD** @briantleemd · Feb 15

Replying to [@HershShroff](#) [@LiverFellow](#) and [@LiverQs](#)

I tend to tell patients to take it all at once - less chance of forgetting!



1



216



**Daniel Ganger** @DanielGanger1 · Feb 14

Replying to [@HershShroff](#) [@LiverQs](#) and [@LiverFellow](#)

It is really a once a day dosing. Patients may like splitting if they blame urso for loose stools but may not make sense.



1



339



**Yuval Patel** @yuvalpatelMD · Feb 14

Replying to [@HershShroff](#) [@LiverFellow](#) and [@LiverQs](#)

Sometimes more tolerated if split but daily is fine



1



461



**Jinendra Satiya, M.D., FACP** @JinendraSatMD · Feb 14

Replying to [@HershShroff](#) [@LiverFellow](#) and [@LiverQs](#)

Yes, to minimize side-effects and increase tolerability as the dose is uptitrated.



2



533



Followed by some Tweeters you follow



**stephen barclay** @stephentbarclay · Feb 14

Replying to [@HershShroff](#) [@LiverFellow](#) and [@LiverQs](#)

Split dosing at the start minimises GI side effects (diarrhoea), switch to once daily to aid compliance if tolerating



3



561



**Elliot Tapper** @ebtapper · Feb 14

Replying to [@HershShroff](#) [@LiverFellow](#) and [@LiverQs](#)



**Kris V. Kowdley MD, AGAF, FAASLD, FACP, F...** @KowdL... · Feb 9

Replying to [@ckjellmo](#) [@newsagent1299](#) and 10 others

In fact, the UDCA dosage frequency is a residual from the gallstone dissolution indication where it was given QID. Most of us now dose it QD or BID and the "take with food" is also not done, along with the old tablets vs capsules debate although I favor tablets



2



8



2,527



What are we not talking about?



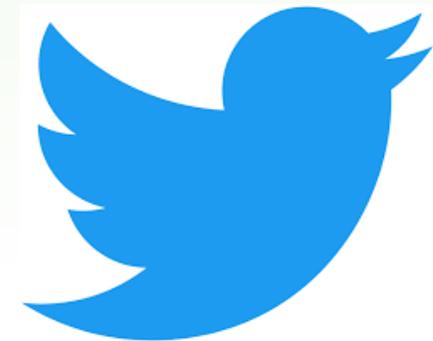
# What are we talking about today?

## What is **social media**?

*Web-based technologies that facilitate multi-user interaction that goes beyond fact-sharing.*

*- Cheston et al. (2013)*

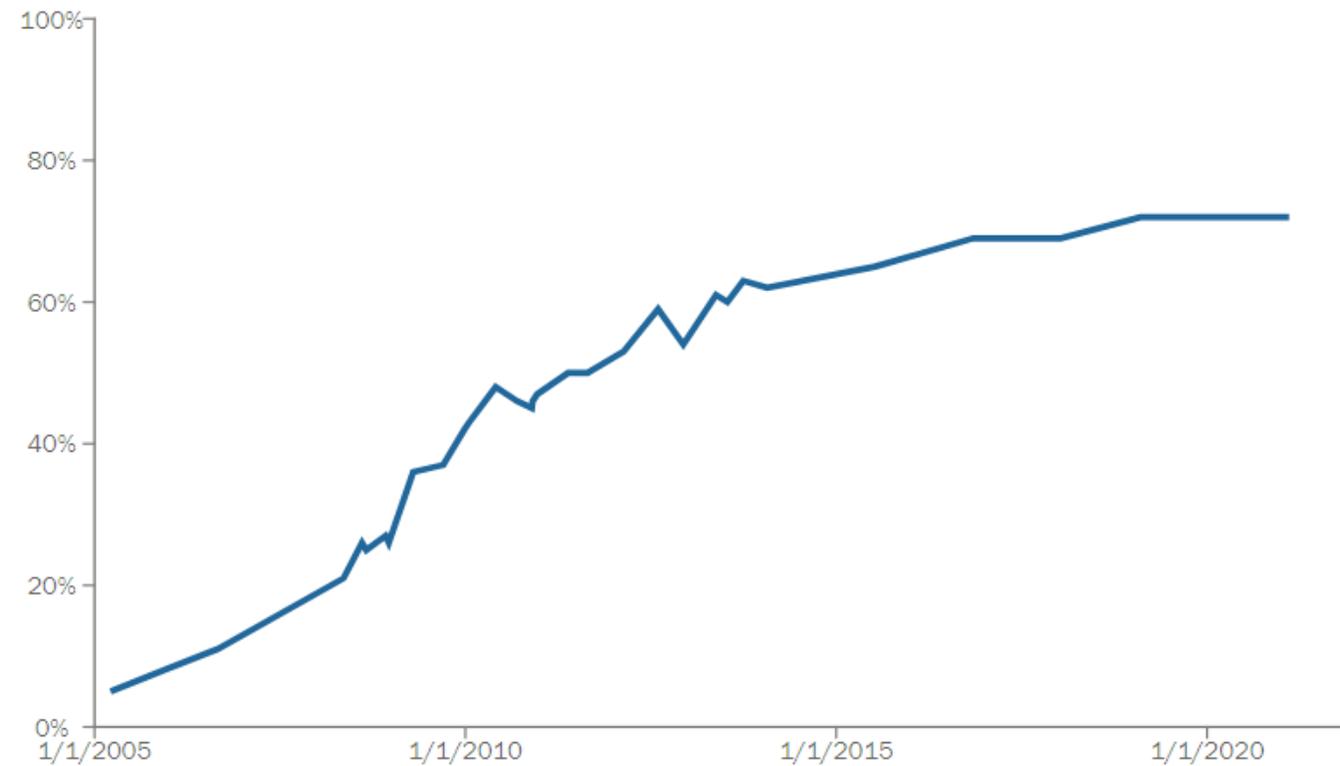
What are the platforms?



# Rising use of social media

## Social media use

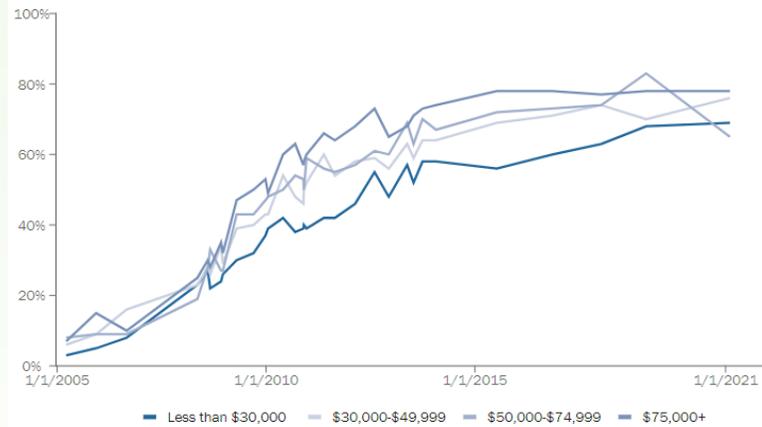
*% of U.S. adults who say they use at least one social media site*



# Rising use of social media

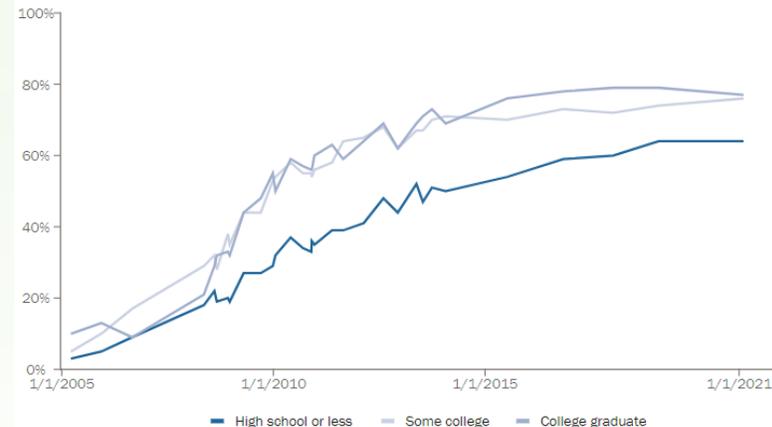
## Social media use by income

% of U.S. adults who say they use at least one social media site, by annual household income



## Social media use by education

% of U.S. adults who say they use at least one social media site, by education level

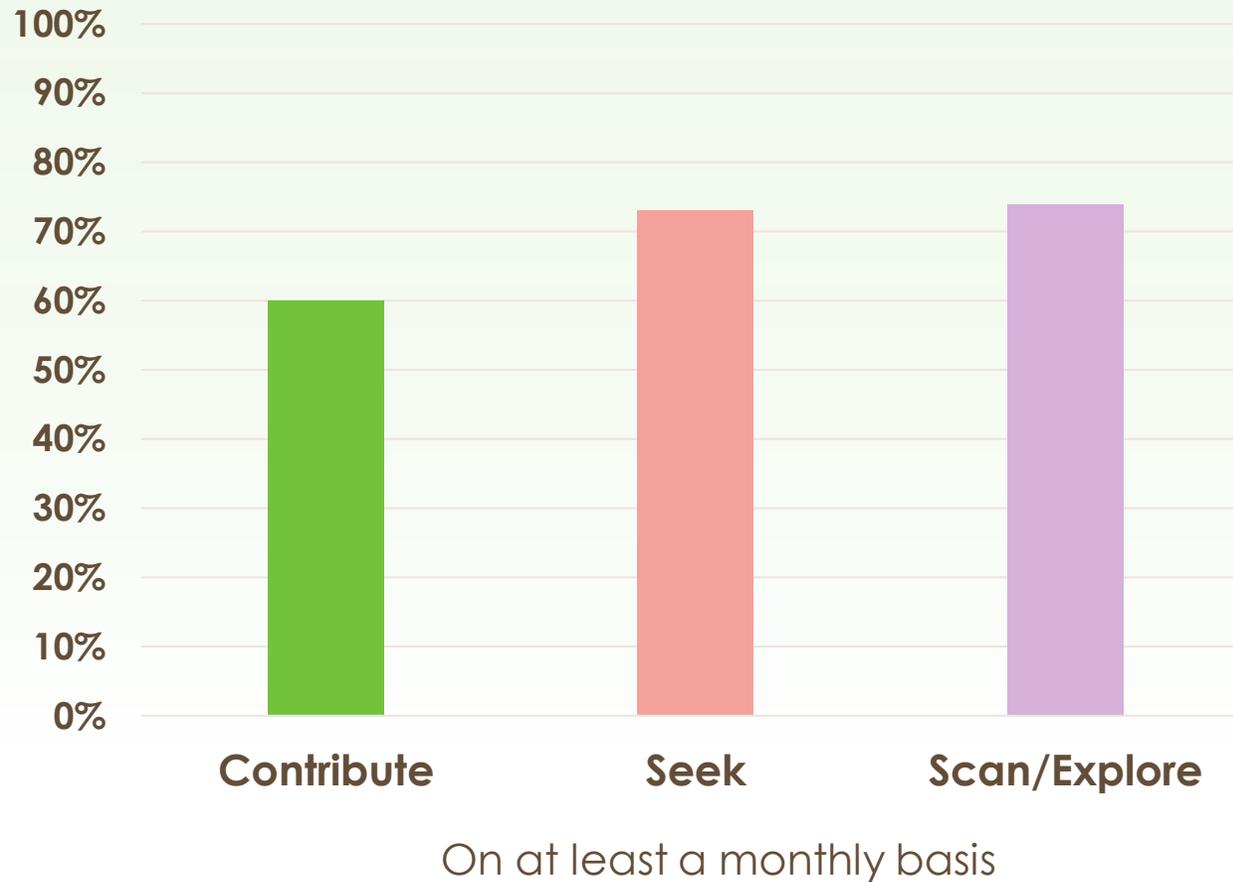


## Social media use by community type

% of U.S. adults who say they use at least one social media site, by community type



# Trends in social media use in medicine



# How do we learn as adults?

<b>Theoretical approaches to learning</b>
Adult learning theory
Transformative learning theory
Reflective practice
Social cognitive theory
Self-directed learning
Situated learning
Communities of practice
Experiential learning

# How do we learn as adults?

Theoretical approaches to learning
Adult learning theory
Transformative learning theory
Reflective practice
Social cognitive theory
Self-directed learning
Situated learning
Communities of practice
Experiential learning

Adult learners:

- Self-directed (know their own needs and styles)
- Value learning that integrates with demands of everyday life
- Value immediate application (vs. future application)

We learn by **observing** and **imitating others**

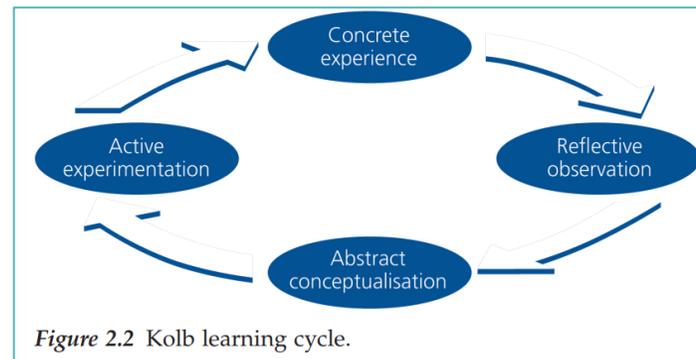


Figure 2.2 Kolb learning cycle.

# How might social media help us learn?

## HOW WE LEARN

**Self-direction**  
**Integration** with daily life  
**Immediate** applicability

We are **social learners**

We learn by **accumulating experiences** and reflecting

## HOW SOCIAL MEDIA CAN HELP

Content is **varied** (spans multiple media and learning styles)  
Content can be consumed **asynchronously**  
Content can be used **in the moment**

Dramatically **expand our learning network**

Exponential increase in “**experiences**” available to us

# Let's agree on some criticisms first

1 It's a waste of time

2 It's an echo chamber for a small # of people

3 It's too easy to be misunderstood

4 You can violate patient confidentiality

5 Plenty more!

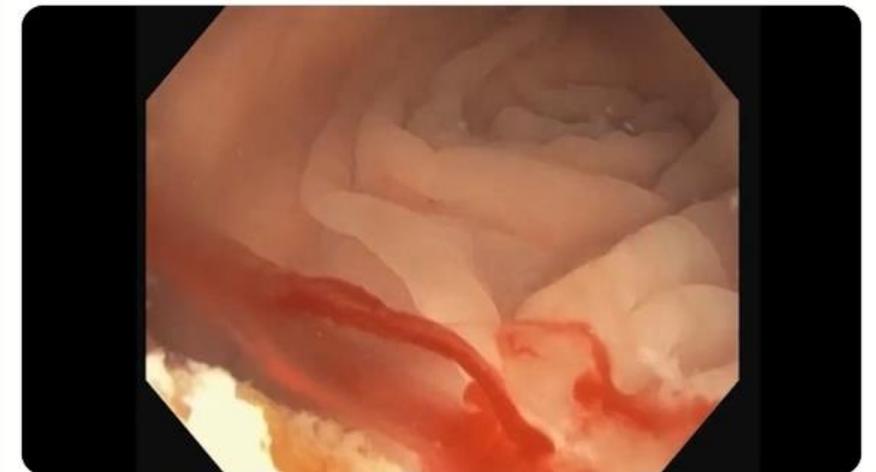
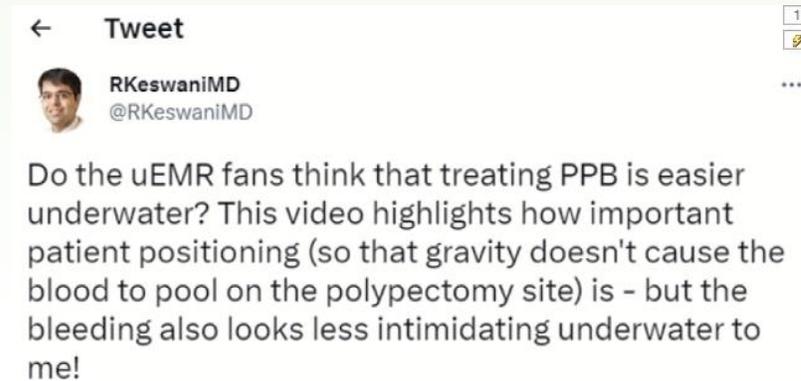
All true  
and yet  
all avoidable

# Point #1: Content is varied

Podcasts



Videos



7:13 PM · Sep 7, 2022

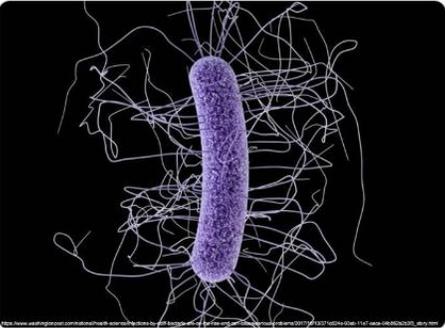
# Variety: Tweetorials

**Tony Breu** @tony\_breu · Jul 26, 2021

1/15  
Why does clostridium difficile infection (CDI) cause marked leukocytosis?

Many of you have likely seen a new WBC >20k and wondered "could this patient have CDI?"

Are you right to wonder? If so, why?



4:38 PM · Jul 26, 2021

**Tony Breu** @tony\_breu · Jul 26, 2021

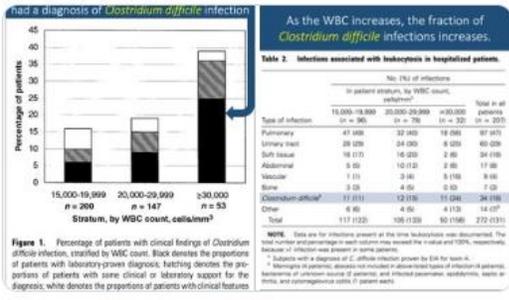
Replying to @tony\_breu

2/  
To start, is there a connection?

One of the earliest studies examined patients with WBC >30k. They reported the following rates of CDI:

- ◆ 20% of all cases (excluding those with heme malignancy)
- ◆ 34% of patients with an infectious etiology

[pubmed.ncbi.nlm.nih.gov/12032893/](https://pubmed.ncbi.nlm.nih.gov/12032893/)



**Figure 1.** Percentage of patients with clinical findings of *Clostridium difficile* infection, stratified by WBC count. Black denotes the proportions of patients with laboratory-confirmed diagnosis; hatching denotes the proportions of patients with some clinical or laboratory support for the diagnosis; white denotes the proportions of patients with clinical features

**Table 2. Infections associated with leukocytosis in hospitalized patients.**

Type of infection	No. (%) of infections in patient stratum, by WBC count, reference*			Total in all patients (n = 207)
	15,000-19,999 (n = 200)	20,000-29,999 (n = 147)	≥30,000 (n = 53)	
Pulmonary	47 (24)	32 (22)	18 (34)	97 (47)
Urinary tract	28 (14)	24 (16)	6 (11)	60 (29)
Soft tissue	18 (9)	16 (11)	3 (6)	37 (18)
Abdominal	5 (3)	10 (7)	2 (4)	17 (8)
Vascular	1 (0)	3 (2)	5 (9)	9 (4)
Bone	3 (2)	4 (3)	1 (2)	8 (4)
<i>Clostridium difficile</i> **	11 (6)	12 (8)	11 (21)	34 (16)
Other	8 (4)	4 (3)	4 (8)	16 (8)
Total	117 (59)	108 (73)	50 (95)	275 (132)

NOTE. Data are for infections present at the time leukocytosis was documented. The total number and percentage in each column may exceed the total and 100%, respectively, because of infection not present in some patients.  
\* Subjects with a diagnosis of *C. difficile* infection proven by EIA for case 4.  
\*\* Percentage of patients, abstracts not included in abstract-based bases of infectious diseases, bacteriology of unknown cause (2 patients), and infected hematoma, epididymitis, osteitis in spine, and osteomyelitis within 11 patient weeks.

**Tony Breu** @tony\_breu · Jul 26, 2021

3/  
In another study included 60 patients with unexplained leukocytosis (WBC >15k) and found:

⚡ 58% had CDI ⚡

And: leukocytosis preceded recorded symptoms of colitis in half of the patients.

[pubmed.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov)  
Clostridium difficile infection in patients with un...  
The majority of patients in our hospital who had unexplained leukocytosis had C. difficile infectio...

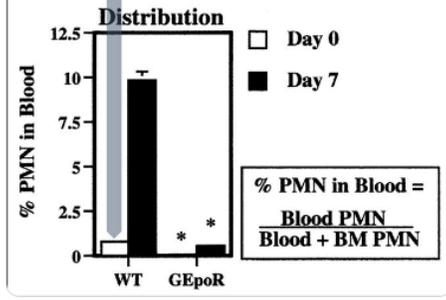
**Tony Breu** @tony\_breu · Jul 26, 2021

4/  
To understand how CDI leads to marked leukocytosis we must review where the "pool" of mature neutrophils resides.

At baseline, well over 90% of mature neutrophils are in the bone marrow.

[pubmed.ncbi.nlm.nih.gov/12387736/](https://pubmed.ncbi.nlm.nih.gov/12387736/)

At baseline, more than 99% of mature neutrophils are in the bone marrow. <1% are in the blood.

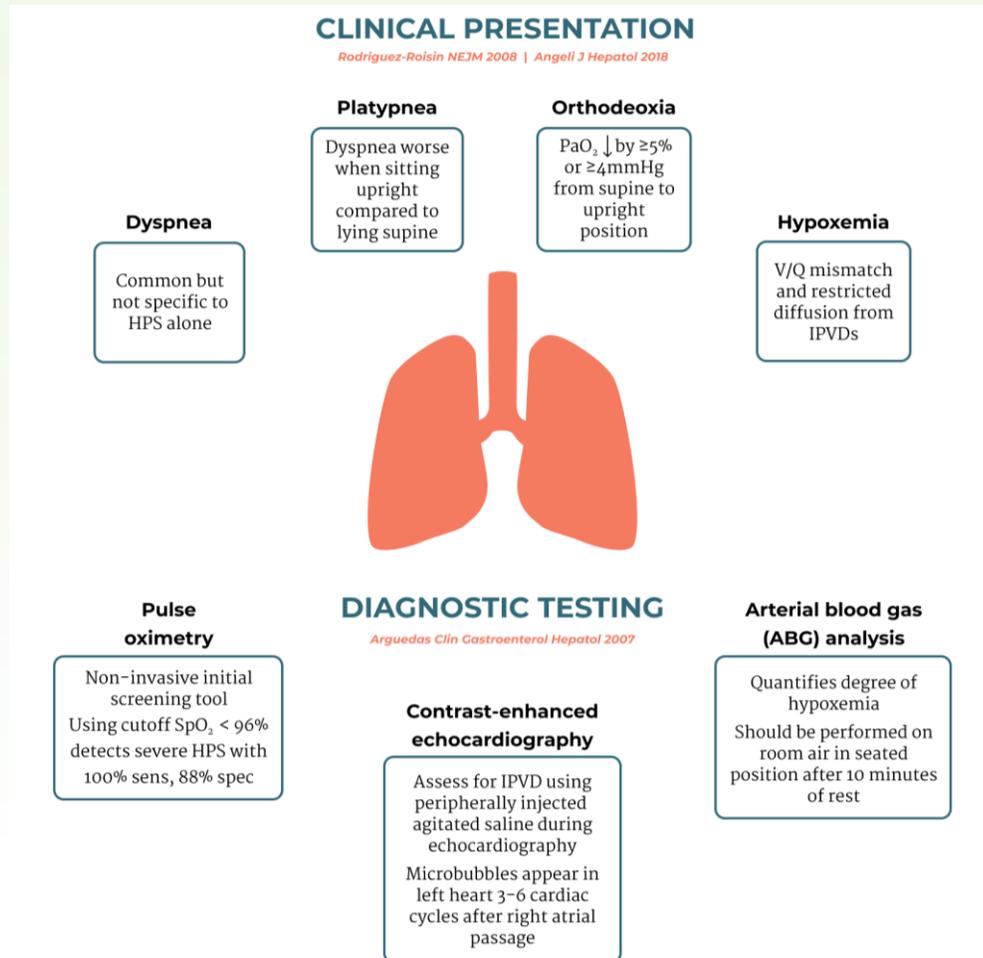


**Distribution**

□ Day 0  
■ Day 7

% PMN in Blood =  $\frac{\text{Blood PMN}}{\text{Blood + BM PMN}}$

# Variety: Infographics



### HPS Diagnostic Criteria

<b>Underlying liver disease</b>	Portal hypertension with or without cirrhosis
<b>Intra-pulmonary vascular dilation</b>	Positive findings on contrast-enhanced TTE Can also be seen on radioactive lung perfusion scanning or pulmonary angiography (in select patients)
<b>Oxygenation defect</b>	PaO <sub>2</sub> < 80mmHg or A-a gradient ≥ 15mmHg (≥20mmHg in patients aged 65 and older) on room air



### Disease Severity

Based on PaO<sub>2</sub> at room air

<b>Mild</b>	≥ 80 mmHg
<b>Moderate</b>	60-79 mmHg
<b>Severe</b>	50-59 mmHg
<b>Very severe</b>	<50 mmHg

**MELD EXCEPTION!**  
If PaO<sub>2</sub> < 60mmHg, can receive exception points

### TREATMENT

There is **no established medical therapy** for HPS

Supportive care with supplemental oxygen if PaO<sub>2</sub> < 60mmHg, goal SpO<sub>2</sub> > 88%

Management of underlying portal hypertension

**Liver transplantation:** results in almost uniform resolution of HPS features

★ Complete resolution of symptoms may take months after transplant

★ *Iyer Am J Respir Crit Care Med 2013*

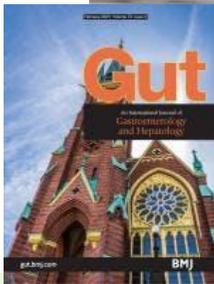
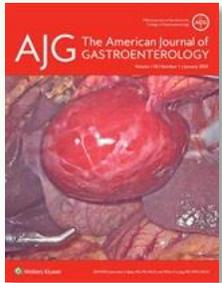
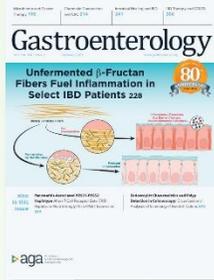


**Content by:** Lizzie Aby  
@lizzieabymd

**Design by:** Hersh Shroff  
@hershshroff

**Review by:** Christopher Moore, MD

# Point #2: we can consume asynchronously



**AIBD**

**ADVANCES IN  
INFLAMMATORY BOWEL  
DISEASES**

**AASLD**  
**The Liver Meeting®**

Nov. 4-8, 2022



# How to stay up to date

**Liver Transplantation Journal (LTxJournal) @LTxJournal** · Jan 7

Evolution of pretransplant cardiac risk factor burden and major adverse cardiovascular events in liver #transplant recipients over time

[journals.lww.com/lt/Abstract/99...](https://journals.lww.com/lt/Abstract/99...)

#LiverTwitter

**Evolution of Pretransplant Cardiac Risk Factor Burden and Major Adverse Cardiovascular Events in Liver Transplant Recipients Over Time**

Claire R Harrington, Paul Levy, Elizabeth Cabrera, Jing Gao, Dyanna L Gregory, Cynthia Padilla, Gonzalo Crespo, Lisa B. VanWagner

**TAKEAWAY** With projected continued increase in cardiac risk factor burden and proportion of patients transplanted for NAFLD, it is critical for LT program to continue to develop efforts to improve cardiovascular care in LT recipients.

Lisa VanWagner and 2 others

2 3 11 2,744

Show this thread

**Gastroenterology @AGA\_Gastro** · Jan 13

An RCT of vonoprazan vs lansoprazole in >1000 patients with erosive esophagitis showed differences of 8.3% in healing and 7.2-8.7% in maintenance of healing. Differences were greatest in LA Grade C/D: healing: 19.6%, maintenance: 13.3-15.7% [ow.ly/URTT50MkpbM](https://ow.ly/URTT50MkpbM)

**Vonoprazan Versus Lansoprazole For Healing And Maintenance Of Healing Of Erosive Esophagitis: A Randomized Trial**

Study Design		Results	
Patients with erosive esophagitis N=1024			
Vonoprazan 20mg	Lansoprazole 30mg	92.9%	84.6%
Difference between arms (95% CI)		8.3% (4.6-12.2)	
Re-randomization of patients who achieved healing by week 8 N=678			
Vonoprazan 20mg	Lansoprazole 15mg	80.7%	72.0%
Vonoprazan 15mg	Lansoprazole 15mg	77.2%	61.5%
Difference between arms (95% CI)		8.7% (1.8-15.6)	
		All patients	7.2% (0.2-14)
		LA Grades C/D	13.3% (0.03-26)

18 36 7,106

**GI Journal Club**

@GiJournal Follows you

Following

# Following conferences: Baveno VII

 **BavenoVII** @BavenoVII · Oct 29, 2021

1/📖  
Part **2** of Session **3**

Acute variceal bleeding 🩸  
🪑 Chaired by Profs. @VirginiaHdezGea and D. Thabut

👤 Panelists: @acv69cardenas, @escorsell, G. Han, @XxuefengL, @DavidPatch1, @bogdanprocopet and M. Rudler

📖 #Livertwitter, follow this 📖



EASLnews and 8 others

1 17 20

 **BavenoVII** @BavenoVII · Oct 29, 2021

2/3

📖 Bacterial infections in patients with AVB  
[pubmed.ncbi.nlm.nih.gov/33845059/](https://pubmed.ncbi.nlm.nih.gov/33845059/)

➡️ **SOON** Preemptive TIPS  
[pubmed.ncbi.nlm.nih.gov/32980344/](https://pubmed.ncbi.nlm.nih.gov/32980344/)  
[pubmed.ncbi.nlm.nih.gov/32339602/](https://pubmed.ncbi.nlm.nih.gov/32339602/)

💊 Impact of anticoagulation  
[pubmed.ncbi.nlm.nih.gov/25773591/](https://pubmed.ncbi.nlm.nih.gov/25773591/)

📖 Statements 🗨️



Keith Siau and 9 others

1 16 22

# Integrating with demands of life

## Choose

Journals, societies, annual meetings of interest to you

## Find

The social media accounts of the above parties of interest

## Follow

Hashtags for coverage of important meetings (DDW, The Liver Meeting, etc)

## Learn

Look out for online journal clubs or literature review

# Point #3: Increase our “experiential” knowledge

 **Lizzie Aby, MD**  
@LizzieAbyMD

Came upon a question about CRC screening post LT for PSC (in a patient w/o colitis) in DDSEP 10 & the answer was "colonoscopy yearly"

I was reading guidelines but there isn't much data on screening intervals for PSC w/o colitis post LT

What interval do folks use?

[#livertwitter](#)

1	54%
2	6.6%
3	10.6%
5	28.8%

226 votes · Final results  
7:38 PM · Oct 16, 2022

 **Benjamin Clement, MD** @BenClement\_MD · Jan 22

Retweeted by #ScopingSundays

Replying to @BenClement\_MD @ScopingSundays and 22 others

Where do you typically begin your myotomy in POEM?

[#ScopingSundays](#) [#GITwitter](#)

3-5 cm from GE junction	16.2%
5-7 cm from GE junction	20.6%
<b>8-10 cm from GE junction</b>	<b>32.4%</b>
Tailor based on HRM	30.9%

68 votes · Final results

3 replies · 2 retweets · 5 likes · 845 views

 **Batul Kaj-Carbaidwala** @dr\_bkaj · Jun 29

Ok [#LiverTwitter](#), need 🙏 help!

Teenaged patient with mild UC but cirrhosis and portal HTN from PSC-AIH. Liver transplant evaluation and re-staging endoscopy in process. Assuming histologically mild, would you recommend:

Colectomy at time of Tx	16.9%
Colectomy post Tx	4.5%
<b>No Colectomy + ASA ✓</b>	<b>55.1%</b>
No colectomy + anti TNF	23.6%

89 votes · Final results

1 reply · 3 retweets · 7 likes

# Multi-disciplinary case conferences

## IBD LIVE



The Cleveland Clinic Foundation Center for Continuing Education acknowledges educational grants for partial support of this activity from:

Ferring Pharmaceuticals Inc., Takeda Pharmaceuticals U.S.A. Inc., Janssen Scientific Affairs, LLC, and AbbVie Inc.



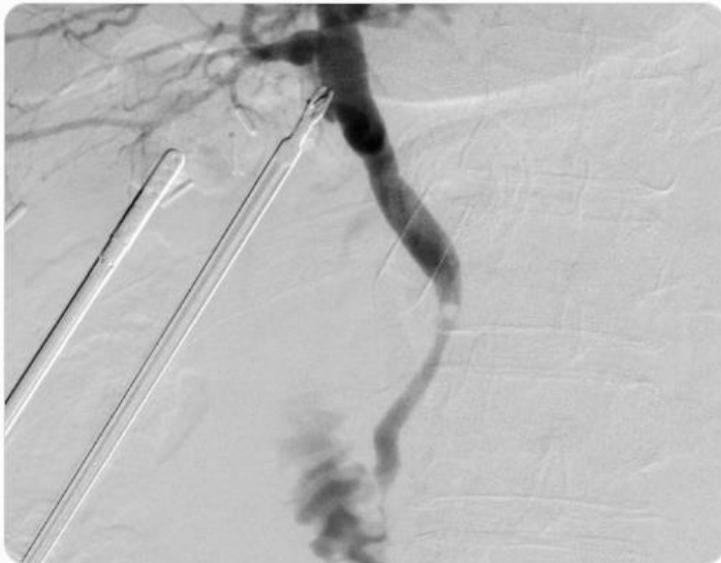
Clinical Practice Special Interest Group  
Virtual Case Conference Series

**Multidisciplinary Case Conference on The Challenging  
Autoimmune Hepatitis Patient**

# Point #4: Expand your learning network

**Ezra Teitelbaum** @EzraTeitelbaum · Jan 11  
Interesting intraop cholangiogram during lap cholecystectomy. What's going on and what would you do next??

@cutitoutPODCAS1 @EricKnauerMD @mj\_pucci @htjacks @LibbyMD823 @JJFordeMD @RKeswaniMD



15 7 36 41.9K

**Kate N Tomasino, PhD** @DrKateTomasino  
Just turned in my slides for a patient education event for the @CrohnsColitisFn on food-related quality of life and #bodyimage in #IBD on Tues Nov 15 @ 7pm CT. If interested register here - really looking forward to this!

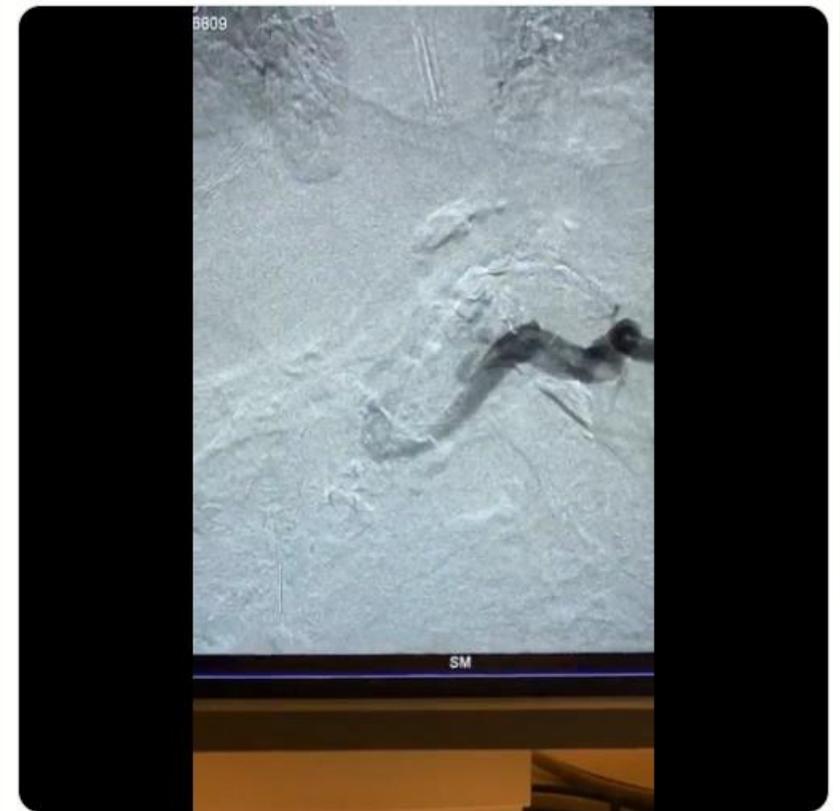
[crohnscolitisfoundation.org/events/diet-bo...](https://crohnscolitisfoundation.org/events/diet-bo...)  
#gastropsych @DoerflerBethany

	<p>crohnscolitisfoundation.org Diet, Body, and your IBD Join us on Tuesday, November 15 at 8:00pm ET/7:00pm CT/6:00pm MT/5:00pm PT for the next webinar in our ...</p>
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6:01 PM · Nov 2, 2022

**NorthwesternIR** @NorthwesternIR

Our first non cirrhotic trans-splenic PVR TIPS 2014 for massive variceal bleed and cavernoma in 35 yo (1/3) @SIRspecialists @cirsesociety @AASLDTweets @EASLnews



# Flatten traditional hierarchies

**Liver Fellow Network**  
@LiverFellow

Why do we give albumin to patients w/ #cirrhosis w/ spontaneous bacterial peritonitis?

Check out this evidence corner by @LizzieAbyMD: [liverfellow.org/post/albumin-i...](https://liverfellow.org/post/albumin-i...)

For the full @NEJM article: [nejm.org/doi/10.1056/NE...](https://nejm.org/doi/10.1056/NE...)

#livertwitter #GITwitter #MedEd #FOAMed

**Evidence Corner**  
@LizzieAbyMD

**Why do we give albumin to patients with cirrhosis with spontaneous bacterial peritonitis?**

**Context:** Patients with cirrhosis and spontaneous bacterial peritonitis develop renal impairment, but effective treatments for this were unclear.

**Article Title:** Effect of Intravenous Albumin on Renal Impairment and Mortality in Patients with Cirrhosis and Spontaneous Bacterial Peritonitis (SBP)

**Authors:** Sart F, Navasa M, Arroyo V et al.

**Journal:** New England Journal of Medicine

**Year:** 1999

**PMID:** 10432325

**Study type:** Multi-center, open-label, randomized control trial

**P:** in patients with cirrhosis that have spontaneous bacterial peritonitis  
I: does IV albumin at 1.5g/kg body weight (within 6 hours) on day 1 and 1g/kg body weight on day 3 + IV cefotaxime  
C: as compared to IV cefotaxime alone  
O: decrease rates of renal impairment (defined as: an increase in blood urea nitrogen (BUN) or creatinine >50% resulting in a BUN >30 mg/dL or creatinine 1.5 mg/dL (for those without renal failure at baseline) and an increase in BUN or creatinine >50% (for those with renal failure at baseline))

**Who was in it?**  
120 adult patients (18-80 years of age) with SBP, defined as a PMN count in the ascites fluid of >250/mm<sup>3</sup>  
**Excluded:** Baseline renal impairment (>3mg/dL), shock, antibiotics in the week prior to diagnosis, other infections, gastrointestinal bleeding, grade 3 or 4 hepatic encephalopathy, ileus, cardiac failure or HIV.

**What did it show?**

- Fewer cirrhotic patients treated with cefotaxime + albumin developed renal impairment compared to cefotaxime alone (p=0.002)
- Cirrhotic patients treated with cefotaxime + albumin had a lower in hospital mortality and mortality at 3 months compared to cefotaxime alone (p=0.01 and p=0.03 respectively)
- There were no differences in duration of antibiotic therapy, resolution of infection, or hospital length of stay between groups (p=0.48, p=0.36, and p=0.48 respectively)
- Baseline serum bilirubin, baseline creatinine levels and treatment with cefotaxime were independent predictors of the development of renal impairment (p<0.001, p=0.01, and OR 4.6; 95% CI 1.3-16.1; p=0.02 respectively)
- Serum bilirubin, BUN, prothrombin time at baseline as well as cefotaxime alone were independent predictors of mortality (p<0.01, p=0.001, p=0.01, and OR 4.5; 95% CI 1.0-20.9; p=0.05)

**Strengths**

- Multi-center, randomized control trial

**Weaknesses**

- Open-label, not blinded
- No published details regarding the fluid management in the control group
- Not powered to study the primary outcomes

**Take away:**  
In patients with cirrhosis with SBP, giving albumin in addition to IV antibiotics is associated with less renal impairment and mortality.

8:48 AM · Jul 20, 2020

Followed by some Tweeters you follow

**Rohit Mehtani** @RohitMehtaniDM · Jul 20, 2020

Replying to @LiverFellow @LizzieAbyMD and @NEJM

I am yet to find a convincing rationale behind the dose of albumin used. We have been using daily albumin 20-40g for 3-5 days and have seen similar results.

1 2

**Hersh Shroff** @HershShroff · Jul 20, 2020

Replying to @RohitMehtaniDM @RohitMehtani and 3 others

Good point. As far as I know the dose chosen in this trial was arbitrary. Have not been able to find any evidence to suggest otherwise.

Anyone else? #livertwitter

1 2

**jaumbosch** @jaumbosch9 · Jul 21, 2020

Replying to @LiverFellow @LizzieAbyMD and @NEJM

✳️ Certainly, the dose was arbitrary, but based on an “educated guess”

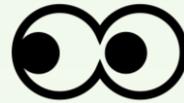
✳️ It could be that the same can be achieved by a lower dose, but needs to be proven !!

1 1 11

# Summary and strategies

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**Search** for content that fits your **life** and **learning style**



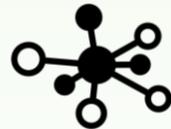
- **Subscribe** to a podcast or video series
- **Save** videos or links for future patient care situations

**Curate** your following via **topics** or **hashtags**



- **Push notifications** for specific medical journal accounts
- **Hashtags** for real-time academic conference updates

**Increase** the size and reach of your **network**



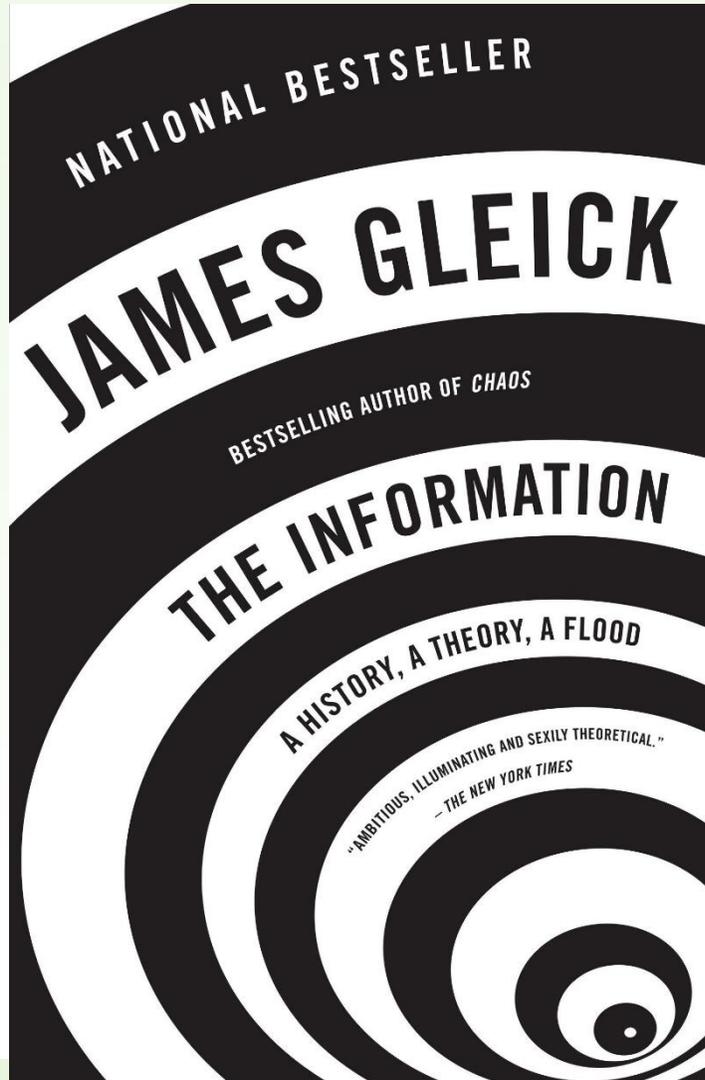
- **Follow** individuals in adjacent fields
- Aim to **connect** with one new colleague on periodic basis

**Engage** with the community through **posts** and/or **questions**



- **Share** an interesting fact or journal article
  - **Respond** to polls about patient scenarios
  - **Ask** questions of your own (you never know who might respond!)
-

# Downsides



**When information is cheap,  
attention becomes  
expensive.**

- James Gleick, *The Information: A History, A Theory, A Flood*

# To revisit those criticisms...

**1** Time and attention are precious, so use social media only as it fits with your needs

**2** Try to broaden whom you follow to avoid it becoming an echo chamber

**3** Be respectful (as you would in real life)

**4** Know your institution's policies; never post patient identifiers; if in doubt, get consent!

# CME/MOC QUESTION

Which of the following is not an appropriate strategy for using social media in medical education?

- A) Post a patient's picture to demonstrate a physical exam finding
- B) Create a Twitter profile with a short biography and follow individuals in your field
- C) Respond to a thread with your own thought-provoking question or idea
- D) Post a question about a clinical scenario to get the opinions of others in your field

# CME/MOC ANSWER

Which of the following is not an appropriate strategy for using social media in medical education?

- A) **Post a patient's picture to demonstrate a physical exam finding**
- B) Create a Twitter profile with a short biography and follow individuals in your field
- C) Respond to a thread with your own thought-provoking question or idea
- D) Post a question about a clinical scenario to get the opinions of others in your field

# Thank you

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