Things We Do For No Reason

Joy Engblade, MD, MMM, FACP

Heartland Hospital Medicine Conference

August 2025

(No financial disclosures)

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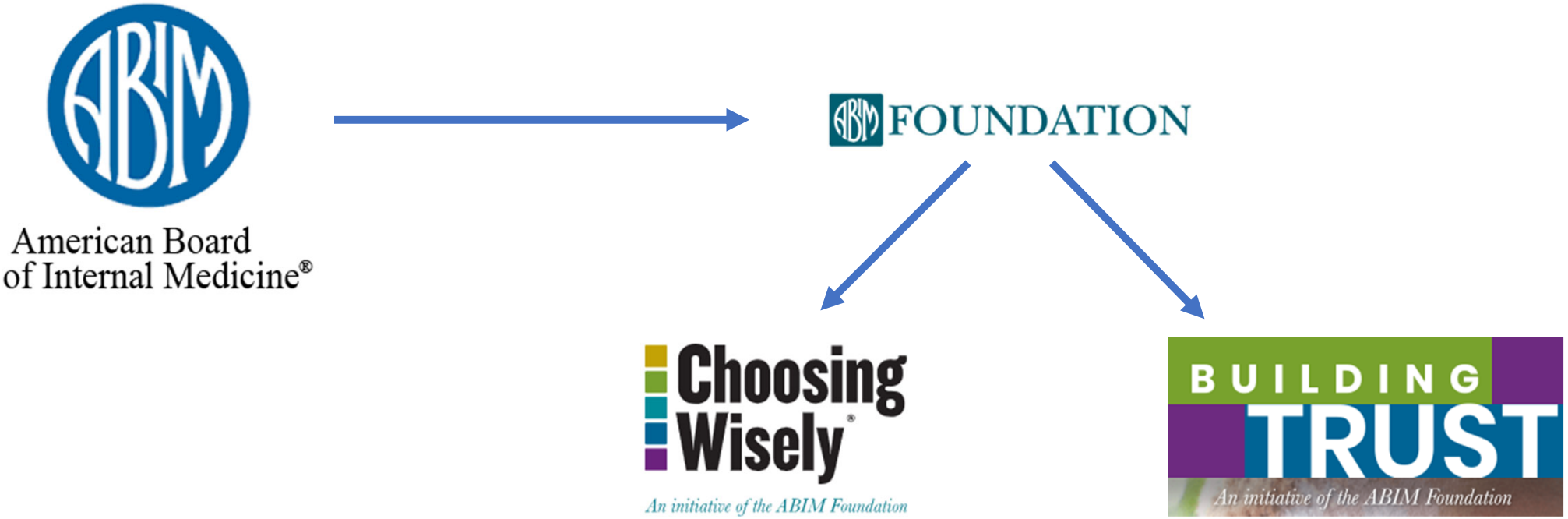

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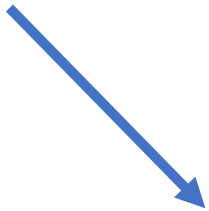


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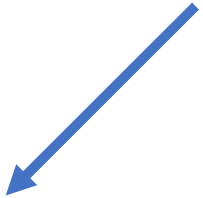

TWDFNR


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Adam Gray, MD

Michael Cherry, MD

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Learning Objectives

- Understand the Picture of Confusion
- Learn what the lung said to the urine
- Decide whether to Protect vs Work the Beans
- Comprehend why to Cut the Guaiac
- Know to beat the lunch rush

Life TWDFNR

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

- Presented Journal of Hospital Medicine 2019
- Dr. Gray presented 2021
- Still seems confusing
- Still order lots of CT scans

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

[Confused patient hi-res stock photography and images - Alamy]

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

29% - 64% prevalence

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

1997 **The Prognostic Significance of Delirium in Older Hospital Patients**

Shaun O'Keeffe, MD, and John Lavan, MD†*

Adjusting for baseline factors, delirium was independently associated with **prolonged hospital stay**, **functional decline** during hospitalization, increased risk of developing a **hospital- acquired complication**, and increased admissions to **long term care**.

2003 **Does Delirium Increase Hospital Stay?**

Jane McCusker, MD, DrPH,‡ Martin G. Cole, MD,†§ Nandini Dendukuri, PhD,*‡ and Eric Belzile, MSc**

Delirium developing during hospital stay was associated with an excess stay after diagnosis of 7.78 days

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

Should you order head imaging?

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

3 studies:

Lead Author/Year	Study Design Population	Bottom line
Lai, 2010	Case Control in delirium unit	Establish risk factors: new focal deficits, falls <2 weeks, GCS<9
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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

Confusion Assessment Method (CAM)
Short form

island health

The diagnosis of delirium by CAM requires the presence of BOTH features ***A*** and ***B***		
CAM Confusion Assessment Method	**A.** **Acute onset** and **Fluctuating course**	Is there evidence of an acute change in mental status from patient baseline? Does the abnormal behavior: ➢ come and go? ➢ fluctuate during the day? ➢ increase/decrease in severity?
	B. **Inattention**	Does the patient: ➢ have difficulty focusing attention? ➢ become easily distracted? ➢ have difficulty keeping track of what is said?
	AND the presence of EITHER feature *C or D*	
	C. **Disorganized thinking**	Is the patient's thinking ➢ disorganized ➢ incoherent For example does the patient have ➢ rambling speech/irrelevant conversation? ➢ unpredictable switching of subjects? ➢ unclear or illogical flow of ideas?
	D. **Altered level of consciousness**	Overall, what is the patient's level of consciousness: ➢ alert (normal) ➢ vigilant (hyper-alert) ➢ lethargic (drowsy but easily roused) ➢ stuporous (difficult to rouse) ➢ comatose (unrousable)

Adapted with permission from: Inouye SK, vanDyck CH, Alessi CA, Balkin S, Siegal AP, Horwitz RI. Clarifying confusion: The Confusion Assessment Method. A new method for detection of delirium. Ann Intern Med. 1990; 113: 941-948. Confusion Assessment Method: Training Manual and Coding Guide, Copyright © 2003, Hospital Elder Life Program, LLC.

Please see the **CAM Training Manual**, available at
http://www.hospitalelderlifeprogram.org/private/cam-disclaimer.php?pageid=01.08.00

A. Acute onset and fluctuating course
B. Inattention
C. Disorganized thinking
D. Altered level of consciousness

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

CAM: Confusion Assessment Method

A. Acute onset and fluctuating course
B. Inattention
C. Disorganized thinking
D. Altered level of consciousness

Day of the week
List months of the year backwards

** 93% sensitivity, 64% specificity**

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

INTERNAL MEDICINE JOURNAL

Intracranial cause of delirium: computed tomography yield and predictive factors

M. M. Y. Lai[1,2] and D. M. Wong Tin Niam[1]

[1]The Delirium and Surveillance Unit, Department of Rehabilitation and Aged Care, Sir Charles Gairdner Hospital, Nedlands and [2]Department of Geriatric Medicine, Royal Perth Hospital, Perth, Western Australia, Australia

*** Identify best predictors of intracranial cause for delirium**

- Delirium Unit (CAM assessment for admission)
- 10 bed unit
- 300 admissions over 18 months
- 200 CT scans
- 29 positive findings

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

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*** Identify best predictors of intracranial cause for delirium**

- Delirium Unit (CAM assessment for admission)
- 10 bed unit
- 300 admissions over 18 months
- 200 CT scans
- 29 positive findings

Best Predictors:

- New Neurologic findings
- Recent Fall History
- Reduction in consciousness

(Warfarin not statistically significant)

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

Journal of HOSPITAL MEDICINE www.journalofhospitalmedicine.com

ORIGINAL RESEARCH

Diagnostic Yield of Head Computed Tomography for the Hospitalized Medical Patient With Delirium

Jesse Theisen-Toupal, MD[1,2*], Anthony C. Breu, MD[1,3], Melissa L. P. Mattison, MD[1,2,4], Ramy Arnaout, MD, DPhil[1,5]

*** Determine the diagnostic yield of head CT in delirium in patients without fall, head trauma or new neurologic defect**

- Single center in Boston, medicine floors
- After exclusion criteria, 220 CT's done on 210 patients
- 6 positive scans

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Diagnostic Yield:

- CT head in this group is low yield
- Too small to evaluate risk factors

(None of supratherapeutic INR's had + CT)

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Hospital Topics, 93(1):9–12, 2015

ISSN: 0018-5868 print / 1939-9278 online
DOI: 10.1080/00185868.2015.1012928

Routledge
Taylor & Francis Group

Utility of Head CT Scan for Acute Inpatient Delirium

RAJAKRISHNAN VIJAYAKRISHNAN, APARNA RAMASUBRAMANIAN, and SUNEEL DHAND

*** Develop clear ordering guidelines for head CT in delirium**

- Single center in Massachusetts, medicine floors
- 400 patients with CT scans, 36 for delirium
- 4 positive CT scans
- All positive scans met risk criteria
- Referred to British Geriatrics Society and Australian and New Zealand Society for Geriatric Medicine recommendations

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<u>Indications for neuroimaging:</u>

- History of fall
- Head injury
- Patients on anticoagulation
- Presence of focal neurologic signs
- Evidence of raised intracranial pressure

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

Argument FOR getting imaging:

- Recent fall
- Focal neurologic findings
- Systemic anticoagulation
- Risk of intracranial process (metastatic malignancy)

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

Argument AGANIST getting imaging:

- If no high-risk features, low yield, costly, potentially harmful

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Picture of Confusion: Neuroimaging for Delirious Hospitalized Patients

So what should you do?

- Thorough history and exam
- Ask: day of the week, recite months backwards (CAM)
- If positive for delirium and risk factors, consider imaging
- If positive for delirium and no risk factors, do not order imaging

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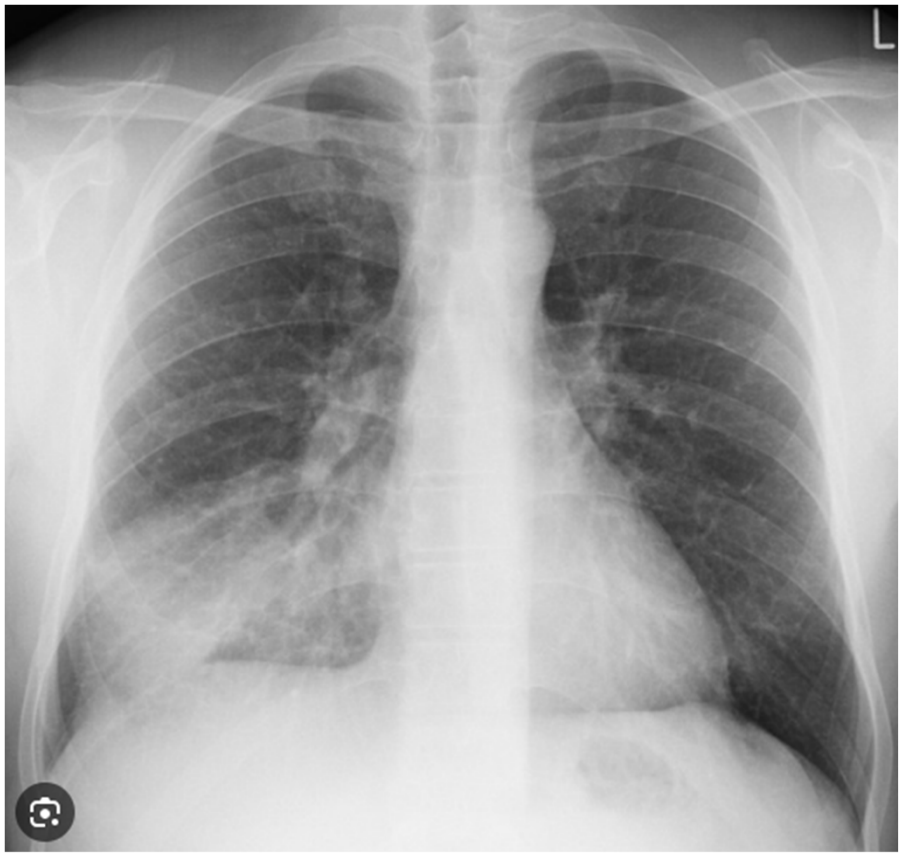
Learn what the lung said to the urine: S. pneumoniae and Legionella UAT



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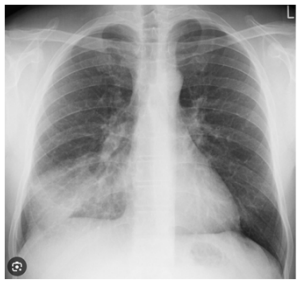
What did the lung say to the urine? S. pneumoniae and Legionella UAT



- 2019: ATS and IDSA conditionally recommended
- Narrow or shorten antibiotic courses

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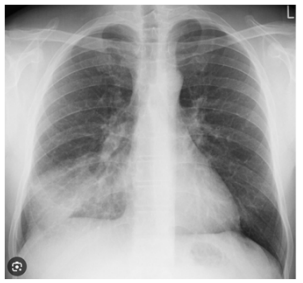

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So – does it?

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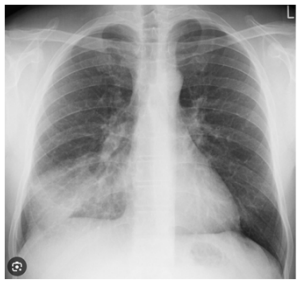

- ATS/IDSA guidelines:
  - Empiric beta-lactam/macrolide
  - Empiric fluoroquinolone

Both cover S. pneumoniae and Legionella!

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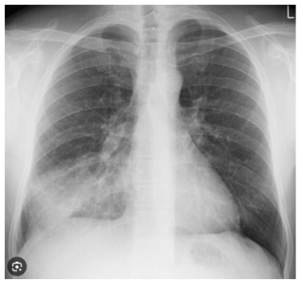

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But wait….. What about resistance?

- UAT do not give information about resistance.

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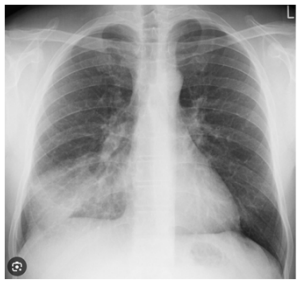

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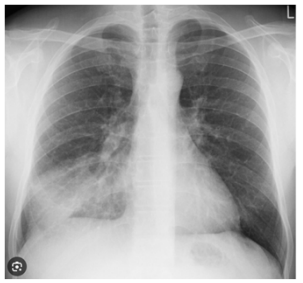
  - Empiric fluoroquinolone

Both cover S. pneumoniae and Legionella!

But wait…. What about shortening the course of treatment?

- ATS/IDSA recommends 5 days with extension if severe, regardless of pathogen.

What did the lung say to the urine? S. pneumoniae and Legionella UAT



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Both cover S. pneumoniae and Legionella!

But wait…. What about public health outbreaks?

- High rate of false positive results (23%)

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Como, J., Moffa, M.A., Bhanot, N. *et al.* Potential false-positive urine *Legionella* enzyme immunoassay test results. *Eur J Clin Microbiol Infect Dis* **38**, 1377–1382 (2019).

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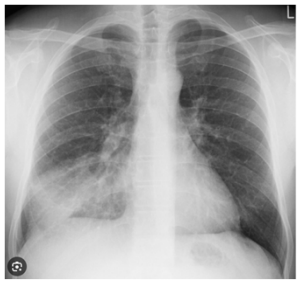

- Is there a setting where this information is helpful?

Yes and No

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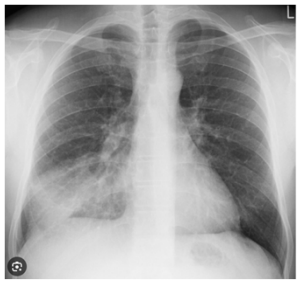
What did the lung say to the urine? S. pneumoniae and Legionella UAT



- Is there a setting to order these?

Yes and No

- Never order S. pneumoniae UAT

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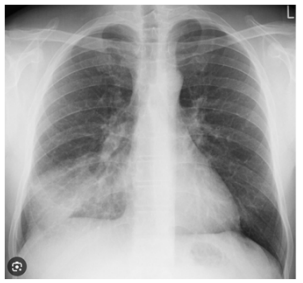
What did the lung say to the urine? S. pneumoniae and Legionella UAT



- Is there a setting to order these?

Yes and No

- Never order S. pneumoniae UAT
- Consider Legionella if:
  - Treating with regimen without macrolide or FQ (due to allergies or side effects)
  - Presence of fever, hyponatremia, diarrhea
  - Higher suspicion if >50 yrs, summer, SNF or assisted living

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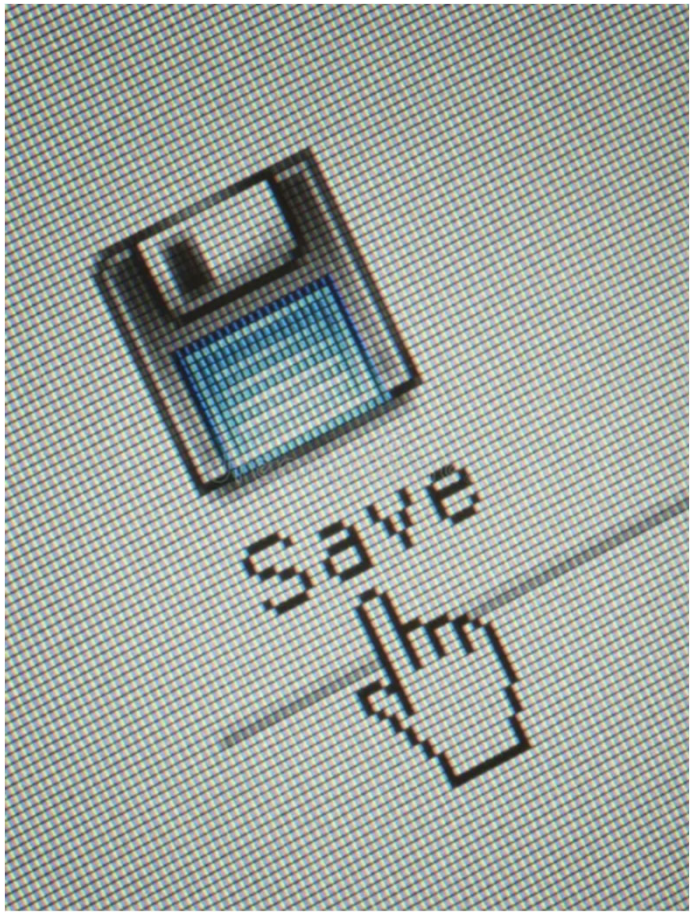

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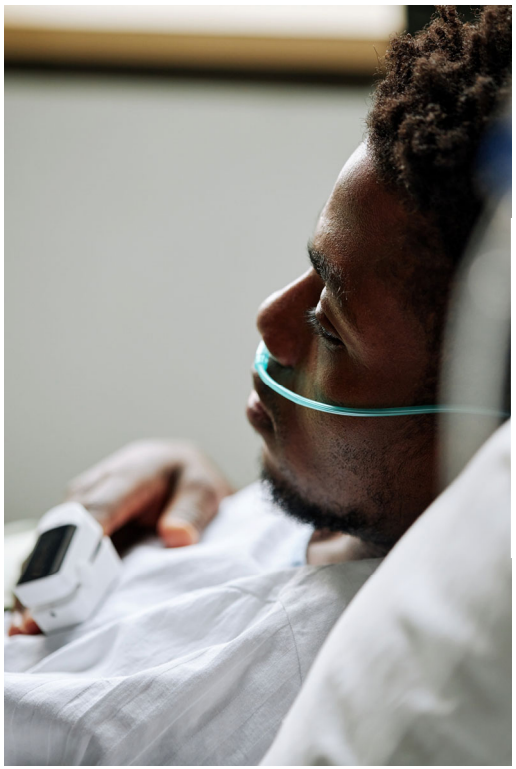
Protect vs Work the Beans:
Avoiding IV Contrast in Patients with AKI or CKD



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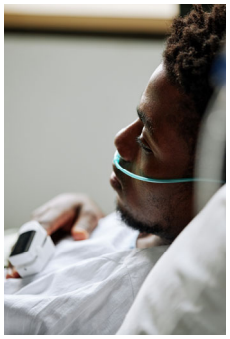

Hesitation to avoid: “First, Do No Harm”

Several trials 1990’s and 2000’s documented AKI 2%-28%

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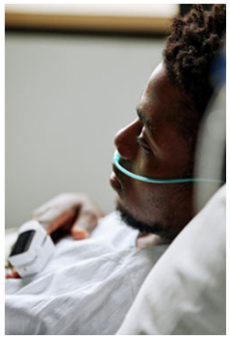

3 reasons NOT to avoid IV contrast:

- IV contrast correlated with but does not cause worsening renal function
- Questions about pathophysiology of CI-AKI
- Withholding IV contrast could cause harm

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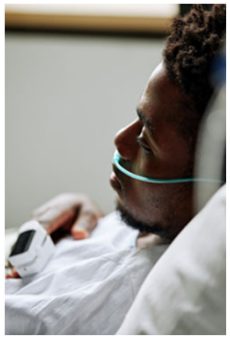
Protect vs Work the Beans:
Avoiding IV Contrast in Patients with AKI or CKD



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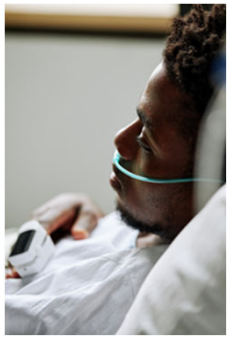

- IV contrast correlated with but does not cause worsening renal function
  - Hospitalized patients: creatinine fluctuates with or without IV contrast

Newhouse JH, Kho D, Rao QA, Starren J. Frequency of serum creatinine changes in the absence of iodinated contrast material: implications for studies of contrast nephrotoxicity. Am J Roentgenol.2008;191(2):376-382

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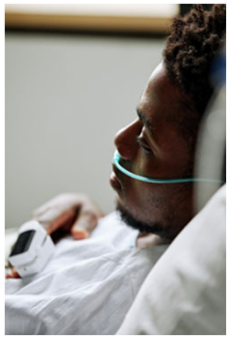

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  - 1 study 2017: lower AKI with IV contrast than without (selection bias?)

Brinjikji W, Demchuk AM, Murad MH, et al. Neurons over nephrons: systematic review and meta-analysis of contrast-induced nephropathy in patients with acute stroke. Stroke. 2017;48(7):1862-1868

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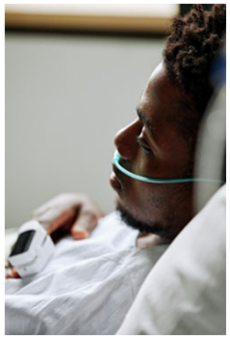
Protect vs Work the Beans:
Avoiding IV Contrast in Patients with AKI or CKD



- IV contrast correlated with but does not cause worsening renal function
  - Hospitalized patients: creatinine fluctuates with or without IV contrast

Newhouse JH, Kho D, Rao QA, Starren J. Frequency of serum creatinine changes in the absence of iodinated contrast material: implications for studies of contrast nephrotoxicity. Am J Roentgenol.2008;191(2):376-382

  - 1 study 2017: lower AKI with IV contrast than without (selection bias?)

Brinjikji W, Demchuk AM, Murad MH, et al. Neurons over nephrons: systematic review and meta-analysis of contrast-induced nephropathy in patients with acute stroke. Stroke. 2017;48(7):1862-1868

  - Series of other studies: no difference or slightly lower AKI with IV contrast

McDonald JS, McDonald RJ, Carter RE, Katzberg RW, Kallmes DF, Williamson EE. Risk of intravenous contrast material-mediated acute kidney injury: a propensity score-matched study stratified by baseline-estimated glomerular filtration rate. Radiology. 2014;271(1): 65-73

McDonald RJ, McDonald JS, Bida JP, et al. Intravenous contrast material-induced nephropathy: causal or coincident phenomenon? Radiology. 2013;267(1):106-118

Hinson JS, Ehmann MR, Fine DM, et al. Risk of acute kidney injury after intravenous contrast media administration. Ann Emerg Med. 2017;69(5):577-586.e4

Wilhelm-Leen E, Montez-Rath ME, Chertow G. Estimating the risk of radiocontrast-associated nephropathy. J Am Soc Nephrol. 2017;28(2):653-659.

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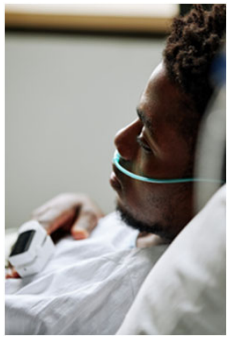

- Questions about pathophysiology of CI-AKI
  - Unclear

Liu C, Mor MK, Palevsky PM, et al. Postangiography increases in serum creatinine and biomarkers of injury and repair. Clin J Am Soc Nephrol. 2020;15(9):1240-1250

Kooiman J, van de Peppel WR, Sijpkens YWJ, et al. No increase in kidney injury molecule-1 and neutrophil gelatinase-associated lipocalin excretion following intravenous contrast enhanced-CT. Eur Radiol. 2015;25(7):1926-1934.

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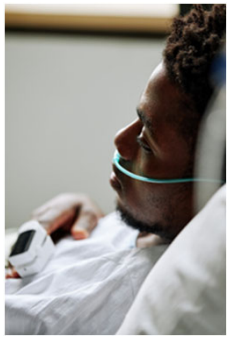

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  - Creatinine rises (functional marker)

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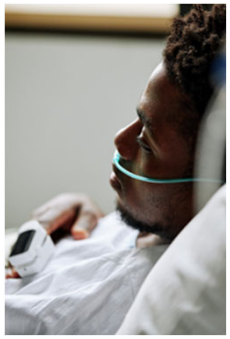

- Questions about pathophysiology of CI-AKI
  - Unclear
  - Creatinine rises (functional marker)
  - Other renal biomarkers – reflect direct tissue damage, inflammatory markers, repair markers
    - Kidney injury molecule – 1
    - Neutrophil gelatinase-associated lipocalin
    - IL-18
    - Monocyte chemoattractant protein – 1
    - Chitinase-3-like protein
    - Uromodulin

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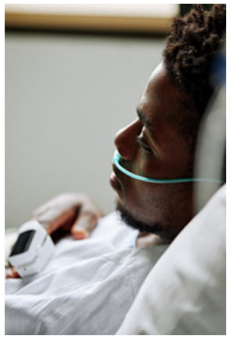

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  - Unclear
  - Creatinine rises (functional marker)
  - Other renal biomarkers - reflect direct tissue damage, inflammatory markers, repair markers
  - Suggests hemodynamic processes unrelated to IV contrast cause creatinine rise

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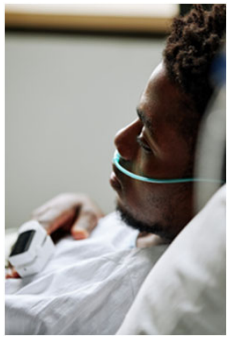

- Withholding IV contrast could cause harm

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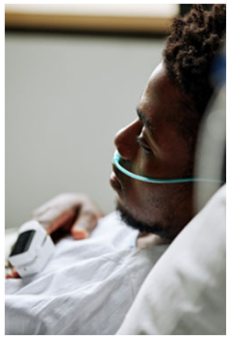
Avoiding IV Contrast in Patients with AKI or CKD



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ORIGINAL RESEARCH • STATEMENTS AND GUIDELINES

Radiology

Use of Intravenous Iodinated Contrast Media in Patients with Kidney Disease: Consensus Statements from the American College of Radiology and the National Kidney Foundation

Matthew S. Davenport, MD • Mark A. Perazella, MD • Jerry Yee, MD • Jonathan R. Dillman, MD, MS • Derek Fine, MD • Robert J. McDonald, MD, PhD • Roger A. Rodby, MD • Carolyn L. Wang, MD • Jeffrey C. Weinreb, MD

From the Departments of Radiology (M.S.D.) and Urology (M.S.D.), Michigan Medicine, 1500 E Medical Center Dr, B2-A209P, Ann Arbor, Mich 48109; Michigan Radiology Quality Collaborative, Ann Arbor, Mich (M.S.D.); American College of Radiology, Reston, Va (M.S.D., J.R.D., R.J.M., C.L.W., J.C.W.); National Kidney Foundation, New York, NY (M.A.P., D.F., R.A.R.); Section of Nephrology (M.A.P., J.C.W.) and Department of Radiology and Biomedical Imaging (J.C.W.), Yale University School of Medicine, New Haven, Conn; Department of Nephrology, Henry Ford Health System, Detroit, Mich (J.Y.); Department of Radiology, Cincinnati Children's Hospital Medical Center at University of Cincinnati College of Medicine, Cincinnati, Ohio (J.R.D.); Department of Nephrology, Johns Hopkins Medicine, Baltimore, Md (D.F.); Department of Radiology Mayo Clinic, Rochester, Minn (R.J.M.); Department of Nephrology, Rush University Medical Center, Chicago, Ill (R.A.R.); and Department of Radiology, University of Washington, Seattle, Wash (C.L.W.). Received September 13, 2019; revision requested October 8; final revision received October 28; accepted November 7. **Address correspondence to** M.S.D. (e-mail: *matdaven@med.umich.edu*).

Conflicts of interest are listed at the end of this article.

Radiology 2020; 294:660–668 • https://doi.org/10.1148/radiol.2019192094 • Content codes: CT GU

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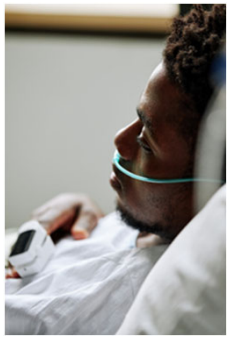

- Withholding IV contrast could cause harm

EPIDEMIOLOGY AND OUTCOMES

"Renalism"

Inappropriately Low Rates of Coronary Angiography in Elderly Individuals with Renal Insufficiency

Chertow, Glenn M.[*]; Normand, Sharon-Lise T.[†,‡]; McNeil, Barbara J.[‡]

Author Information

Journal of the American Society of Nephrology 15(9):p 2462-2468, September 2004. | **DOI:** 10.1097/01.ASN.0000135969.33773.0B

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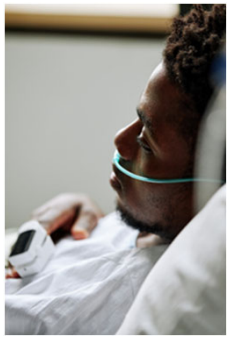

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Coronary angiography in 30% with CKD, 50% without CKD
1 year mortality 30% with intervention, 60% without

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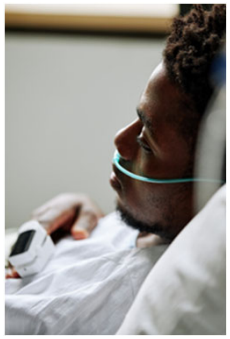

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Neurons Over Nephrons

Systematic Review and Meta-Analysis of Contrast-Induced Nephropathy in Patients With Acute Stroke

Waleed Brinjikji, MD; Andrew M. Demchuk, MD; Mohammad H. Murad, MD; Alejandro A. Rabinstein, MD; Robert J. McDonald, MD, PhD; Jennifer S. McDonald, PhD; David F. Kallmes, MD

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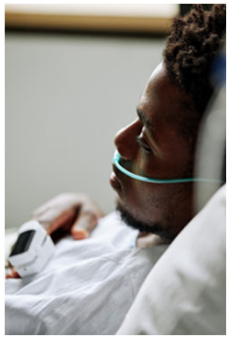

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>6000 patients, rate of AKI 3%
HD rates 0.07%
No difference in rate of AKI with or without CKD

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Protect vs Work the Beans:
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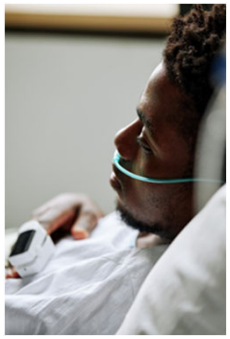

So should we get CT PE in this patient?

Yes and….

Consider volume expansion.

(might be the next TWDFNR….!)

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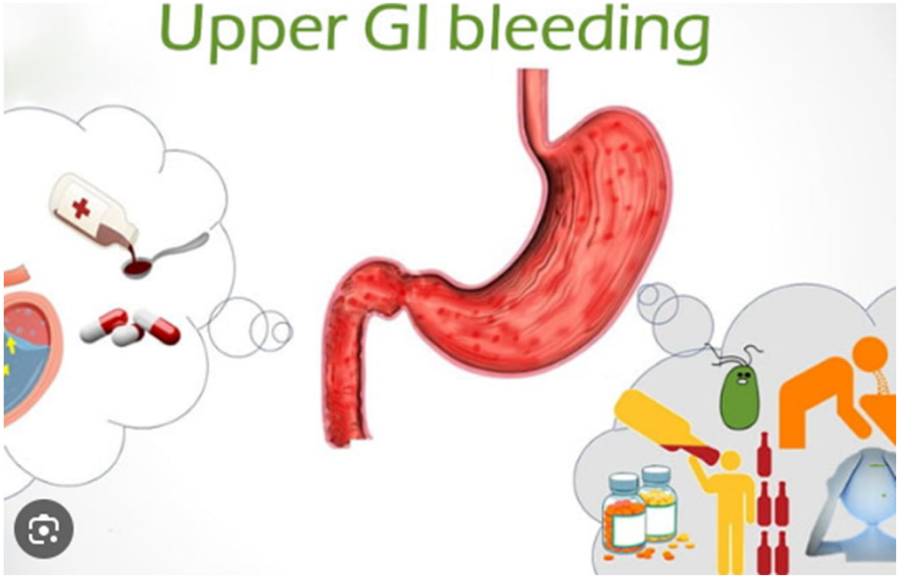
Cut the Guaiac: FOBT testing in hospitalized patients with UGIB

- First published 2017 – bringing it back



Upper GI Bleed – Blood Vomitus or Black Stools - Dr Pathik Parikh

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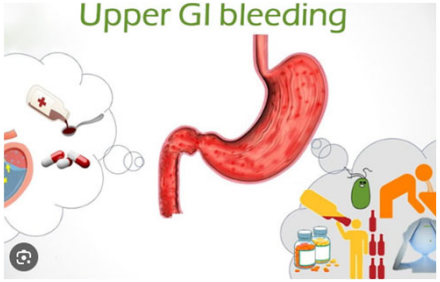
Cut the Guaiac: FOBT testing in hospitalized patients with UGIB



Stool Test Review:

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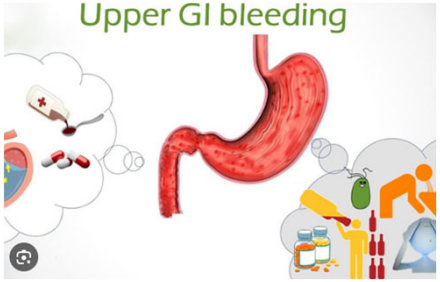

Stool Test Review:

Fecal Occult Blood Testing (FOBT)

- Guaiac based testing (heme)
- Fecal immunochemical tests (globin of human hemoglobin)

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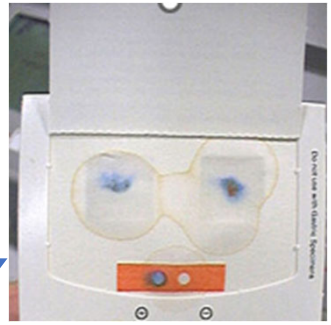
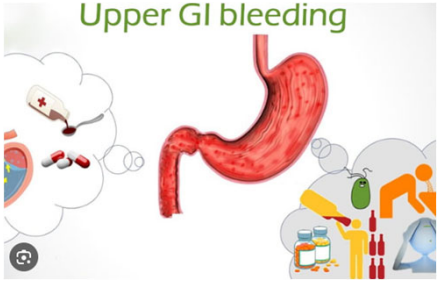
Cut the Guaiac: FOBT testing in hospitalized patients with UGIB





Stool Test Review:

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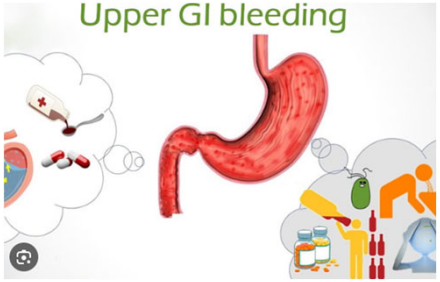
Cut the Guaiac: FOBT testing in hospitalized patients with UGIB

Why you might think it's helpful



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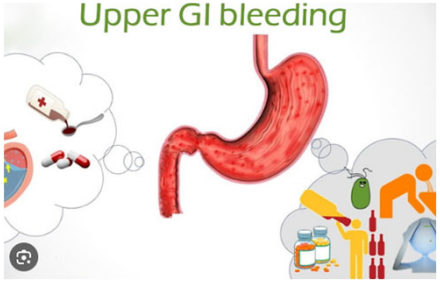

Why you might think it's helpful

- Quick
- Cheap
- Doesn't require a GI consult

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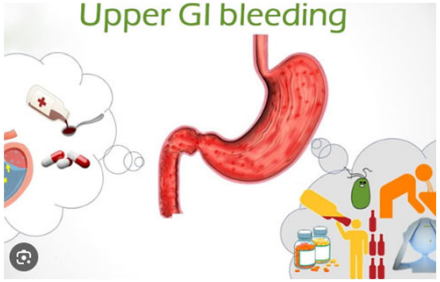
Cut the Guaiac: FOBT testing in hospitalized patients with UGIB

Why FOBT is not helpful in this setting



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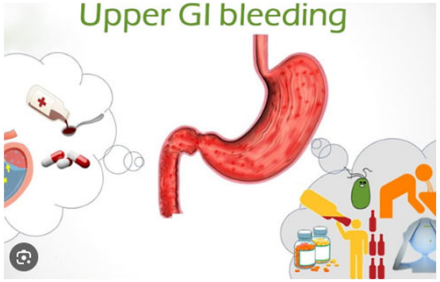

	gFOBT	FIT
False-Positive Results	Ingestion of nonhuman heme (eg, meat products) Ingestion of peroxidases (eg, broccoli) Ingestion of non-GI blood (eg, epistaxis) Use of aspirin, NSAIDs, or anticoagulant medication	Use of aspirin, NSAIDs, or anticoagulant medication
False-Negative Results	Ingestion of antioxidants (eg, Vitamin C)	Bleeding from the upper GI or proximal lower GI tracts
Additional Considerations	Potential for visual misinterpretation Low sensitivity (requires multiple samples)	Potential for visual misinterpretation (qualitative tests only) Varying test characteristics depending on manufacturer

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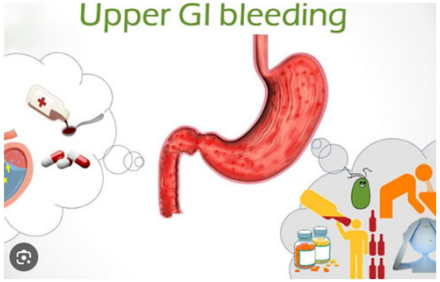
When is FOBT helpful?



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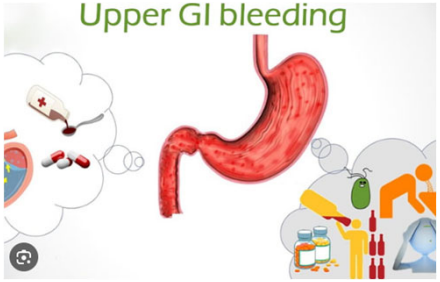

When is FOBT helpful?

- Outpatient colon cancer screening

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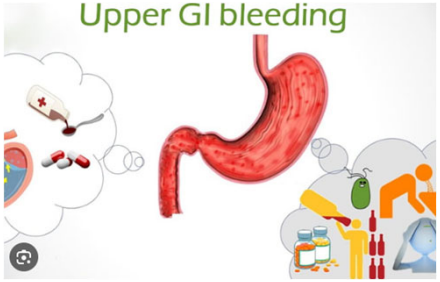
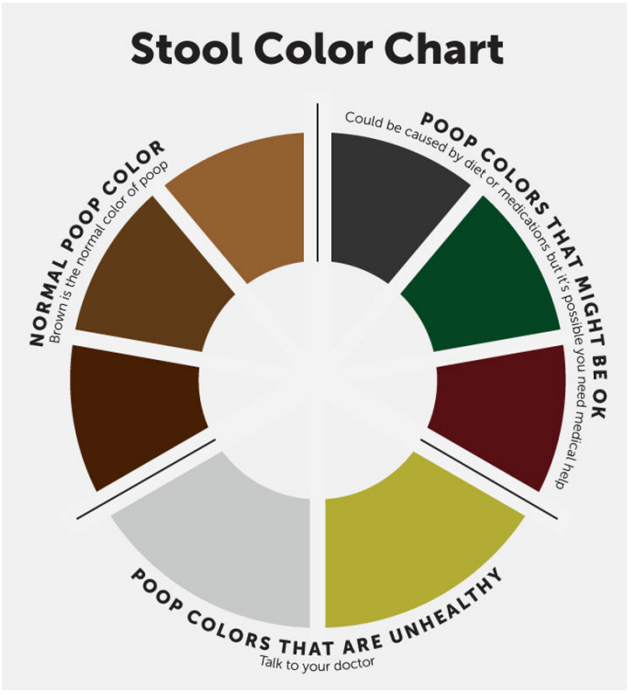


What we should do instead?

- H&P
- Visualize stool
- BUN:Cr ratio



What your poop says about your health | HealthPartners Blog

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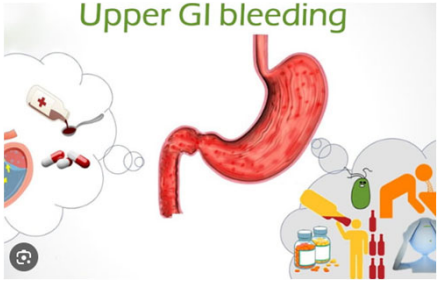
Cut the Guaiac: FOBT testing in hospitalized patients with UGIB



What we should do instead?

Do not order FOBT on hospitalized patient with suspected Upper GI Bleed

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Life TWDFNR

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Lunch Rush: Discharge before Noon

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Lunch Rush: Discharge before Noon

- Length of Stay
- ED Boarding (different topic)
  - Leads to poor outcomes, particularly >75 years
    - Increased in-hospital mortality
    - Increased LOS

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Lunch Rush: Discharge before Noon

Why you might think this is good for hospital flow

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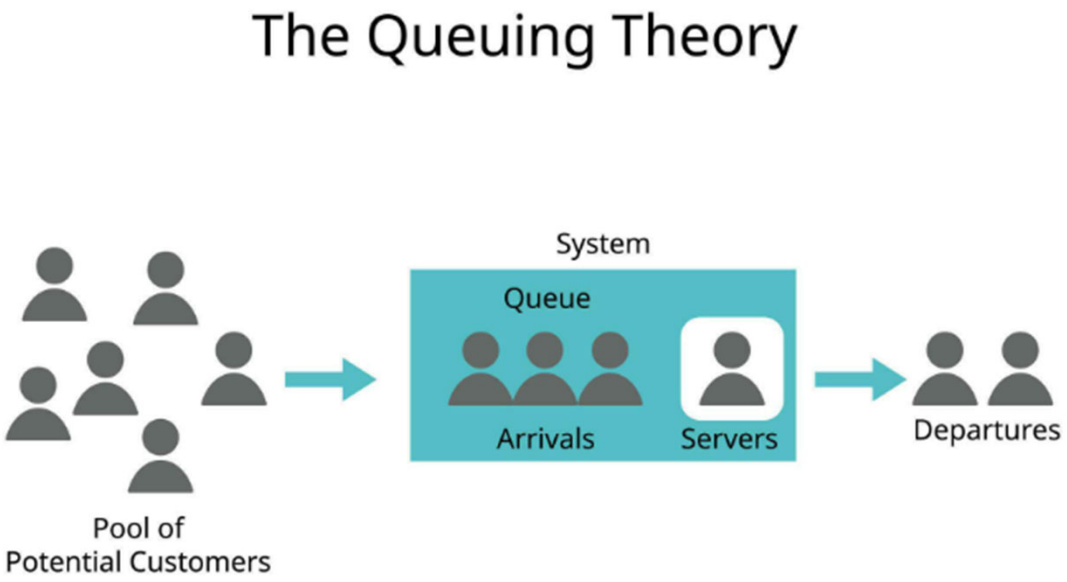
Lunch Rush: Discharge before Noon

Why you might think this is good for hospital flow



[Queueing theory is the mathematical study of waiting lines, or queues to predict queue lengths and waiting time 34857050 Vector Art at Vecteezy]

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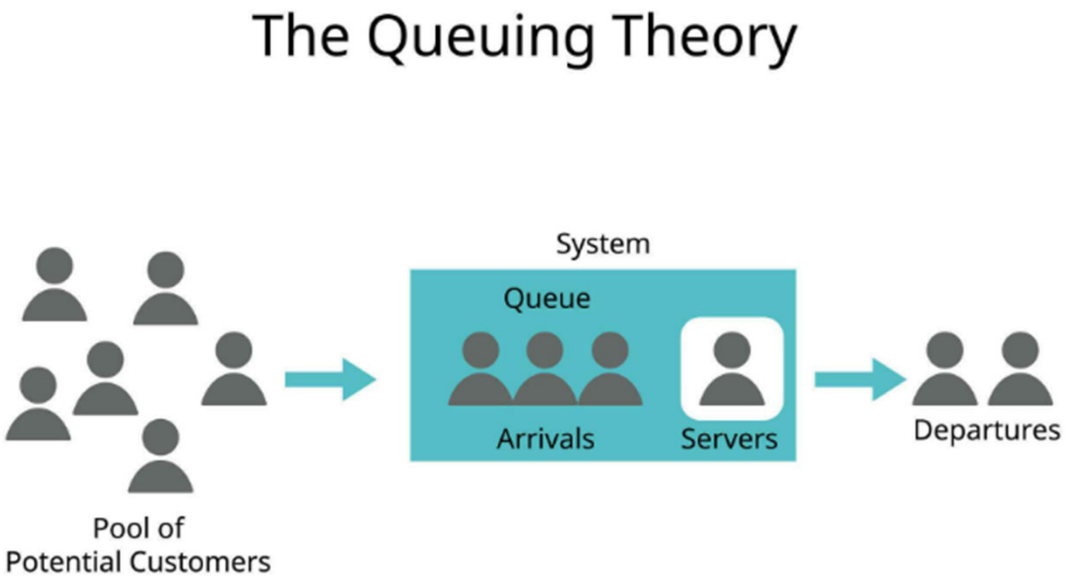
Lunch Rush: Discharge before Noon

Why you might think this is good for hospital flow



Decompress IP beds earlier, before ED gets busy

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[Queueing theory is the mathematical study of waiting lines, or queues to predict queue lengths and waiting time 34857050 Vector Art at Vecteezy]

Lunch Rush: Discharge before Noon

Why this may not be helpful

- Alone, unhelpful
- Part of a system/group of interventions
- Prioritization of “missions”

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Lunch Rush: Discharge before Noon

What you should do:

- Focus on patient specific discharge goals
- Advocate for systems level changes to improve hospital flow

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Summary of TWDFNR

Picture of Confusion

Order CT scan for your delirious patient only if focal neurologic deficit, fall in last 2 weeks, anticoagulation, risk for increased ICP

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Summary of TWDFNR

Picture of Confusion
Order CT scan for your delirious patient only if focal neurologic deficit, fall in last 2 weeks, anticoagulation, risk for increased ICP

What did the lungs say to the urine?
Do not order S. pneumoniae UAT; consider Legionella UAT in patients with severe symptoms and risk factors

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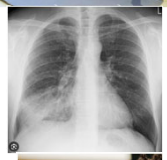
Summary of TWDFNR



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Protect vs Work the Beans
Do not avoid IV contrast in patients with AKI or CKD since withholding testing could cause more harm

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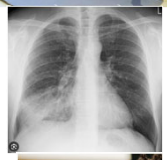

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Protect vs Work the Beans
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Cut the Guaiac
Do not order FOBT on patients with UGIB, as this is a screening test for colon CA and not helpful to diagnosis the presence or absence of UGIB

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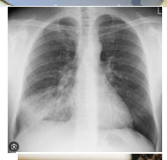
Summary of TWDFNR



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Order CT scan for your delirious patient only if focal neurologic deficit, fall in last 2 weeks, anticoagulation, risk for increased ICP

What did the lungs say to the urine?
Do not order S. pneumoniae UAT; consider Legionella UAT in patients with severe symptoms and risk factors

Protect vs Work the Beans
Do not avoid IV contrast in patients with AKI or CKD since withholding testing could cause more harm

Cut the Guaiac
Do not order FOBT on patients with UGIB, as this is a screening test for colon CA and not helpful to diagnosis the presence or absence of UGIB

Lunch rush
Do not prioritize discharge before noon. Discharge your patient when ready and advocate for system changes to improve hospital flow

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Questions?


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Joy Engblade, MD, MMM, FACP | University of Kentucky | jken226@uky.edu |

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