Updates in Hospital Medicine 2024

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Disclosures

- No financial disclosures

Objectives

- Identify, interpret and apply recently published literature and evidence into clinical practice to provide management for specific conditions in hospitalized patients.

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Room Number	Principal Problem	Level of Care
512	Decompensated Cirrhosis	Acute
514	Diverticulitis	Acute
515	Community Acquired Pneumonia	Progressive
517	Upper GI bleed	Acute
525	Nausea and vomiting	Tele
531	Dysphagia	Acute
538	C diff colitis	Acute
540	Toxic metabolic encephalopathy	Progressive
541	Atrial fibrillation	Tele

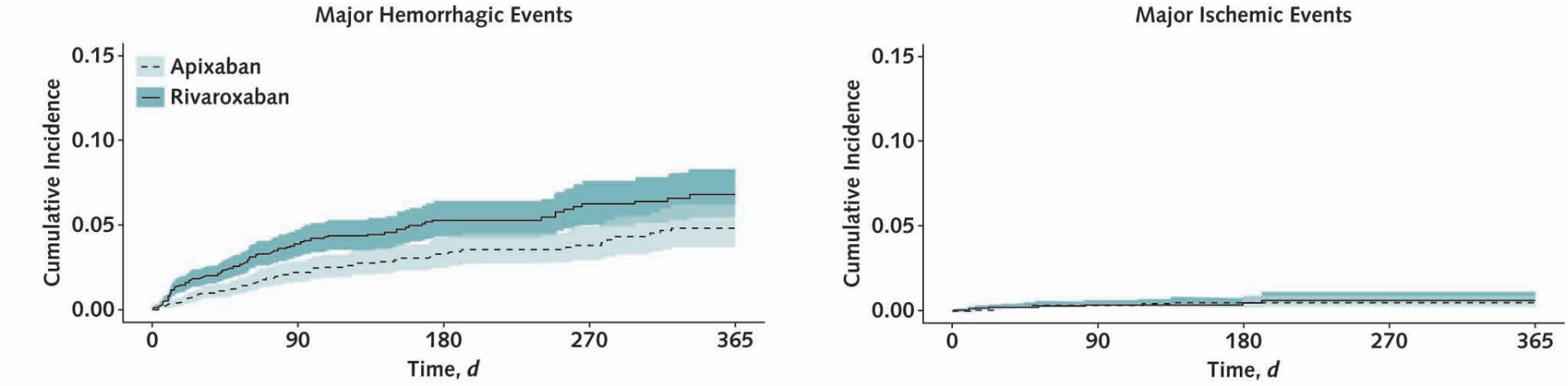
47 yo M with HCV cirrhosis, decompensated by ascites. He has been hemodynamically stable but was noted to be in new atrial fibrillation this hospital stay. He underwent LVP negative for SBP, now up-titrating his diuretics. He remains in atrial fibrillation. He has no history of esophageal varies.

You discuss his risks/benefits of AC and decide to anti-coagulate. You consider which agent to use…

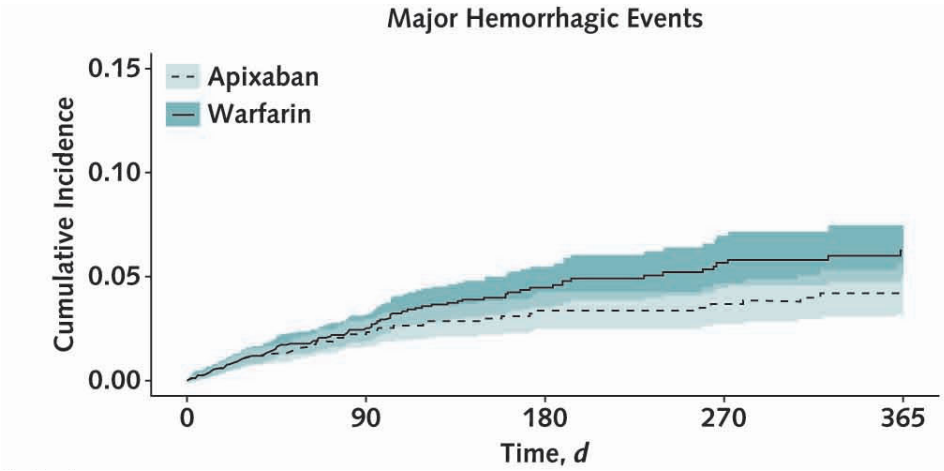
Comparative Effectiveness and Safety of Apixaban, Rivaroxaban and Warfarin in Patients with Cirrhosis and Atrial Fibrillation

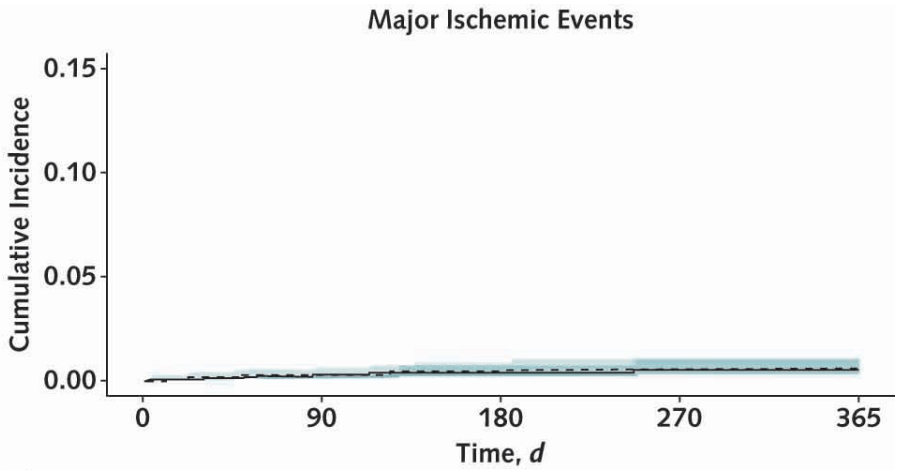
- Retrospective cohort study to compare effectiveness and safety in real-world patients with cirrhosis and AF

- Primary outcome: major hemorrhagic event and major ischemic events



- Higher rates of major hemorrhagic events
  Rivaroxaban (86.9 per 1000 PY)
  Apixaban (51.0 per 1000 PY)
- No differences for ischemic events or death





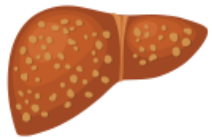
- Higher rates of major hemorrhagic events (CVA)
  - Warfarin (78.9 per 1000 PY)
  - Apixaban (50.6 per 1000 PY)
- No difference in major GI bleed, ischemic events or death

What is the comparative effectiveness and safety of apixaban vs. rivaroxaban vs. warfarin in patients with cirrhosis and atrial fibrillation (AF)?

2013–2022

CMS Medicare and Optum Clinformatics

11 624 patients with cirrhosis and nonvalvular AF initiating apixaban, rivaroxaban, or warfarin



	Ischemia/death	Major bleeding
Rivaroxaban	⟷	↑
Apixaban	⟷	↓
Warfarin	⟷	↑

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You discuss his risks/benefits of AC and decide to anti-coagulate. You consider which agent to use and initiate Apixaban.

- DOACs safe and effective AC for atrial fibrillation in patients with cirrhosis
- Apixaban has lower risk of major bleeding than Rivaroxaban and Warfarin

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58 yo M admitted with acute, uncomplicated diverticulitis and AKI. He was given IV fluids and piperacillin-tazobactam by the admitting provider overnight.

This morning his renal function is worse and you wonder if it was the piperacillin-tazobactam and consider switching him to cefepime…

Cefepime vs Piperacillin-Tazobactam in Adults Hospitalized with Acute Infection

The Antibiotic Choice on Renal Outcomes (ACORN)
Randomized Clinical Trial

- Open label, parallel-group, randomized comparative safety trial of adults with suspected infection in the ED or ICU

- Primary outcome: highest stage of AKI or death in 14 days

- Secondary outcomes:

  Major adverse kidney event

  Days alive and free of delirium and coma

AKI

Cefepime

Piperacillin-
Tazobactam

Neurological dysfunction

- Higher in Cefepime group (20.8% vs 17.3%)

Highest risk with impaired renal function and sepsis

POPULATION

1439 Men **1071** Women

Adults hospitalized with acute infection

Median age: **58** years

LOCATION

1
Medical center in Nashville, Tennessee

INTERVENTION

2634 Patients randomized
2511 Patients analyzed

1214
Cefepime
Administered as an intravenous push over 5 minutes

1297
Piperacillin-tazobactam
Administered as a bolus for the initial administration and then extended infusion over 4 hours for subsequent doses

PRIMARY OUTCOME

Highest stage of acute kidney injury or death by day 14 (measured on a 5-level ordinal scale; range: no acute kidney injury to death)

FINDINGS

Highest stage of acute kidney injury or death by day 14

Cefepime

Survived with stage 3 acute kidney injury	**7.0%** (85 of 1214 patients)
Died	**7.6%** (92 of 1214 patients)

Piperacillin-tazobactam

Survived with stage 3 acute kidney injury	**7.5%** (97 of 1297 patients)
Died	**6.0%** (78 of 1297 patients)

There was no significant between-group difference:
Odds ratio, **0.95** (95% CI, 0.80 to 1.13); *P* = .56

58 yo M admitted with acute, uncomplicated diverticulitis and AKI. He was given IV fluids and piperacillin-tazobactam by the admitting provider overnight.

This morning his renal function is worse and you continue piperacillin-tazobactam and volume resuscitation.

- Piperacillin-Tazobactam and Cefepime have similar risks of AKI (even when co-administered with Vancomycin)
- Cefepime has a slightly higher risk of neurotoxicity

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63 yo F with was admitted overnight for severe community acquired PNA. She was started on Ceftriaxone and Azithromycin.

She is afebrile, RR 28, HR 125, BP 110/78, O2 92% on 6LNC. CXR notes multifocal PNA, labs significant for AKI, leukopenia. She is confused and in mild respiratory distress on exam.

She meets criteria for severe CAP and you wonder if she would benefit from corticosteroids…

Focused Update: Use of Corticosteroids in septic shock, ARDS and CAP

- Suggest steroids in adults with septic shock

  Hydrocortisone 200mg IV/day for 7d or ICU discharge

- No specific recommendation for steroids in sepsis alone

- Suggest steroids in critically ill adults with ARDS
  - Early ARDS (within 24 hours) – Dex
  - Early ARDS (within 72 hours) - Methylpred
  - Unresolving ARDS (7-21 days) - Methylpred

- Recommend steroids for adult patients hospitalized with severe bacterial CAP
  - ATS/IDSA, CAPE COD, PSI

    MV, pressors, confusion, uremia, RR, O2 requirements, multilobar infiltrates

- Recommend steroids for adult patients hospitalized with severe bacterial CAP
  - -Hydrocortisone or Methylprednisolone
  - -Bolus + infusion

- Recommend steroids for adult patients hospitalized with severe bacterial CAP

- No recommendation for less severe bacterial CAP

63 yo F with was admitted overnight for severe community acquired PNA. She was started on Ceftriaxone and Azithromycin.

She is afebrile, RR 28, HR 125, BP 110/78, O2 92% on 6LNC. CXR notes multifocal PNA, labs significant for AKI, leukopenia. She is confused and in mild respiratory distress on exam.

She meets criteria for severe CAP and you start her on Methylprednisolone 0.5 mg/kg IV q12 for 7 days.

- Suggest steroids in septic shock but not sepsis alone
- Suggest steroids in ARDS
- Recommend steroids in severe CAP

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42 yo F with T2DM recently sustained shoulder injury and has been taking heavy NSAIDs presented with blood tinged emesis. She was posted for EGD this afternoon and you get a message from anesthesia that her case has been cancelled for today because the patient had her weekly subq injection of Semaglutide yesterday.

You suppress your annoyance over another endoscopy delay and wonder what factors you need to consider for peri-procedural management of these new diabetes meds…

NEWS

June 29, 2023

American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists

Clinical Gastroenterology and Hepatology 2024;22:705–707

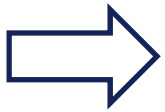
CLINICAL PRACTICE UPDATES

AGA Rapid Clinical Practice Update on the Management of Patients Taking GLP-1 Receptor Agonists Prior to Endoscopy: Communication

Check for updates

ASA Consensus-based Guidance on Preoperative Management of Patients on Glucagon-like Peptide-1 Receptor Agonists

Glucagon-like peptide-1 receptor agonists can delay gastric emptying



Delayed gastric emptying increases risk of aspiration

ACG:

Insufficient evidence for strong recommendation to continue or withhold

"GLP1s could be withheld" but recommend proceeding with endoscopy if patient fasted and has no GI symptoms

ASA:

Consider holding GLP1s day of/week prior

If given – use "full stomach" precautions

42 yo F with T2DM recently sustained shoulder injury and has been taking heavy NSAIDs presented with blood tinged emesis. She was posted for EGD this afternoon and you get a message from anesthesia that her case has been cancelled for today because the patient had her weekly subq injection of Semaglutide yesterday.

You make a note to stay on the lookout for updated medication and fasting recommendations for GLP1s.

- Watch for additional data regarding GLP1s preop and/or changes in recommended fasting time
- Institutional variations likely

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23 yo M with cannabis use disorder presents with intractable nausea and vomiting. He has several electrolyte disturbances, is unable to tolerate PO intake requiring IVF and this morning he is now having blood streaked emesis despite multiple anti-emetics.

You have maximized your typical anti-emetic regimen and wonder what other adjunct medications may provide this patient relief…

AGA Clinical Practice Update on Cannabinoid Hyperemesis Syndrome

AEM GRACE 4: Cannabinoid Hyperemesis Syndrome in the ED

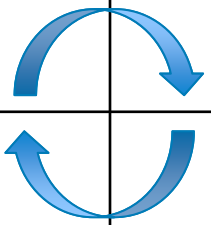
CHS

1. Stereotypical episodic vomiting

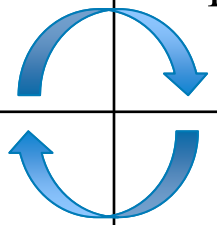
2. Cannabis use pattern

3. Cannabis cessation

Inter-episodic phase Absent or minimal symptoms	Prodromal phase Nausea and abdominal pain
Recovery phase Start oral intake and advance as tolerated	Emetic phase Vomiting, retching and abdominal pain



Inter-episodic phase	Prodromal phase
Prophylactics: TCAs, Topiramate, NK-1 agonists	Abortives: Triptans, Anti-emetics, NK-1 agonists
Recovery phase	Emetic phase
Consider PPX	Dopamine Agonists Topical Capsaicin Antiemetics, Anxiolytics, Pain Control



23 yo M with cannabis use disorder presents with intractable nausea and vomiting. He has several electrolyte disturbances, is unable to tolerate PO intake requiring IVF and this morning he is now having blood streaked emesis despite multiple anti-emetics.

You include a dose of Droperidol and topical Capsaicin to the upper abdomen with much relief for the patient.

- Cannabis use (and CHS) are on the rise
- Consider ppx in recovery/inter-episode phase
- Use abortive in prodrome/emetic phase

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84 yo F nursing home resident presented after a syncopal event and fall. She sustained only superficial injuries and was admitted for workup of syncopal event, which has been unremarkable to date. She has been intermittently confused and you get a message from the RN that they are concerned about dysphagia and request a modified diet with thick liquids and an SLP evaluation.

You hesitate over modifying the diet order from thin to thick liquids and consider the benefits of the change….

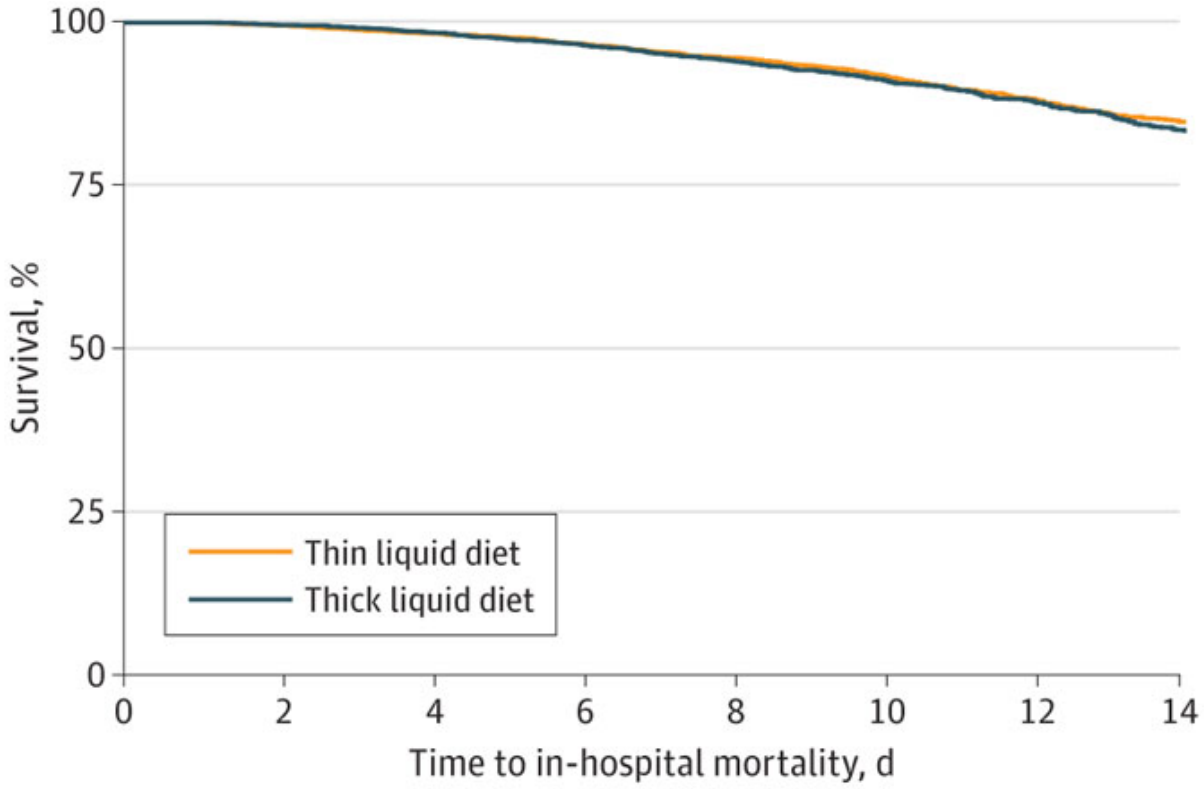
Thick Liquids and Clinical Outcomes in Hospitalized Patients with Alzheimer Disease and Related Dementias and Dysphagias

- Patients 65 or older with AD/ADRD who were admitted to the hospital with clinical suspicion of dysphagia

- Thin or thick liquid groups for 75% of diet time

- Primary outcome: hospital mortality

- Secondary outcomes: new respiratory complications, intubation, dehydration, hospital LOS and 30 day re-admission



No. at risk

Thin liquid diet	458	4341	3640	2650	1929	1383	1012	753
Thick liquid diet	458	4354	3715	2815	1964	1390	1020	738

Table 2. Matched Outcome Analysis[a]

Outcome	Effect measure (95% CI)
Time to in-hospital mortality	HR, 0.92 (0.75-1.14)
Respiratory complications	OR, 1.73 (1.56-1.91)
Intubation	OR, 0.66 (0.54-0.80)
Dehydration	OR, 1.00 (0.91-1.11)
30-d Readmission	OR, 1.05 (0.93-1.19)
Hospital length of stay, log day	MD, 0.02 (−0.01 to 0.04)

Abbreviations: HR, hazard ratio, generated by Cox proportional hazards model; OR, odds ratio, generated by logistic regression model; MD, mean difference, generated by linear regression model.

[a] The reference group for each comparison is the thin liquid diet group.

- “Proactively engage SLPs, but do not ask them if it is safe for patients with dementia to eat or drink normally… ask what we can do to meet the patient’s goals and maintain quality of life given the current evidence base.”

84 yo F nursing home resident presented after a syncopal event and fall. She sustained only superficial injuries and was admitted for workup of syncopal event, which has been unremarkable to date. She has been intermittently confused and you get a message from the RN that they are concerned about dysphagia and request a modified diet with thick liquids and an SLP evaluation.

You discuss with the patient and her daughter and proceed with her preference for liberalized thin liquids.

- No differences for in hospital mortality with thin vs thick liquids… out of hospital?
- Think thin and consider patients preferences

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68 yo M with PMH of HTN was recently treated for cellulitis presented with c diff infection, found to have an AKI on admission with relative hypotension. His home BP meds were held and he improved with Fidoxamicin treatment and IVF with resolution of his AKI. He is HDS with a BP of 164/70 is hopeful for discharge today.

You are preparing his discharge med rec and consider his home blood pressure medications and if you should resume them…

Blood Pressure, Readmission, and Mortality Among Patients Hospitalized with Acute Kidney Injury

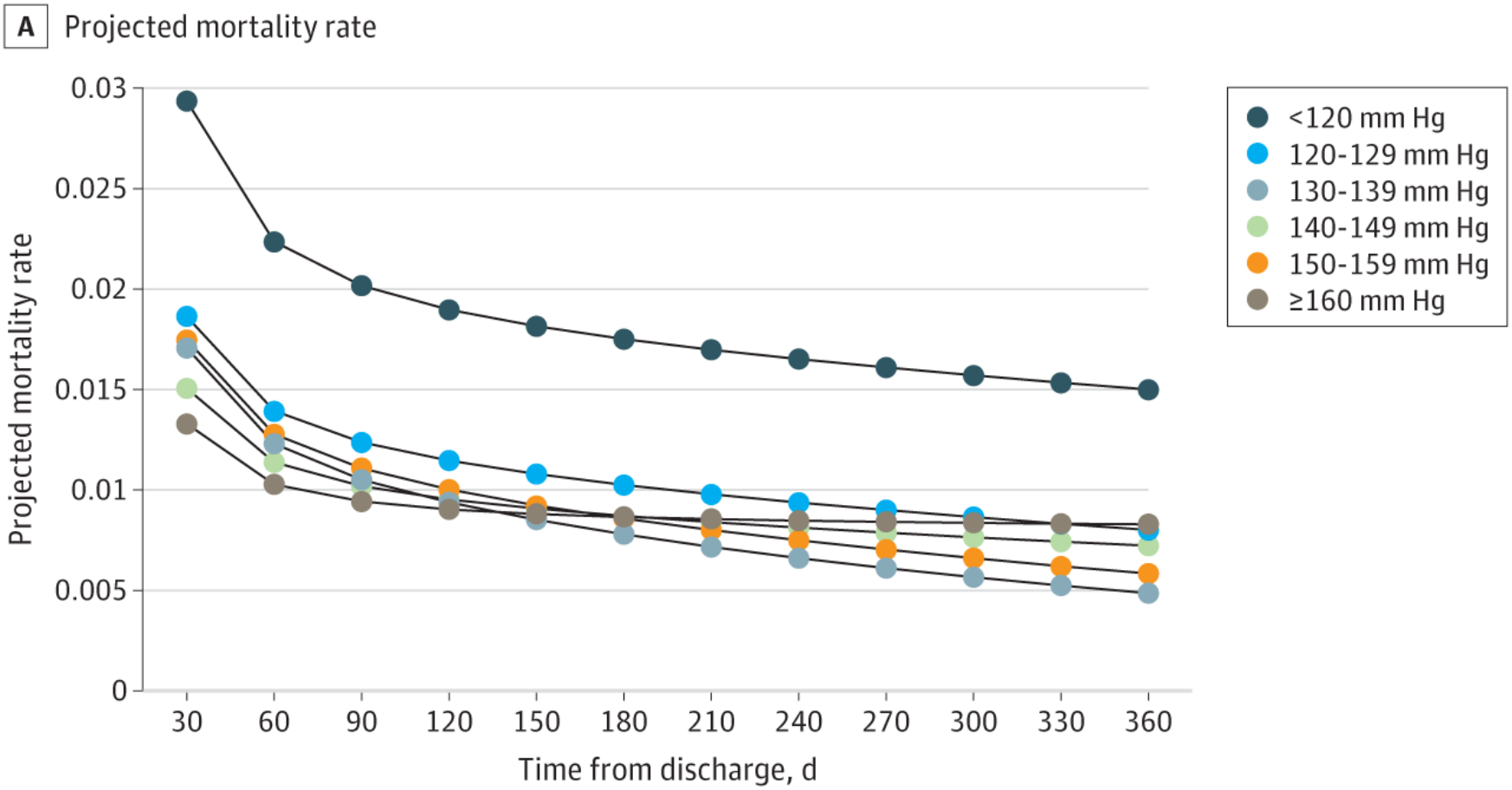
- Adult patients admitted to the VA with an acute hospitalization complicated by AKI

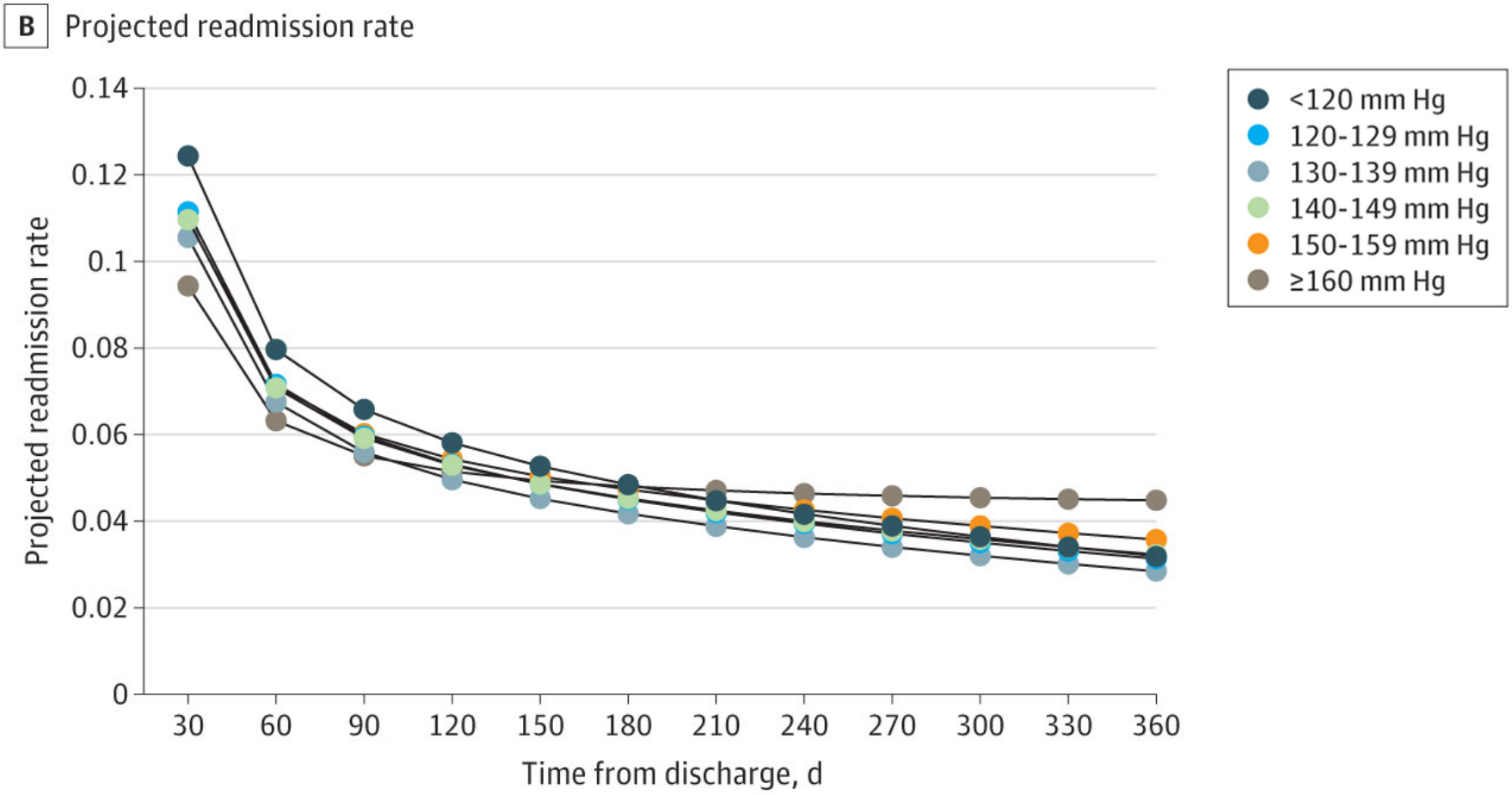
- Time spent in SBP category in 30 day increments

  <120, 120-129, 130-139, 140-149, 150-159, >160

- Primary outcome:
  Time to mortality following discharge
  Time to all-cause rehospitalization

- Secondary analysis:
  ACEI and ARB
  CHF
  AKI severity


A
Projected mortality rate
0.03
0.025
0.02
0.015
0.01
0.005
0
Projected mortality rate
30
60
90
120
150
180
210
240
270
300
330
360
Time from discharge, d
<120 mm Hg
120-129 mm Hg
130-139 mm Hg
140-149 mm Hg
150-159 mm Hg
≥160 mm Hg


B
Projected readmission rate
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Projected readmission rate
30
60
90
120
150
180
210
240
270
300
330
360
Time from discharge, d
<120 mm Hg
120-129 mm Hg
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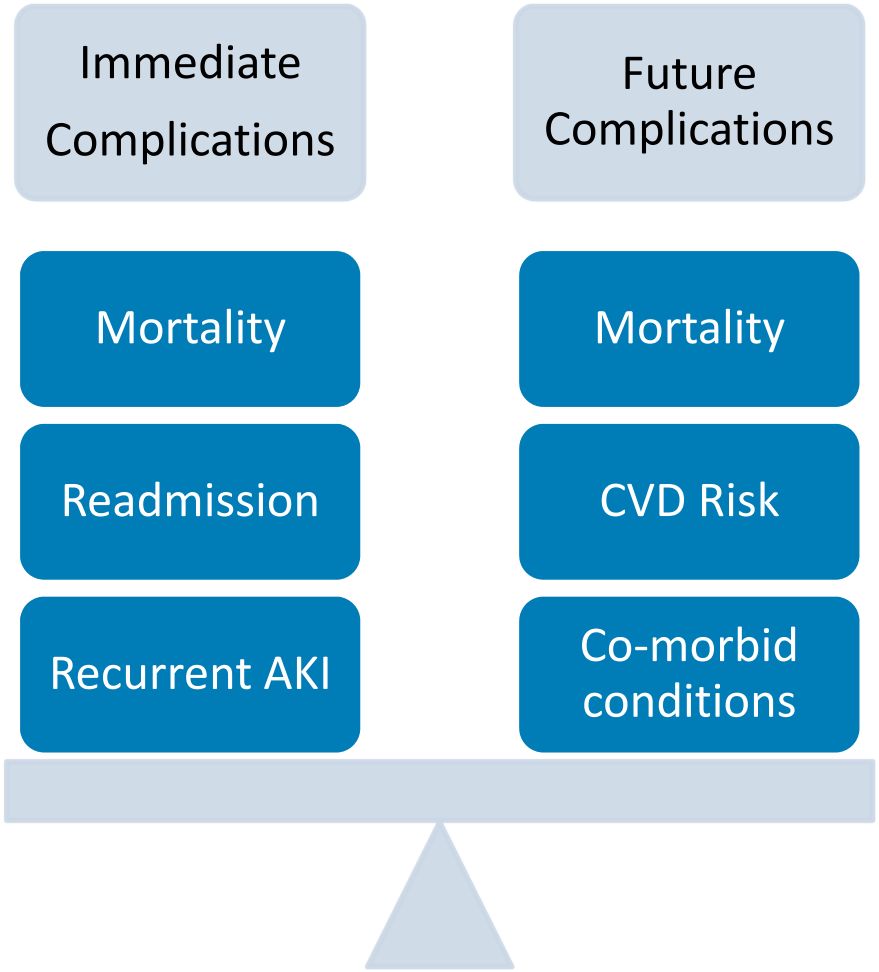
140-149 mm Hg
150-159 mm Hg
≥160 mm Hg

- Primary outcome:
  Time to mortality following discharge
  Time to all-cause rehospitalization

- Secondary analysis:
  ACEI and ARB
  CHF
  AKI severity


Immediate Complications
Future Complications
Mortality
Readmission
Recurrent AKI
Mortality
CVD Risk
Co-morbid conditions

Risk of Mortality and Readmission

	Immediate	Long Term
<120	↑↑	↑↑
130-139	↓	↓
>160	↓	↑

68 yo M with PMH of HTN was recently treated for cellulitis presented with c diff infection, found to have an AKI on admission with relative hypotension. His home BP meds were held and he improved with Fidoxamicin treatment and IVF with resolution of his AKI. He is HDS with a BP of 164/70 is hopeful for discharge today.

You are preparing his discharge med rec and consider his home blood pressure medications. You resume one med, hold another and request a PCP follow up in 2-4 weeks.

- Permissive hypertension at discharge following AKI
- Arrange prompt follow up for monitoring and titration

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74 yo F with PMH of DLBCL in remission, presented with altered mental status and fever. You open her chart and review her vitals.

ALERT:
BMI of 33.1.Would you like to add the diagnosis of OBESITY to the chart? Go to problem list.

She is hemodynamically stable. You review her current labs and imaging and decide on additional imaging.

ALERT: There are other tests equally appropriate with less radiation. Consider one of the following alternatives.

You navigate to her orders page…

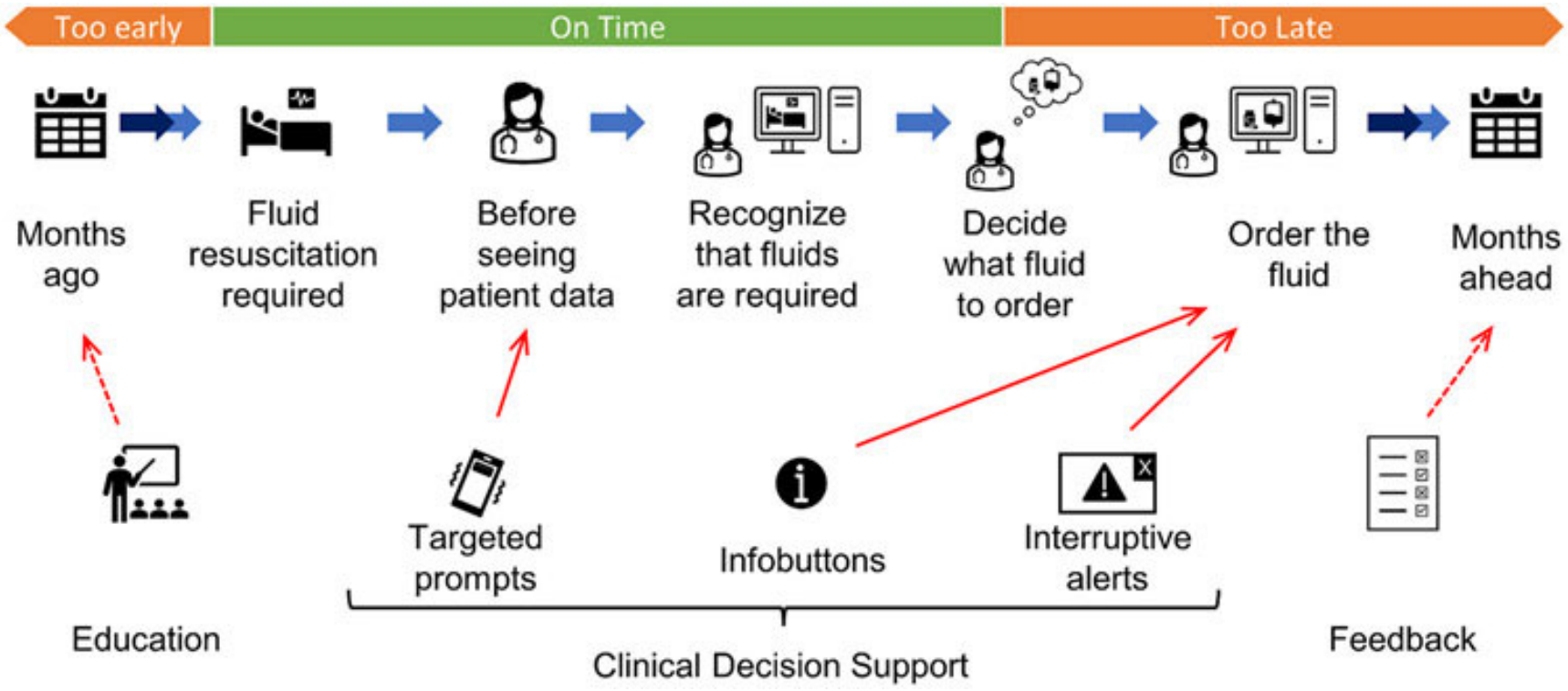
ALERT: Medications PTA require review

ALERT: Drug-drug interaction
Meloxicam + Enoxaparin
HIGH RISK for bleeding

Machine Learning-Based Prediction of Low-Value Care for Hospitalized Patients

Generative AI to Transform Inpatient Discharge Summaries to Patient-Friendly Language and Format

- IV albumin for fluid resuscitation in the ICU



- “Create a discharge summary for a hospitalization on acute care medicine unit that is readable for a patient at a sixth grade reading level.”

Dear [Patient Name],

We hope you are doing well. We're writing this letter to help you understand what happened during your recent hospital stay. You were in hospital from [Date] to [Date]. [Physician name] was the doctor in charge of your care.

What brought me to the hospital?
You came to the hospital because of severe chest pain.

Why was I hospitalized?
You were hospitalized because of STEMI, which is a severe heart attack. You also had mild protein-calorie malnutrition, which means your body didn't get enough nutrients from food.

What happened in the hospital?
The doctors did a test called an ECG and found that your heart was not getting enough blood. They gave you medicines to help your heart. They also did a procedure called a coronary angiogram. They found a blockage in your heart and put in two stents to open it up. Your chest pain went away and your heart rhythm was normal.

What should I know after leaving the hospital?
You will need to take medicines for your heart. You will also need to see your heart doctor and your regular doctor. Make sure to look at your discharge instructions in [Institution] After Visit Guide.

- AI is coming…
  - Workflow changes – EMR alerts, best practice notifications
  - Documentation and patient education

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63 yo M with PMH of CAD, HTN and HLD presented with palpitations. 12 lead EKG confirms atrial fibrillation and you have been titrating his beta blocker while awaiting an echo to evaluate for structural heart disease. You get a notification of the echo results and while you are waiting for them to load you glance at your email inbox…

MANDATORY WEB-BASED TRAINING DUE

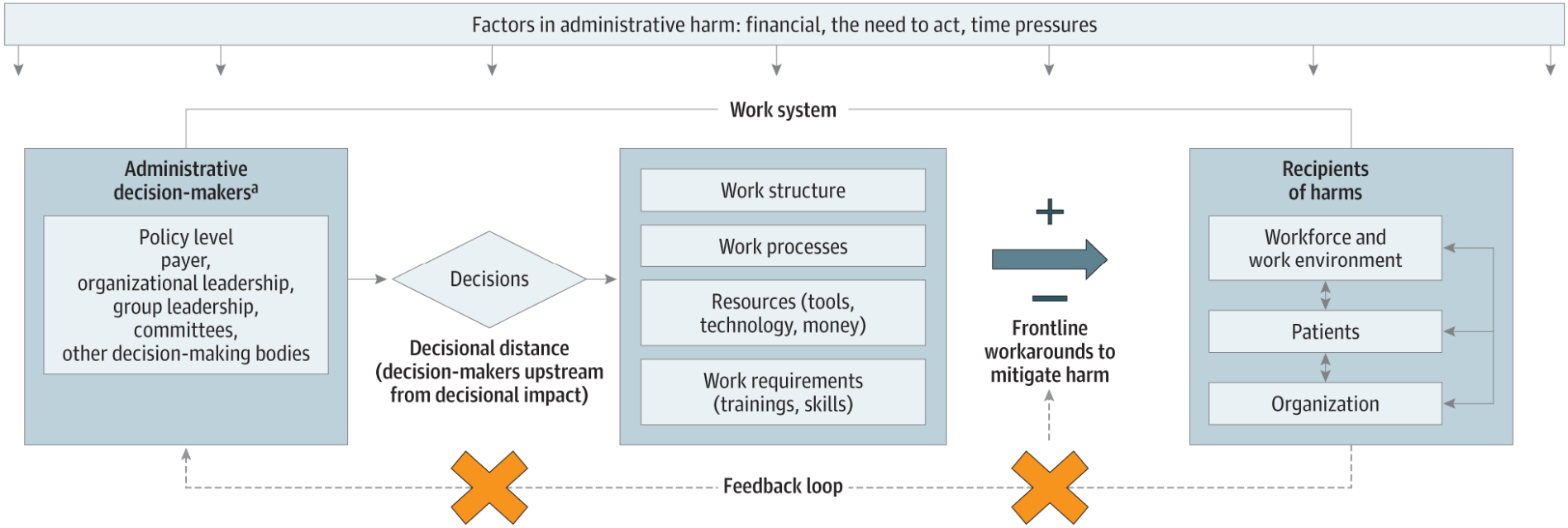
You open up your email to see that your institution has required you to complete a web-based training module. This training is required for all faculty and staff in order to provide evidence of agreement with a national standard for an award for a department that you do not work for.

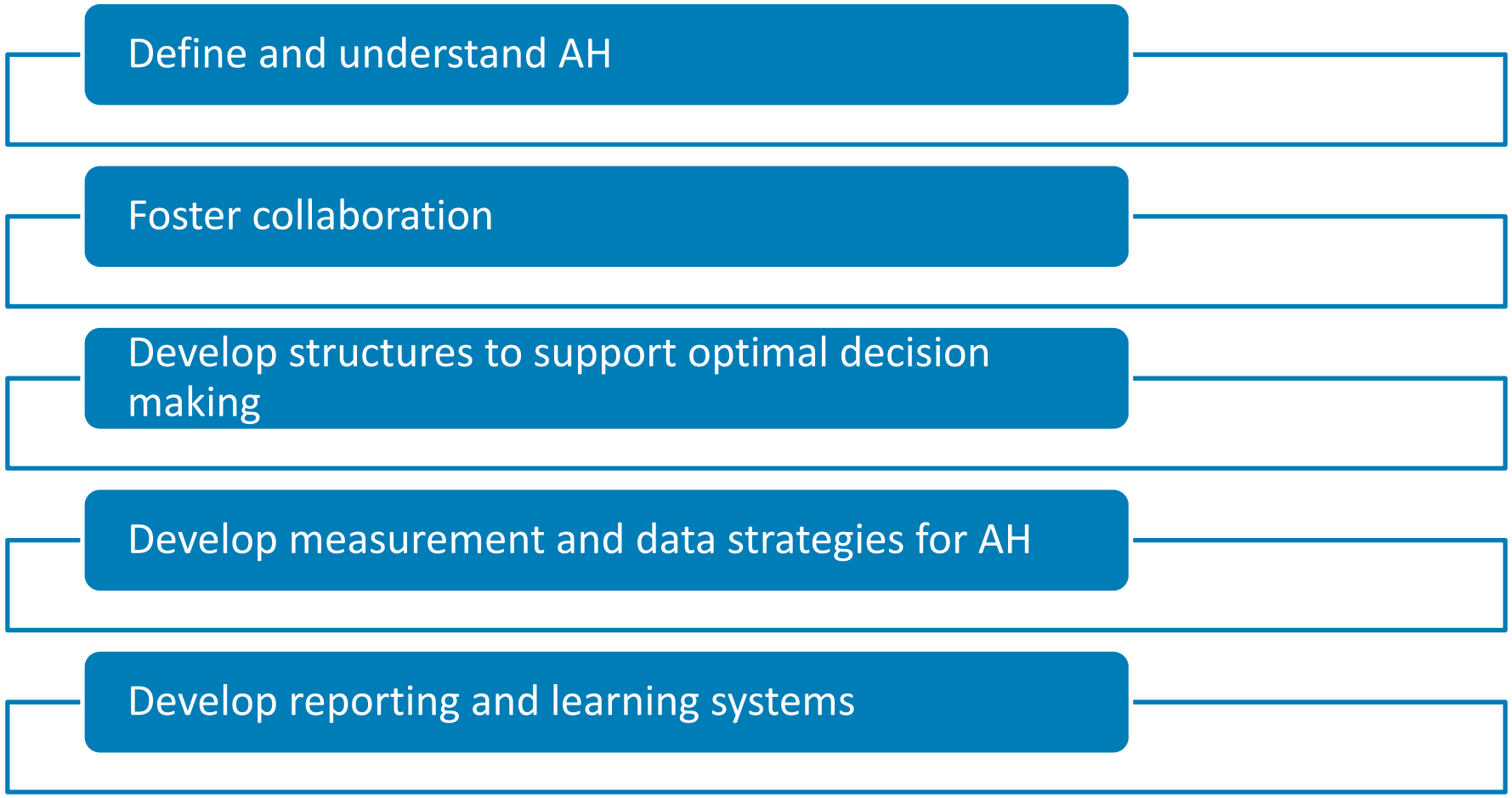
The web-based training module is projected to take 1 hour to complete and is due in 48 hours.

Identifying and Measuring Administrative Harms Experienced by Hospitalists and Administrative Leaders

Themes

- AH is pervasive and comes from all levels of leadership with wide-reaching impact
- Organizations lack mechanisms to identify, measure and give feedback on AH
- Organizational pressures drive AH


Factors in administrative harm: financial, the need to act, time pressures
Work system
Administrative decision-makers[a]
Policy level payer, organizational leadership, group leadership, committees, other decision-making bodies
Decisions
Decisional distance (decision-makers upstream from decisional impact)
Work structure
Work processes
Resources (tools, technology, money)
Work requirements (trainings, skills)
+
−
Frontline workarounds to mitigate harm
Recipients of harms
Workforce and work environment
Patients
Organization
Feedback loop


Define and understand AH
Foster collaboration
Develop structures to support optimal decision making
Develop measurement and data strategies for AH
Develop reporting and learning systems

- Administrative harm is pervasive, widespread, challenging to define and measure
- Systems should be developed for organizations to critically evaluate their decision making

Room	Principal Problem	
512	Decompensated Cirrhosis	DOACs for AF in cirrhosis
514	Diverticulitis	Pip-Tazo = Cefe for AKI
515	Community Acquired Pneumonia	Steroids for severe CAP
517	Upper GI bleed	Watch for GLP1s
525	Nausea and vomiting	CHS ppx and abortive
531	Dysphagia	Thin > thick liquids
538	C diff colitis	Permissive BP after AKI
540	Toxic metabolic encephalopathy	AI is coming……
541	Atrial fibrillation	AH is happening – lets define it

University of Kentucky