

The image features two large, dark blue L-shaped brackets. One is positioned in the top-left corner, and the other is in the bottom-right corner, framing the central text.

TEACHING IMPROVEMENT
SCIENCE (TIS) CURRICULUM:
WEEK 4

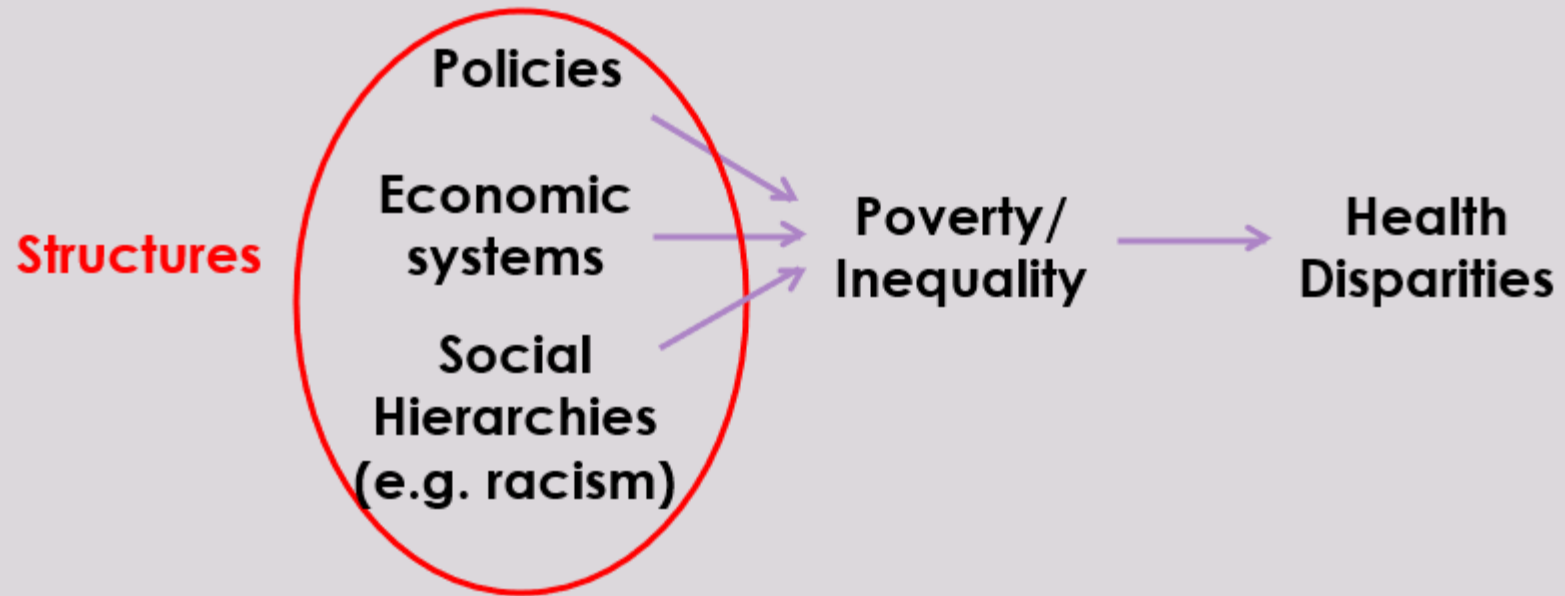


Today's Agenda

- **Week 3 recap**
- Intro to high value care
- Identifying waste
- Cases
- How do we stop ourselves?
- Wrap up + HSPs

Figure 1

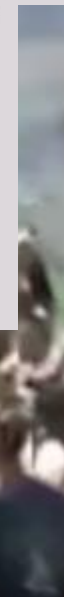
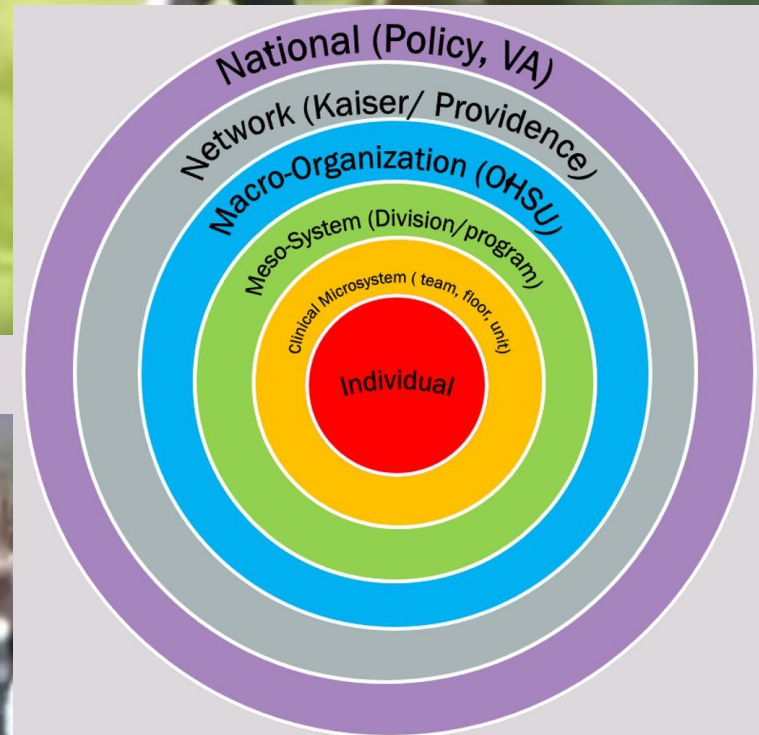
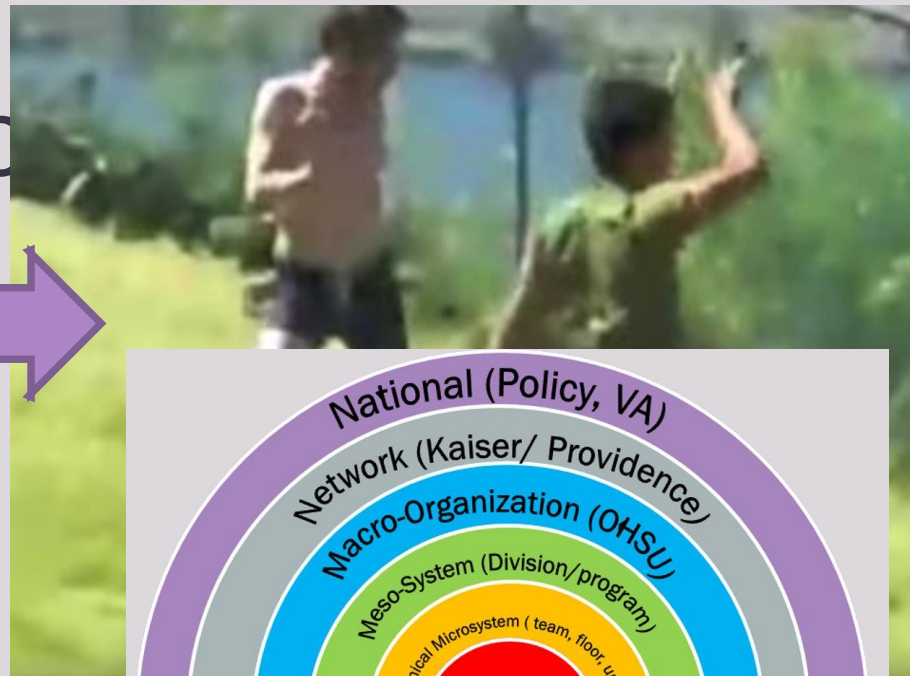
Social Determinants of Health



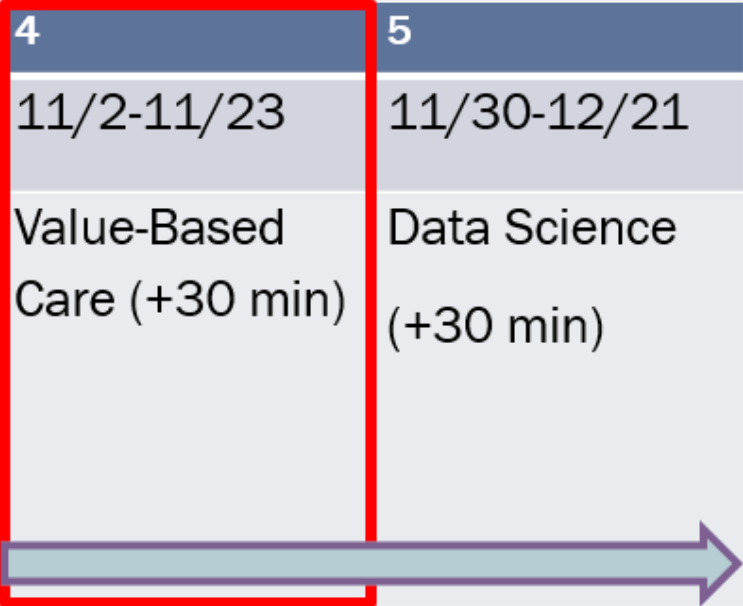
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Levels of Prevention


- In
- In
- Cl
- Co
- Re
- Po



Week	1	2	3	4	5
Dates	8/10- 8/31	9/7- 9/28	10/5- 10/26	11/2-11/23	11/30-12/21
Topic	Systems 1: Intro & Clinical Efficiency	Systems 2: Microsystems & Tools for Improvement	Systems 3: Macrosystems & SDoH	Value-Based Care (+30 min)	Data Science (+30 min)



Week	6	7	8	9	10	11
Dates	1/11-2/1	2/8-3/1	3/8-3/29	4/5-4/26	5/3-5/24	5/31-6/21
Topic	Diagnostic Errors (+60 min)	Systems Errors (RCA) (+60 min)	Teamwork Simulation (+60 min)	Error Disclosure & Second Victim (+60 min)	Narrative Medicine (+60 min)	Present HSPs!



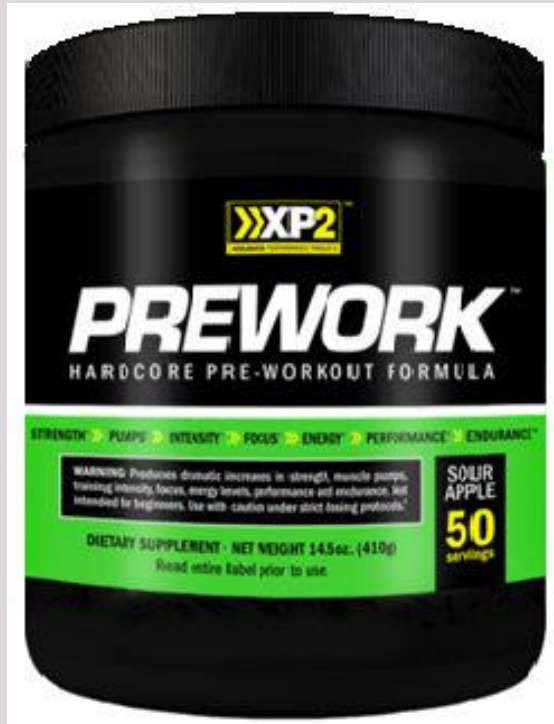
Health System Projects Will Be Completed Across Weeks 4-11



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Pre-work:



■ Assignment:

- *Listen to “This American Life” clip.*
- *Reflect on the patient experience of medical cost:*
 - How do you feel when you receive a medical bill?
 - Does this change how you feel about ordering tests?
 - Do you feel personally responsible for cost to patients?

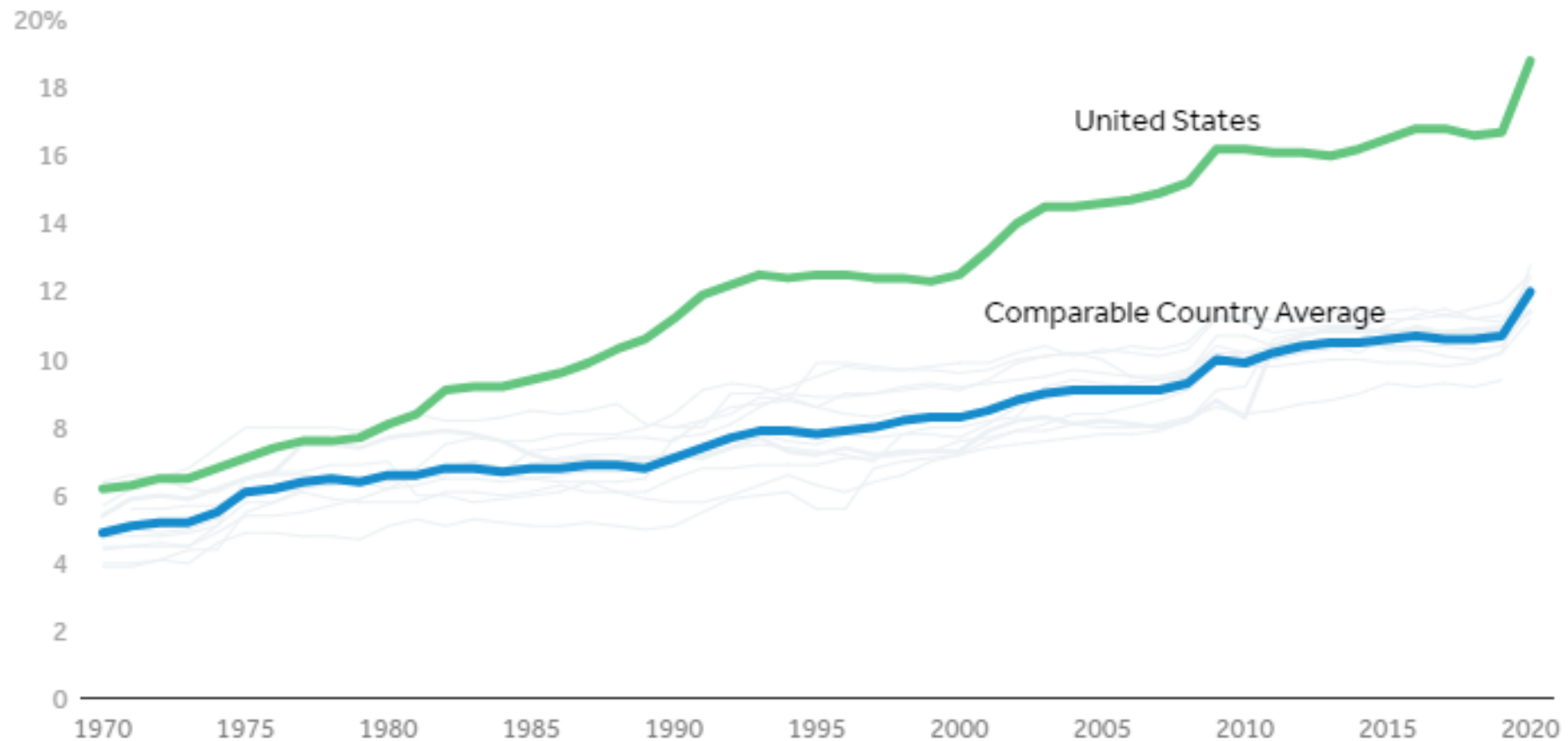
- Share:

- Does thinking about cost from the patient’s perspective change how you feel about ordering tests?
- What is our role as physicians in controlling cost?

Objectives

- Define and articulate the importance of high value care
- Understand where and how waste occurs
- Describe barriers to high value care in clinical practice
 - *Explore ways to overcome these barriers*
- Practice negotiating a care plan with patients that incorporates their values and addresses their concerns
- Locate resources to improve individual delivery of high value care

Health consumption expenditures as percent of GDP, 1970-2020



Notes: U.S. values obtained from National Health Expenditure data. Health consumption does not include investments in structures, equipment, or research. 2020 data not yet available for Australia, Belgium, Canada, Japan or Switzerland. Provisional 2020 data for Austria, Germany, Netherlands, Sweden and the United Kingdom. Provisional 2019 data for Canada. Data for Australia and Japan in 2019 and France in 2020 is estimated. France data before 1990 is not shown.

Source: [KFF analysis of OECD and National Health Expenditure \(NHE\) data](#) • [Get the data](#) • [PNG](#)

Peterson-KFF
Health System Tracker

- A. 1 million dollars
- B. 2.2 Trillion Dollars
- C. 3.6 Trillion Dollars
- D. 4.1 Trillion Dollars
- E. I have no clue, these numbers are bigger than my mind can imagine

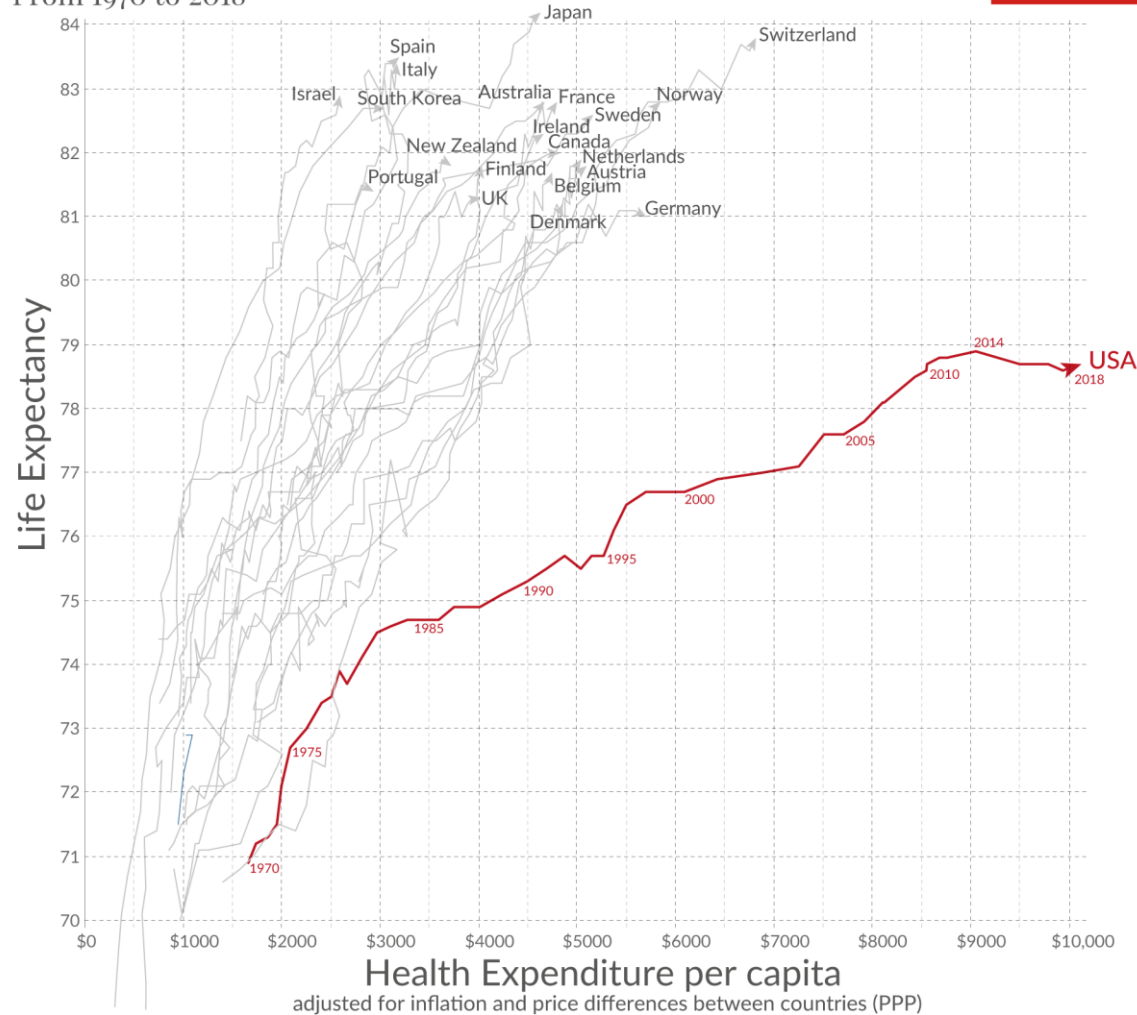


Q: How much did the US spend on healthcare in 2020?

Life expectancy vs. health expenditure

Our World
in Data

From 1970 to 2018

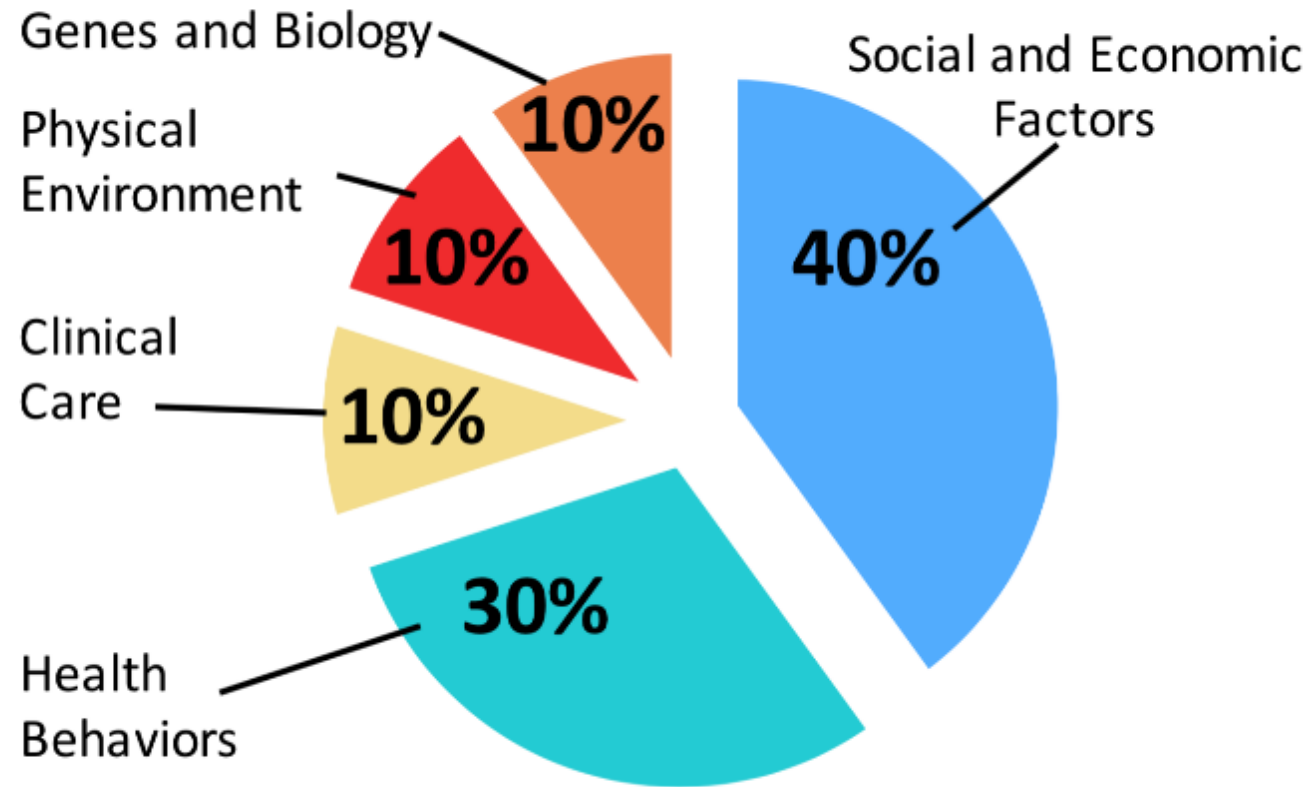


Data source: OECD — Note: Health spending measures the consumption of health care goods and services, including personal health care (curative care, rehabilitative care, long-term care, ancillary services, and medical goods) and collective services (prevention and public health services as well as health administration), but excluding spending on investments. Shown is total health expenditure (financed by public and private sources). Licensed under CC-BY by the author Max Roser.

[OurWorldinData.org](https://ourworldindata.org) – Research and data to make progress against the world's largest problems.

Why is this important?

Determinants of Health



Determinants of Health Model based on frameworks developed by: Tarlov AR. *Ann N Y Acad Sci* 1999; 896: 281-93; and Kindig D, Asada Y, Booske B. *JAMA* 2008; 299(17): 2081-2083.

Why is this important?

Part of HEALTH INSURANCE BASICS ▾

Why Do Healthcare Costs Keep Rising?

By [JIM PROBASCO](#) Updated March 04, 2022

BILL OF THE MONTH

Hit with \$7,146 for two hospital bills, a family sought health care in Mexico

April 27, 2022 · 5:00 AM ET
Heard on [Morning Edition](#)

PAULA ANDALO

©CBS NEWS

More than 1 million Americans ration their insulin as the drug's cost skyrockets

Audio Live TV

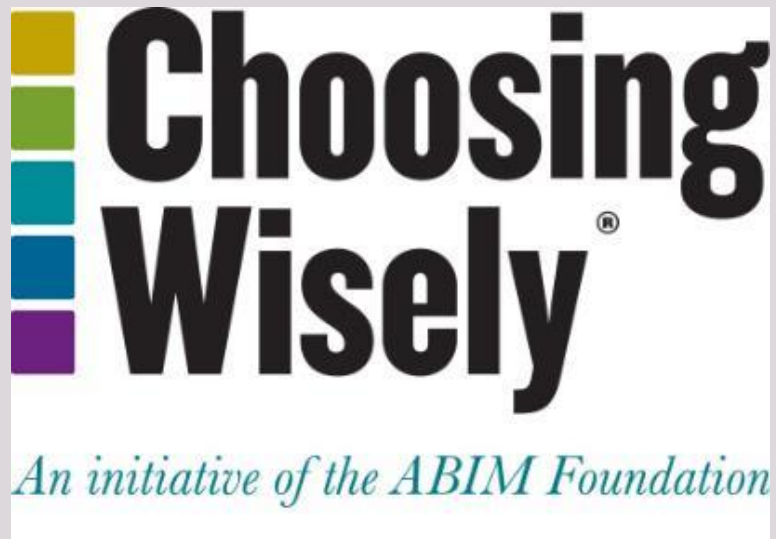
☰ **CNN** health Life, But Better Fitness Food Sleep More

Costs top Americans' health care concerns, new poll finds

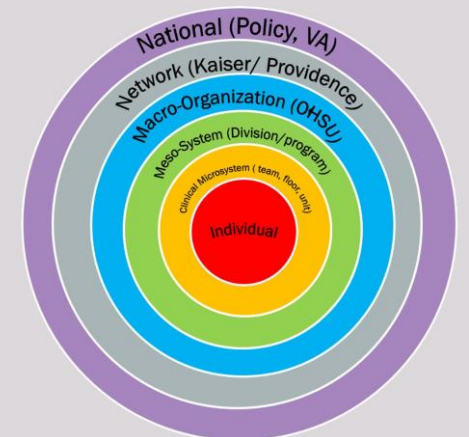
By [Ariel Edwards-Levy](#), CNN
🕒 Updated 5:01 AM ET, Thu March 31, 2022

Medicine's Ethical Responsibility for Health Care Reform — The Top Five List

Howard Brody, M.D., Ph.D.



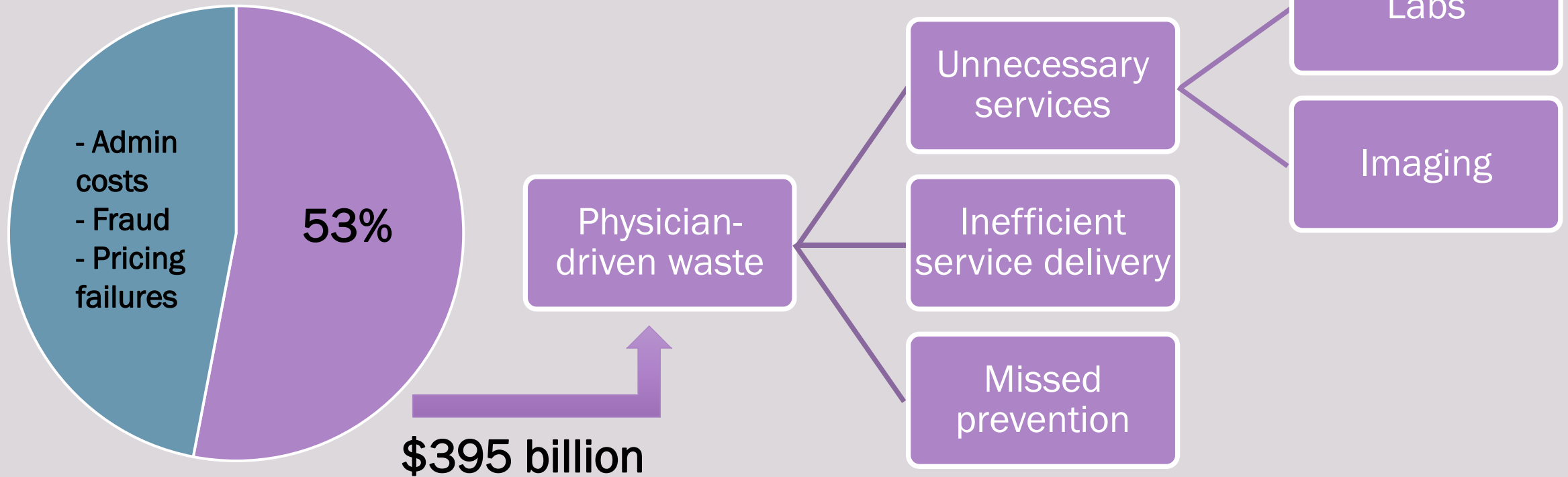
- Initiative started in 2012 to support clinicians and patients in care that is:
 - *Supported by evidence*
 - *Not duplicative of other tests*
 - *Free from harm*
 - *Truly necessary*



Importance

Sources of Excess Healthcare Costs

WASTE



High Value Care

$$\text{Value} = \frac{\text{Quality (Outcomes + Experience)}}{\text{Cost}}$$

Yeah, but that's not my job.

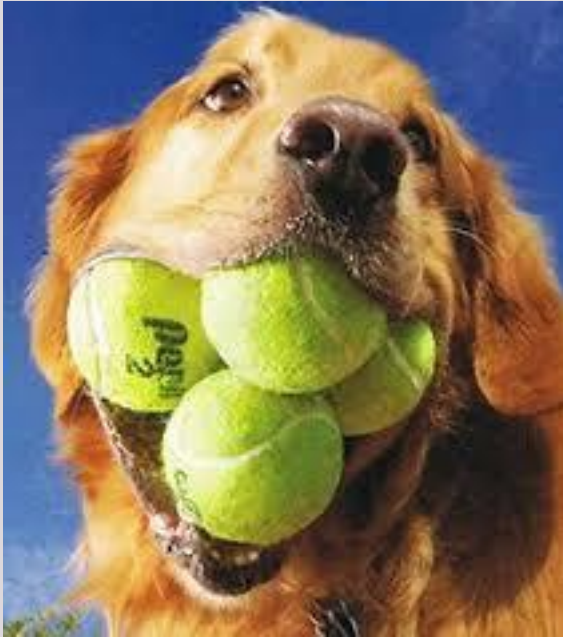


“I’m going to do what is best for my patient.”

Smarter
Healthcare

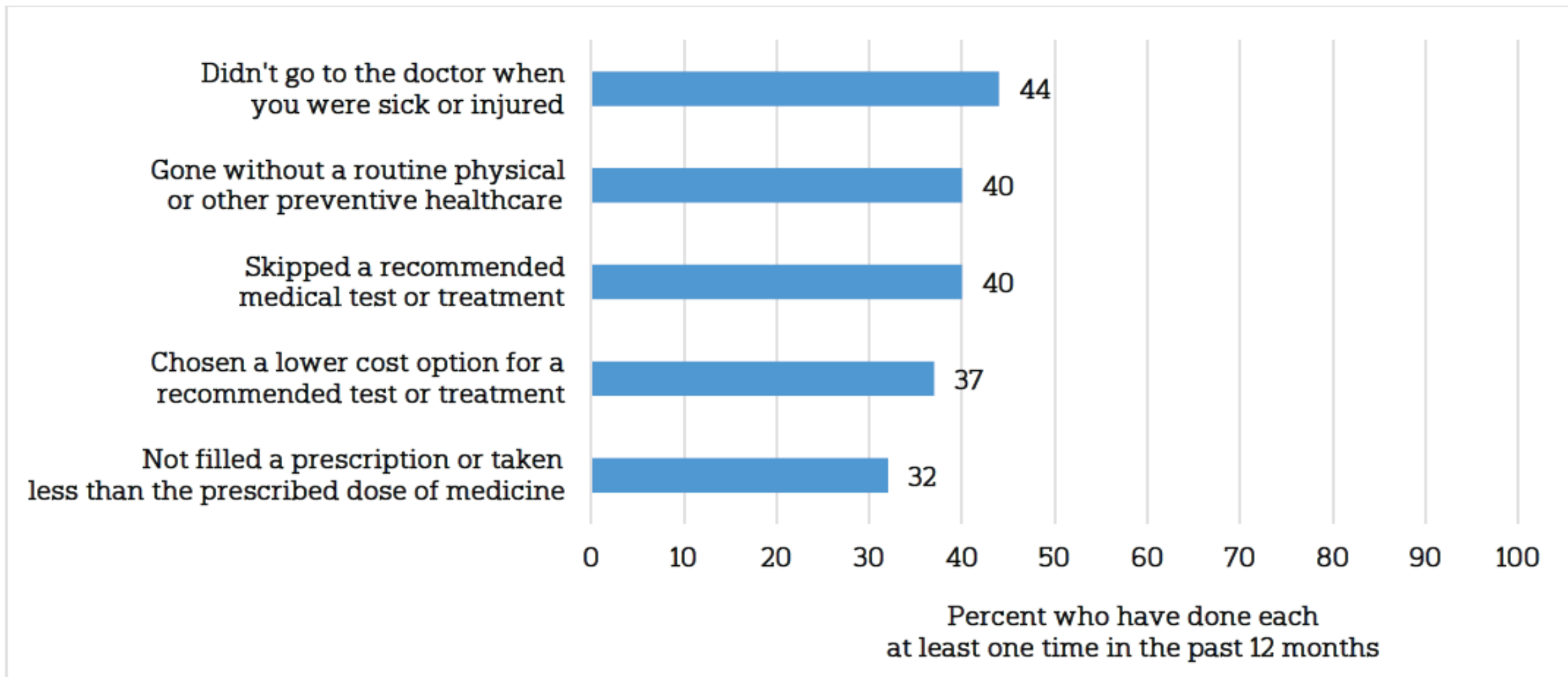


The harm of too much...



- Consequences of unneeded:
 - Procedures
 - Testing
 - Diagnostics
 - Incidentalomas
- The cost to our patients

Many Americans report they have made healthcare decisions based on cost in the past 12 months.



Question: Thinking more about the costs of healthcare, in the past 12 months, how often have you done any of the following because of cost?

Source: West Health Institute/NORC poll conducted February 15-19, 2018, with 1,302 adults nationwide



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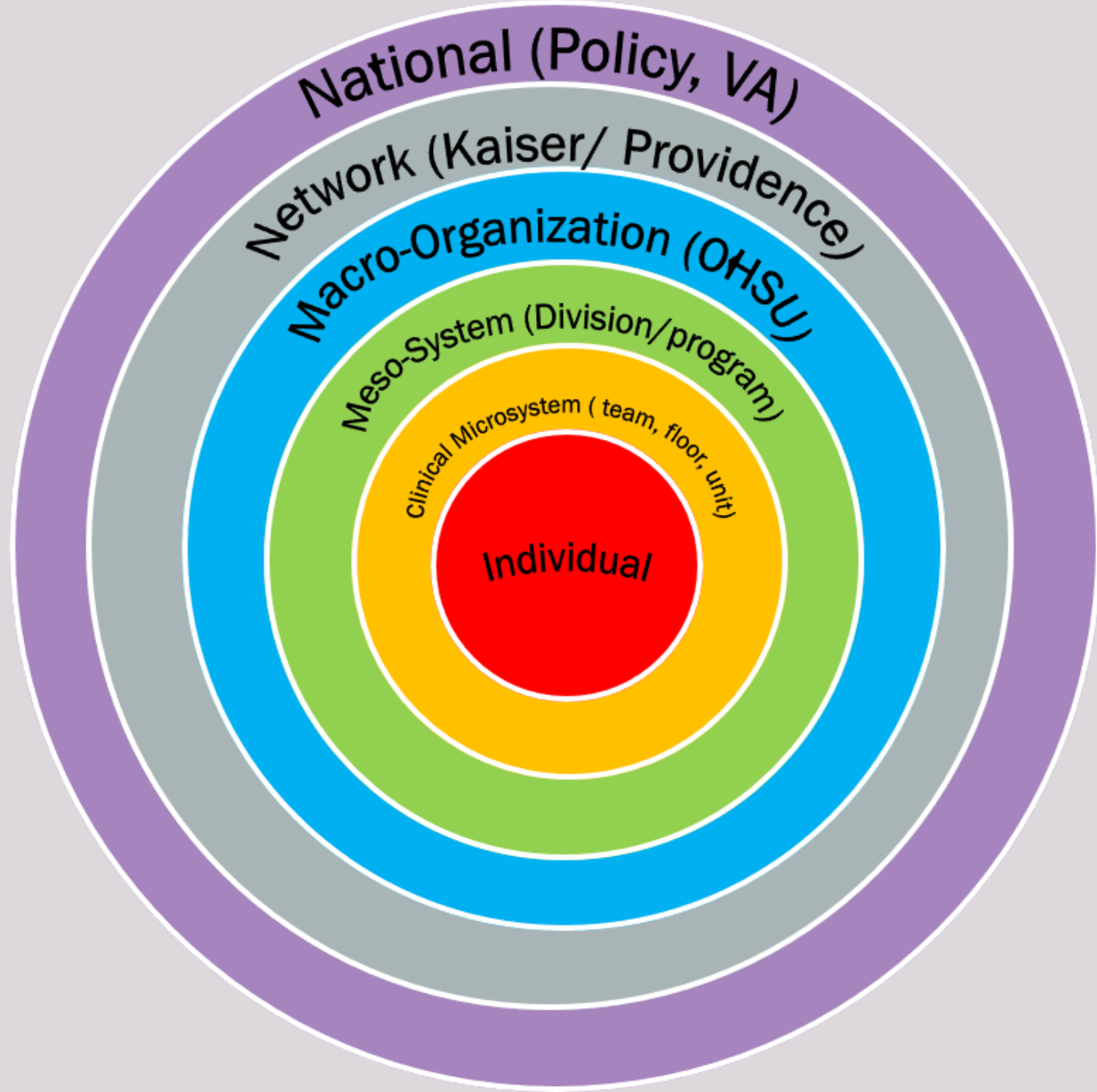
HOW DO WE CURB COST AND GIVE GREAT PATIENT CARE?



1. Understand where and how waste occurs



2. Locate resources



National (Policy, VA)

Network (Kaiser/ Providence)

Macro-Organization (OHSU)

Meso-System (Division/program)

Clinical Microsystem (team, floor, unit)

Individual

Low-Cost, High-Volume Health Services Contribute The Most To Unnecessary Health Spending

[John N. Mafi](#), [Kyle Russell](#), [Beth A. Bortz](#), [Marcos Dachary](#), [William A. Hazel](#), and [A. Mark Fendrick](#)

**\$586 Million
dollars/year in
waste in the
state of Virginia**

- Labs for low-risk surgery patients
- Cardiac stress test/imaging for low risk/asymptomatic patients
- Annual EKG for low risk/asymptomatic patients
- Routine CTH scans for ED visits complaining of dizziness
- EKG/CXR/PFT in low-risk surgery patients
- Population screening for vitamin D deficiency
- PSA screening for all men regardless of age
- Routine imaging for uncomplicated rhinosinusitis
- Routine annual cervical cancer screening in women ages 21-65
- Imaging for low back pain within first 6 weeks without red flag symptoms



8 Billion

osts



35 Billion



13.7 Billion

87,000,000,000



43 Billion



61.7 Billion



3.5 Billion

National Average Charge of Common Labs:

Test	National Average Charge
CBC	\$51
CMP	\$179
Vitamin D	\$108-\$350
TSH	\$108
Hemoglobin A1c	\$61
Lipid Panel	\$68

Estimated 30% of testing is waste

Lab Test Description

Cbc	CBC \$6.65
Cbc	Highest urgency allowed: STAT
Cbc Clozapine Panel	Unique collection sample: BLOOD LAVENDER
Cbc With Auto Diff	Lab collect sample: BLOOD LAVENDER
Cbc&dif	Collection sample: BLOOD LAVENDER
Cbc_pnl	Form name/number: HEM
Cbg Glucose	Minimum volume (in mls): 2
Cbili	Tests included in panel:
Cc-wtnk	WBC
Ccaat/Enhancer Binding Protein	RBC
Ccp	HGB
Ccp-Igg	HCT
Cd19	MCV
Cd3	MCH
Cd3 T-Cell Monitoring	MCHC
Cd33	RDW-CV
Cd34	PLT
Cd4 Helper T-Lymph	MPV
Cd4 Ratio	RDW-SD
Cd4/8bf	IPF%
Cd4/Cd8	IPF#
Cd4/Cd8, Body Fluid	NRBC%
Cd4tlym	NRBC#
Cd8	

Close

Patient Estimates

Drug	Cost at OHSU	Similar but not quite the same...
Argatroban	\$4,000	Heparin \$40
IV allopurinol	\$12,000	PO Allopurinol \$12
U500 insulin	\$4,800	Regular insulin \$80
Hydrocortisone 1% with perineal applicator	\$3,968	1% cream \$14
Zosyn extended infusion 4.5g	\$2,655	Zosyn 3.375mg \$52
Ursodiol 60mg oral suspension	\$2,541	Tablet \$28
Daptomycin	\$1,479	Vancomycin \$84
Acyclovir oral suspension	\$1,186	Tablet is 12 dollars

Lab Over-Utilization

Teaching hospitals account for 20% of patient volume but 50% of charges for redundant tests.

Estimated 42% of laboratory testing is wasteful at teaching hospitals.

Potential Barriers to High Value Care

System Level	Individual Provider Level
Lack of guidelines (sometimes from lack of evidence)	Poor familiarity with guidelines
Time pressure (emphasis on shorter visits/LOS, productivity)	Lack of time to explain to patients, patient expectations
Lack of centrally available information on prior tests	Discomfort with diagnostic uncertainty
Local culture	Lack of appreciation of harms, lack of knowledge of costs
Defensive medicine	

Residents' Self-Report on Why They Order Perceived Unnecessary Inpatient Laboratory Tests

Mina S. Sedrak, MD, MS^{1*}, Mitesh S. Patel, MD, MBA, MS^{2,3,4,5}, Justin B. Ziemba, MD⁶, Dana Murray, MSN, CRNP⁷,
Esther J. Kim, BS³, C. Jessica Dine, MD, MSHPR^{2,3,4}, Jennifer S. Myers, MD^{2,3}

Contributors to over testing:

- Habit/routine (90%)
- Lack of understanding of associated costs (86%)
- Diagnostic uncertainty (82%)
- Fear of not having lab result for your attending (75%)





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Case: Diagnostic Dogma

CC: Loss of Consciousness

67 YO M presents to the ED
after an episode of LOC...

- Occurred about 1 min after defecation.
- Cold/clammy sensation, tunnel vision prior to episode.
- Thinks he was down 30 seconds.
Reports eating big dinner prior.
- No preceding chest pain, palpitations.
No confusion following.
- Drinks about 3-4 glasses of water per day.

Case: Diagnostic Dogma

PMHx:

- Hypertension → On metoprolol, HCTZ, amlodipine
- DM2 → On metformin, HgbA1c 7%

Social Hx:

- Lives at home w/ partner
- 5 standard drinks per week
- No tobacco
- No recreational drug use

Case: Diagnostic Dogma

Exam:

- VS: AF / HR 72 / BP 134/71 / SpO2 98% on RA
- Physical Exam: No murmurs, rubs, gallops. No carotid bruits. No LE edema. Neuro exam normal.

Work up:

- Labs: hsTrop 19, CBC + BMP WNL
- CXR: No acute process
- ECG: NSR, No Q waves, No ST segment changes, QTc 450. Unchanged from prior.

Case: Diagnostic Dogma

Diagnosis and etiology?

- Working diagnosis
 - *Syncope*
- Etiologies
 - *Neurocardiogenic*
 - *Orthostatic*
 - *Cardiogenic*

Further workup?



CHOOSING WISELY[®]: THINGS WE DO FOR NO REASON

**Things We Do For No Reason:
Echocardiogram in Unselected Patients with Syncope**

Charles L. Madeira, MD¹, Michael J. Craig, MD², Andrew Donohoe, MD², John R. Stephens, MD^{2*}

¹New York University School of Medicine, Division of General Internal Medicine, Veterans Affairs NY Harbor Healthcare System, Manhattan Campus, New York, New York; ²University of North Carolina School of Medicine, Department of Internal Medicine, Division of Hospital Medicine, Chapel Hill, North Carolina.

Things We Do For No Reason

- Only 25-40% of patients with syncope will have a cause identified
- Across studies, those with a normal cardiac history, exam, and ECG → Yield of TTE of showing significant abnormalities was:
 - 0% across 3 studies (340 patients)
 - 2% across 2 studies (535 patients)
 - 4.2% across 1 study (192 patients)
- Routine echocardiograms cost \$60,000 to \$132,000 in spending to find 1 new significant abnormality
- Of note, unclear if TTE findings caused syncope

TTE IN SYNCOPES



~0% YIELD

New structural hx disease in unselected pts is rare!

Basic Work-up (ACC 2017):

- H&P, EKG, Orthostatic VS

Avoid if no CHF, no CAD, normal

EKG, no elevated biomarkers

(ROME0 Criteria)

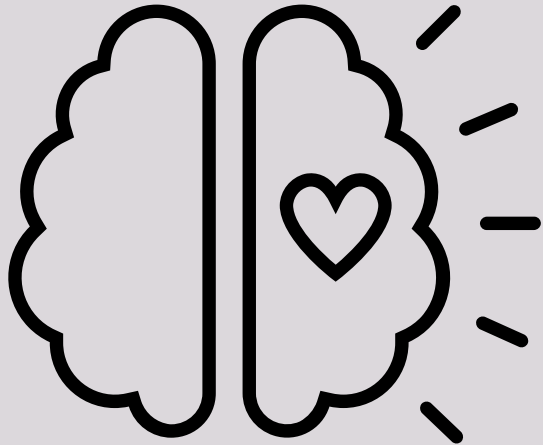
What we should do:

- Thorough history and physical exam
- Orthostatic vital signs, ECG
- Routine labs (CBC, delta troponin)
- Use of risk scores:
 - Canadian Syncope Score
 - EGSYS Score
 - San Francisco Syncope Rule

Consider TTE when:

- A history of cardiac disease
- Examination suggestive of structural heart disease or congestive heart failure
- Abnormal ECG





Case continued...

- Prior to discharge:
 - Family member expresses concern about syncope
 - Requests MRI brain to make sure “everything is looking normal”

Barrier: Patient Expectations

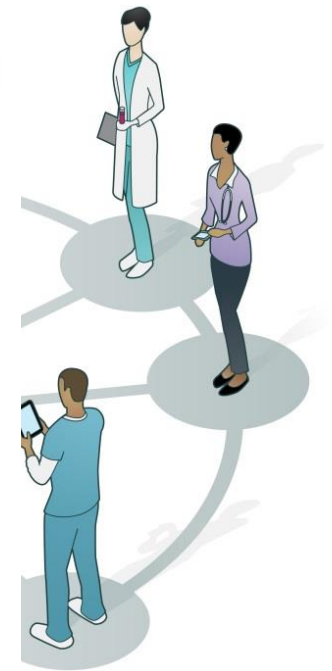
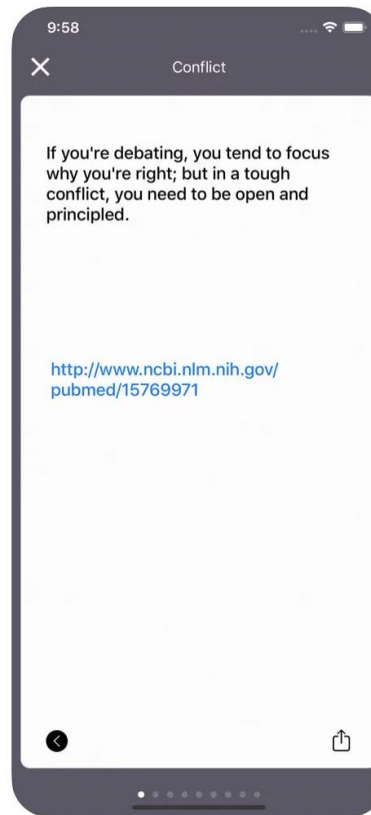
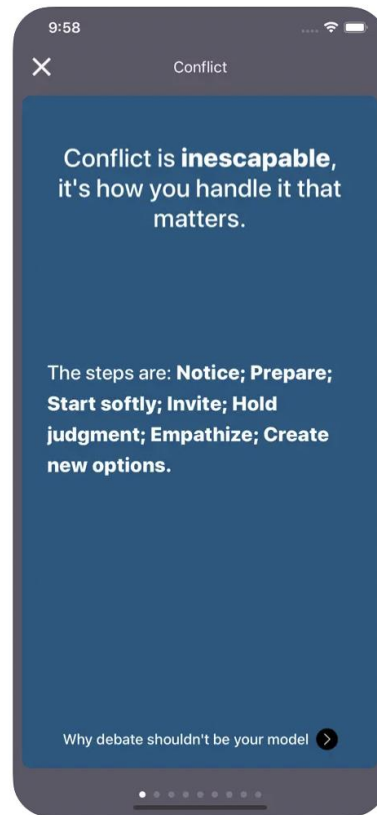
- How do you approach these

issues

- Is there

you can

iPhone Screenshots



Barrier: Patient Expectations



Patients often think that more testing is better



Physicians have legitimate concerns about patient satisfaction



Patients want a clear diagnosis, shared decision-making, acknowledgment that their symptoms are real and concerns are valid, and reassurance



Effective communication contributes more to patient satisfaction than the specific management plan

Case: Stuffy Sinuses

CC: “I need antibiotics”

- A 35-year-old man presents to clinic, asking for antibiotics
- Reports sinus congestion and headache for 3 days
- States he has always received antibiotics for sinus infections in the past
- Denies fevers, chills or worsening pain
- Exam: AF/ HR 67 / BP 120/80 / SpO2 100% on RA. HEENT WNL. Dentition good. Neurologic exam WNL.

**Choosing
Wisely**[®]

An initiative of the ABIM Foundation

 American College of
Emergency Physicians[®]
ADVANCING EMERGENCY CARE 

Barrier: Patient Expectations

The Conflict:

- Patient had multiple past experiences where he has received antibiotics for the same complaint
- You know, however, that avoidance of antibiotics for acute sinusitis is a Choosing Wisely initiative from multiple professional societies

 AAFP

 AAAAI
American Academy of
Allergy Asthma
& Immunology

Barrier: Patient Expectations

- How would you resolve the conflict between what the patient wants and what you feel is medically indicated?
 - *What language would you use?*
- How much should we accommodate patient wishes for treatments?
- What contextual factors could impact patient expectations?
 - *Example → Clinic versus ED?*
- Is this request any different than the Brain MRI for syncope? If so, how?



Communication Tips

**How to Prescribe Fewer
Unnecessary Antibiotics: Talking
Points That Work with Patients
and Their Families**

KATHERINE E. FLEMING-DUTRA, MD
*Centers for Disease Control and Prevention,
Atlanta, Georgia*

Use 'bad cold' or 'nasty virus' combinations:

- “This is a nasty cold, so antibiotics won’t make you better faster.”
- “The Strep test is negative, meaning your sore throat is caused by a bad virus, and antibiotics won’t help.”

Avoid using "bronchitis," and instead use "chest cold":

- Patients are less likely to expect antibiotics for “chest colds” than for “bronchitis”

Pairing explanation of why Abx are not needed *with* treatment recommendations:

- "This is a nasty cold, so antibiotics won't make you better faster. **Taking ibuprofen and drinking plenty of fluids will help you feel better.**"
- *"I'm not seeing any pus or signs of a bacterial infection, so antibiotics won't make you feel better faster. I want to **prescribe you other medication to get you feeling better.**"*

Develop a contingency plan:

- "If you are still sick in a week or develop a fever, come back and see me."
- **Delayed Abx Rx have been shown to decrease use!**

Validation:

- **“Viral infections are hard and can be as painful as bacterial infections.** I would like to provide you with treatment recommendations that can help you feel better while your body’s immune system fights the virus.”
- **“We used to think that antibiotics were necessary for your symptoms,** however, we found that people would have gotten better without them, and they can cause harm and side effects.”

Aligning:

- **“We have the same goal of getting you to feel better,** and antibiotics aren’t going to get us there. Thank you for partnership with me. We’ll come up with a plan.”

Acknowledge guidelines with education:

- “There's a '10-day rule' for sinusitis—more than 90% of infections are viral before 10 days.”

Sharing a story of possible harm:

- C diff after antibiotic use, for example

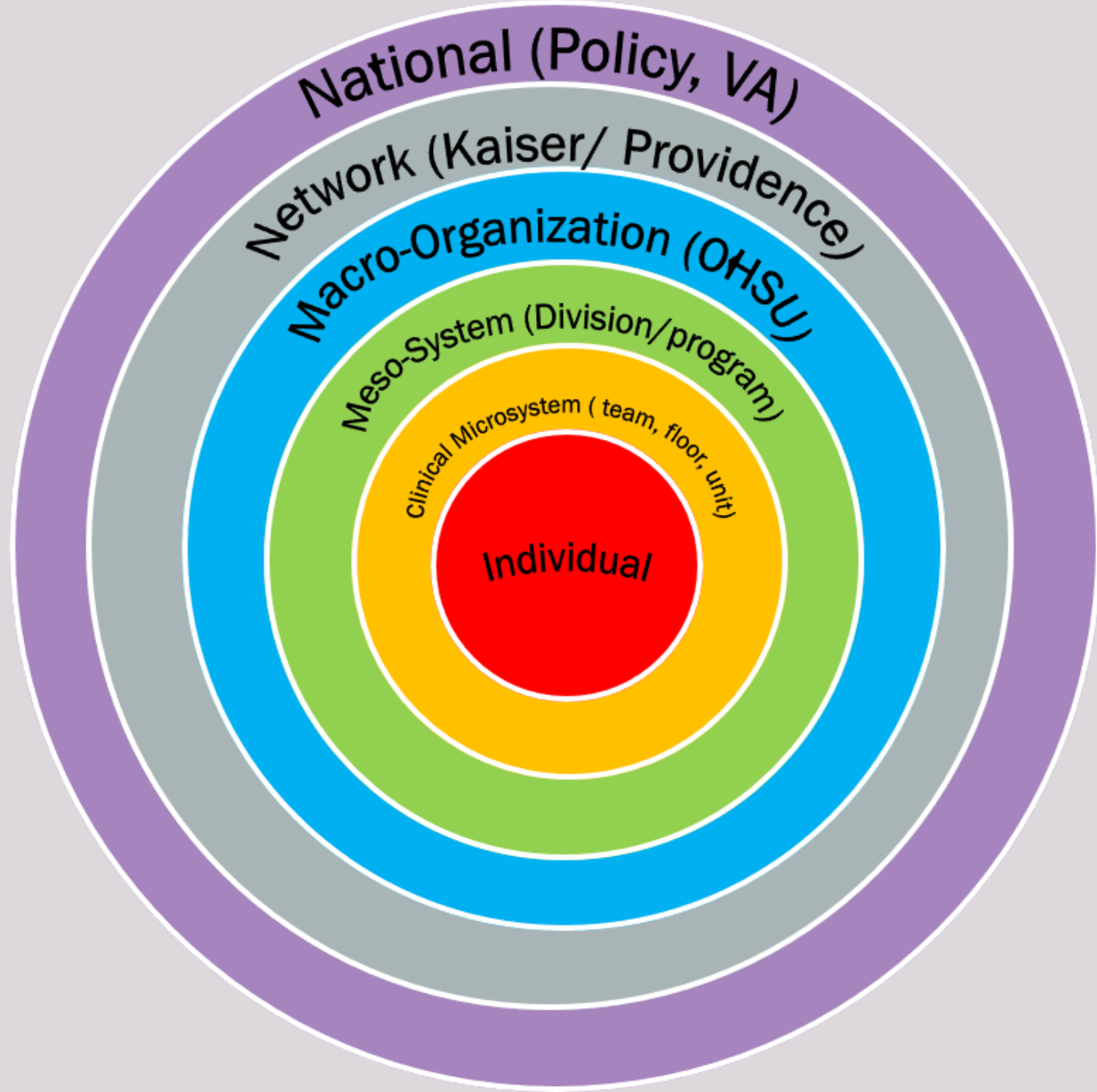
Prescribing non-antibiotics to acknowledge patient expectation:

- Flonase, Tessalon Perles, etc..



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RESOURCES TO AVOID LOW VALUE CARE



Choosing Wisely: Internal Medicine

1. Don't recommend daily home finger glucose testing in patients with type 2 DM not using insulin.
2. For asymptomatic adults without chronic medical conditions don't routinely perform annual general health checks that include a comprehensive physical with lab testing.
3. Don't perform routine pre-operative testing before low-risk surgical procedures.
4. Don't recommend cancer screening in adults with life expectancy of less than 10 years.
5. Don't place or leave PICCs for patient or provider convenience.

Choosing Wisely: Things We Do For No Reason

- Routine anaerobe coverage with aspiration pneumonia
- Use of antipsychotics in delirious patients
- HIT testing in low probability patients
- Prealbumin testing to diagnose malnutrition in hospitalized patients
- Prescribing docusate for constipation

RESOURCES TO REINFORCE HIGH VALUE CARE



Locate Resources

- ACP Guidelines
 - *Disease specific information*
- USPSTF
 - Preventative care, population health
 - *App is great*
- Podcasts

✓ Acute Pain from Musculoskeletal Injuries

✓ Appropriate Antibiotic Use

✓ Breast Cancer Screening

✓ Colorectal Cancer Screening

✓ Coronavirus Disease 2019 (COVID-19)

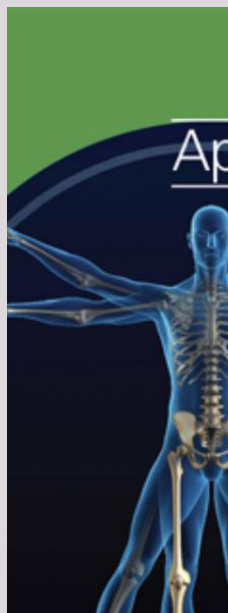
✓ Delivery of High Value Care

✓ Diabetes

✓ Diverticulitis

✓ Hematuria

Clinical



Ratio

American College of Radiology ACR Appropriateness Criteria® Chronic Dyspnea-Noncardiovascular Origin

Variant 1: Chronic dyspnea. Unclear etiology. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography chest	Usually Appropriate	☼
CT chest without IV contrast	May Be Appropriate (Disagreement)	☼☼☼
CT chest with IV contrast	May Be Appropriate	☼☼☼
CT chest without and with IV contrast	Usually Not Appropriate	☼☼☼
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☼☼☼☼
MRI chest without and with IV contrast	Usually Not Appropriate	○
MRI chest without IV contrast	Usually Not Appropriate	○
US chest	Usually Not Appropriate	○

Variant 2: Chronic dyspnea. Suspected chronic obstructive pulmonary disease (COPD). Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography chest	Usually Appropriate	☼
CT chest without IV contrast	May Be Appropriate	☼☼☼
CT chest with IV contrast	May Be Appropriate	☼☼☼
MRI chest without and with IV contrast	Usually Not Appropriate	○
MRI chest without IV contrast	Usually Not Appropriate	○
US chest	Usually Not Appropriate	○
CT chest without and with IV contrast	Usually Not Appropriate	☼☼☼
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☼☼☼☼

Variant 3: Chronic dyspnea. Suspected central airways disease. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography chest	Usually Appropriate	☼
CT chest without IV contrast	Usually Appropriate	☼☼☼

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ng by
clinical

QI Projects

- Efforts to reduce low-value pre-operative care for cataract surgery
 - *Reduced unnecessary services*
 - Yellow line on graphs →
 - *Projected 3-year savings of \$210,000*

Evaluation of an Intervention to Reduce Low-Value Preoperative Care for Patients Undergoing Cataract Surgery at a Safety-Net Health System

John N. Mafi, MD, MPH; Patricia Godoy-Travieso, MSN, MHA, RN; Eric Wei, MD; Malvin Anders, MD; Rodolfo Amaya, MD; Carmen A. Carrillo, MA, MHS; Jesse L. Berry, MD; Laura Sarff, MSN, RN, MBA; Lauren Daskivich, MD, MSHS; Sitaram Vangala, ms; Joseph Ladapo, MD, PhD; Emmett Keeler, PhD; Cheryl L. Damberg, PhD; Catherine Sarkisian, MD, MSPH

Figure 2. Unadjusted Percentage of Patients Receiving Preoperative Care



BECOMING A PHYSICIAN

Tolerating Uncertainty — The Next Medical Revolution?

Arabella L. Simpkin, B.M., B.Ch., M.M.Sc, and Richard M. Schwartzstein, M.D.

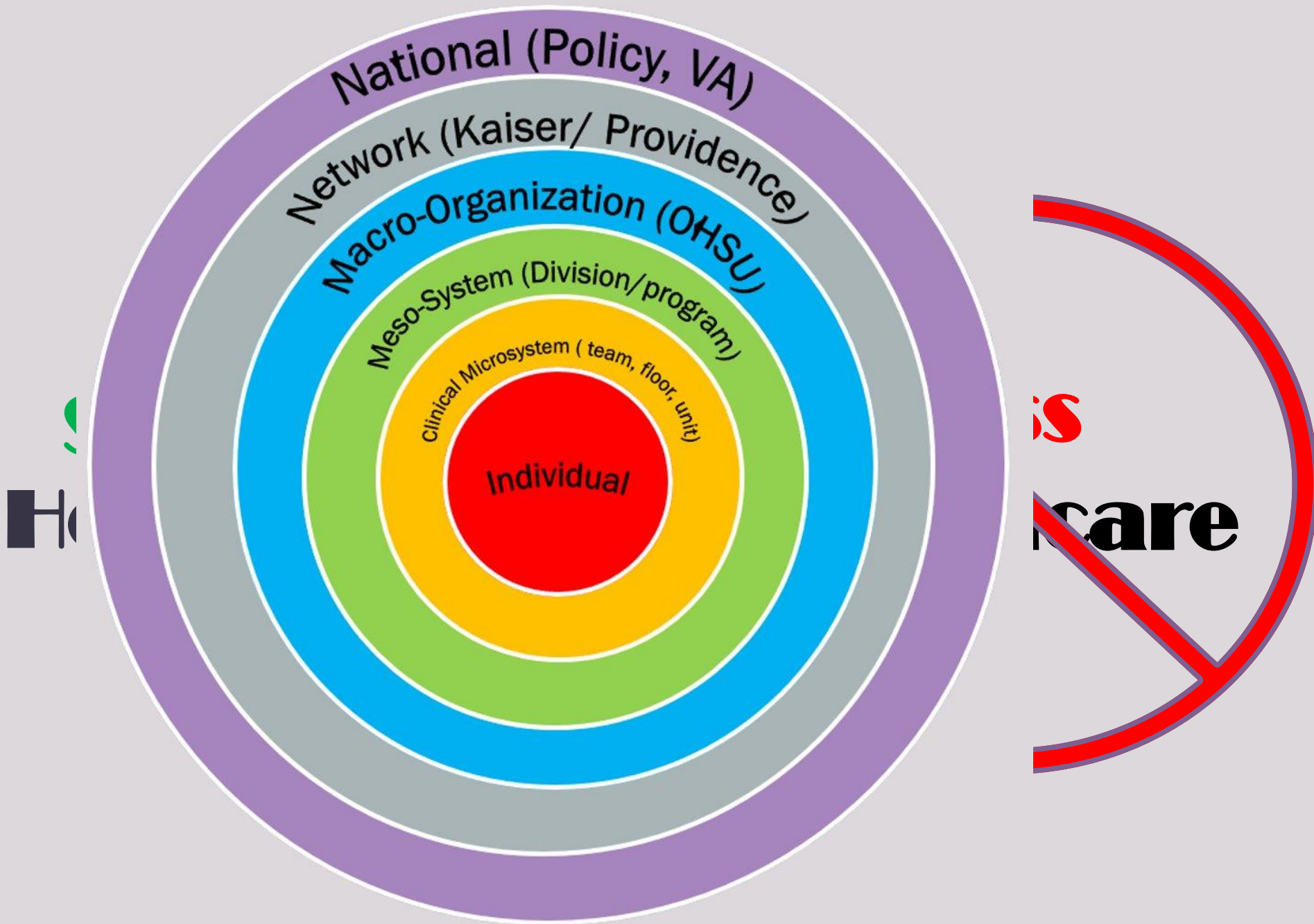
“We believe a shift toward the acknowledgement and acceptance of uncertainty is essential – for us as physicians, for our patients, and for our health care system as a whole...

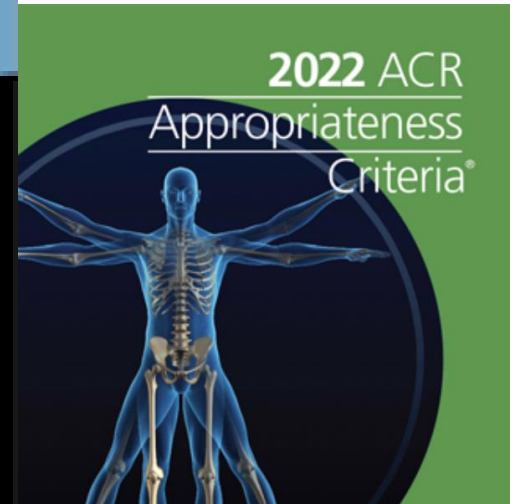
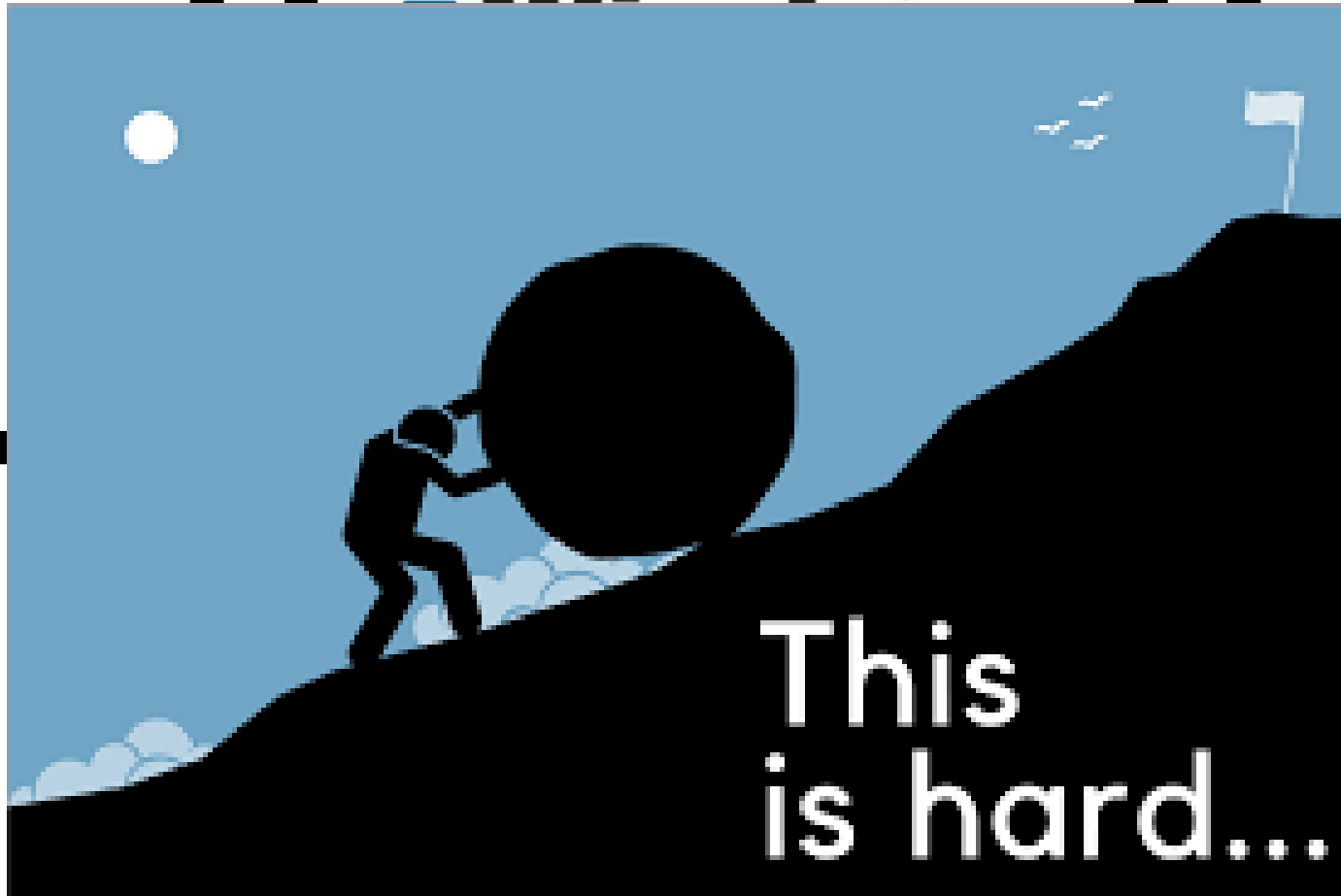
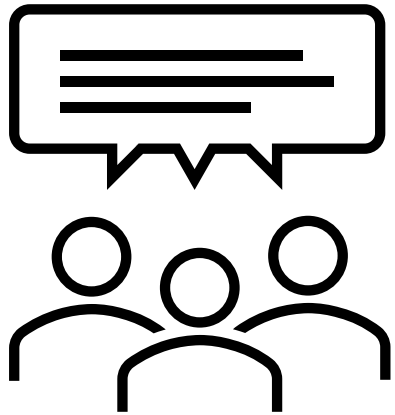
Physicians’ difficulty in accepting uncertainty [is] associated with detrimental effects on patients, including excessive ordering of tests that carry risks of false positives or iatrogenic injury.”



Today's Agenda

- Recap week 3
- Intro to high value care
- Identifying waste
- Cases
- Locating Resources
- **Wrap up + HSPs**





TIS Wrap-Up



HEALTH SYSTEMS PROJECT (HSP)



HSP: What is it?

- This is a chance to demonstrate your Health Systems Science abilities.
- 6 months to investigate a health system issue you have identified in groups of 2-3.
- Use your Improvement Science skills.
- Present your proposal June 2023.

Project Domains

Patient safety

Policy/advocacy

Systems problem

Quality improvement

Social & Structural Determinants of Health

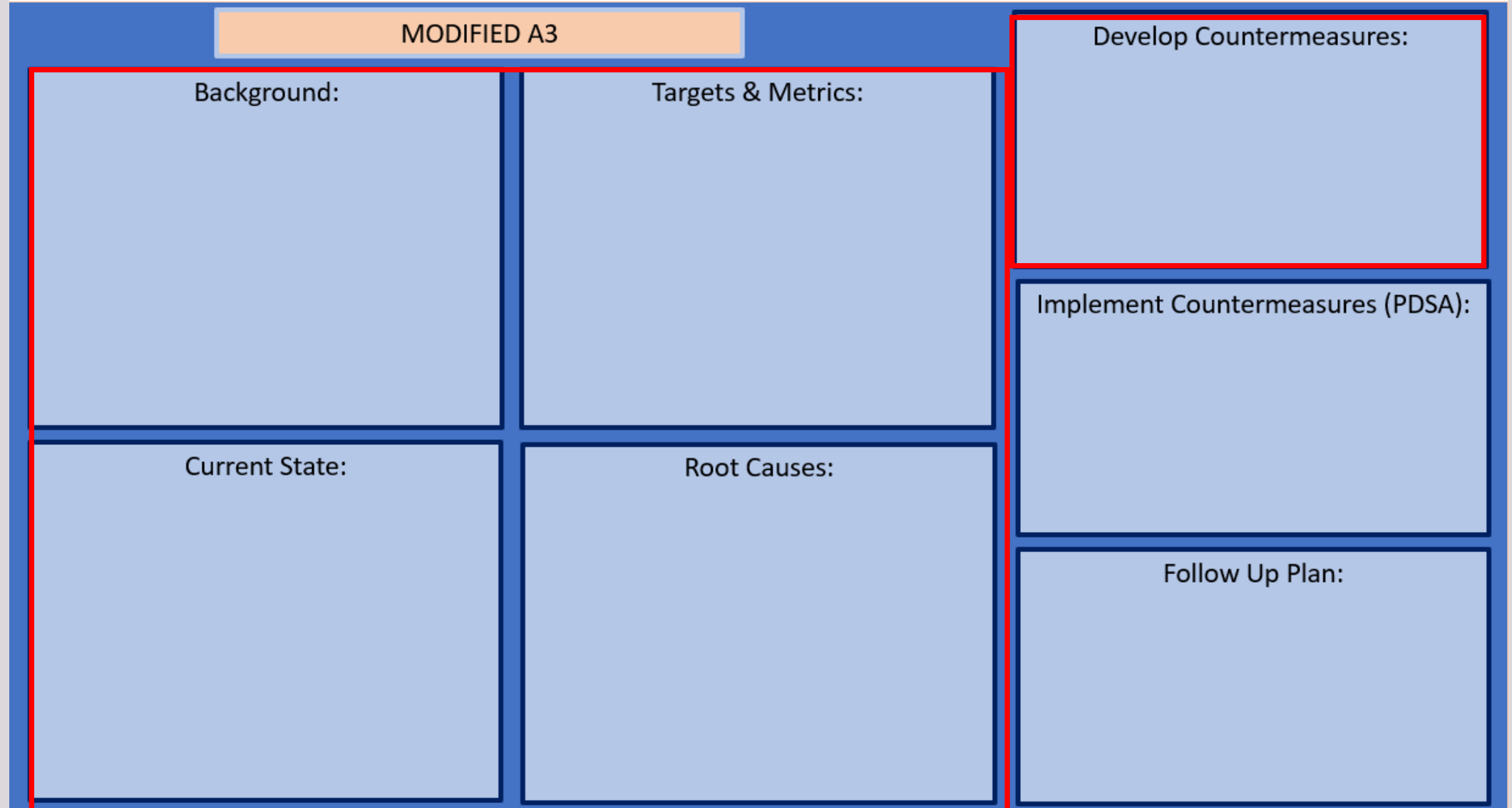
Informatics or EMR design

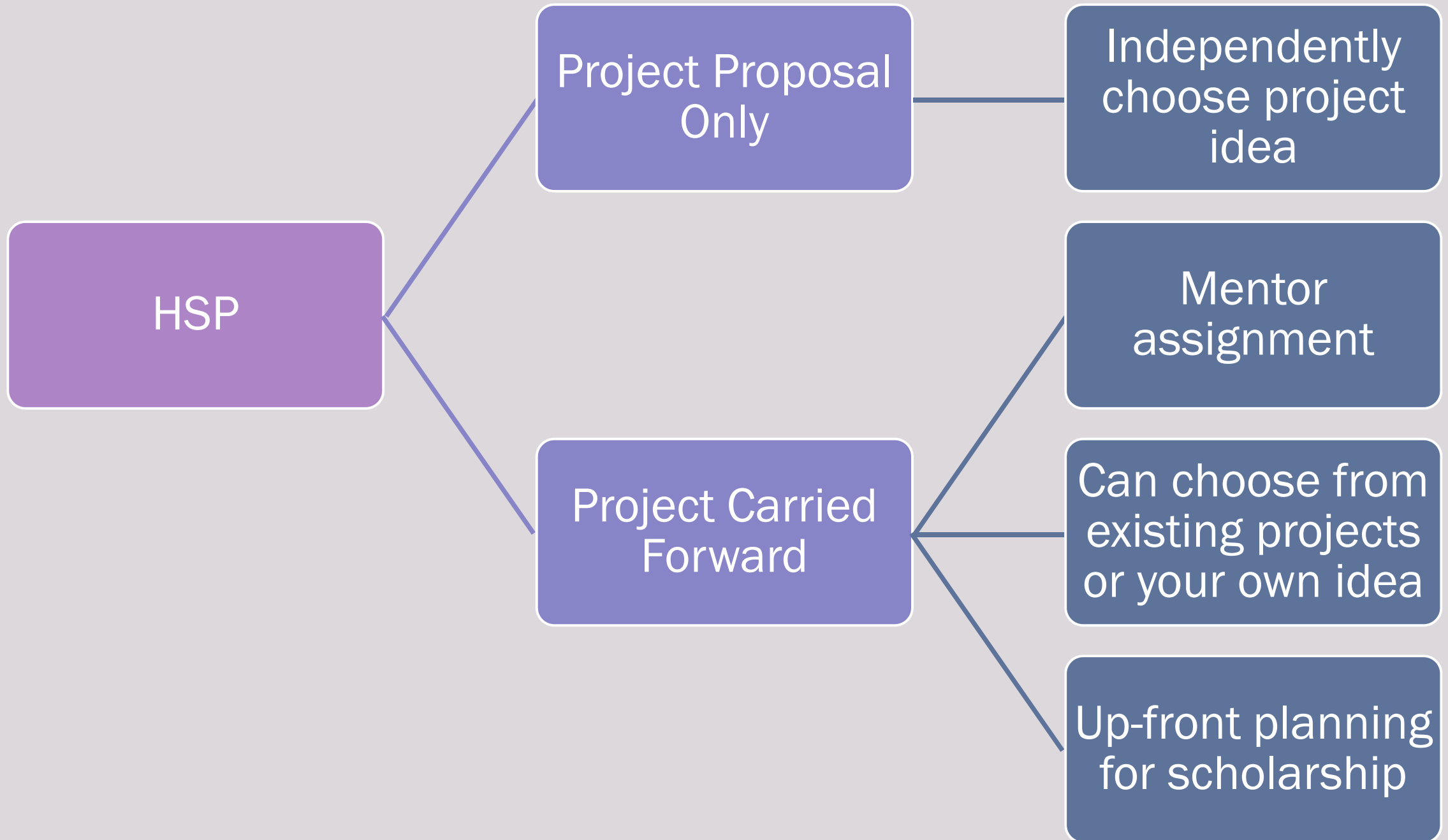
Value or waste in healthcare

Teamwork/Leadership

Ethics

Structuring the HSP





Selecting A Project

- **Existing projects:** You can choose between existing projects (we will provide you with a list), or you can use your own idea.
- **Passion:** Care about the problem – an error you witnessed, a policy you care about, or a systems issue that bothers you.
- **Bite-sized:** Projects should be small enough to be completed with limited time (about 6 months).
- **Feasible interventions:** Actions that can be carried out by your team to fix the issue.
- **Mentorship:** You will be either assigned a mentor, or, if you have a mentor in mind, you can self-select a mentor.
- **Scholarship:** If you plan on doing this for scholarship purposes let us know early so your project can be appropriately designed/supported for this.
- **Future careers goals:** Consider selecting a project in a domain you plan to practice. For instance, if you are fellowship bound for Cardiology consider a project around a topic that will build your application (i.e. daily weights, diuretic dosing errors etc.).



AY 21-22 EXAMPLES



Brainstorming Activity

- Individually write down potential project ideas
- We will go around the room and ask your idea
- Objective is to get people thinking and identify colleagues who are thinking about similar ideas!
- Consider:
 - *Errors that you've seen*
 - *Frustrating circumstances you wanted to fix*
 - *Future career goals*

Patient safety

Policy/advocacy

Systems problem

Quality improvement

Social & Structural Determinants of Health

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Ethics

Next Steps

- IMRESPDX:
 - Full outline for the project and presentation
 - We'll get an updated list of current faculty projects up shortly
- Start thinking about projects (either from the list or dream up your own)
- Project selection by January 2023
- If you plan on carrying a project forward, please email Anne Smeraglio smeragli@ohsu.edu no later than January 1st, 2023
- The top 4 project presentations from the end of TIS will win a DOM award and be given the opportunity present at a DOM-wide noon conference in July 2023

WEEK 4 FEEDBACK



****Case Sensitive****

bit.ly/WISCFB5

