

Beyond the Knife: **Health Literacy** and Why It Matters

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UAB THE UNIVERSITY OF
ALABAMA AT BIRMINGHAM

Knowledge that will change your world

Disclosures

- I **do not** have any relevant financial relationships with any commercial interest that pertains to the content of my presentation.

Work supported from:

K12 HS023009 AHRQ Mentored Career Development Award (2017-2019)

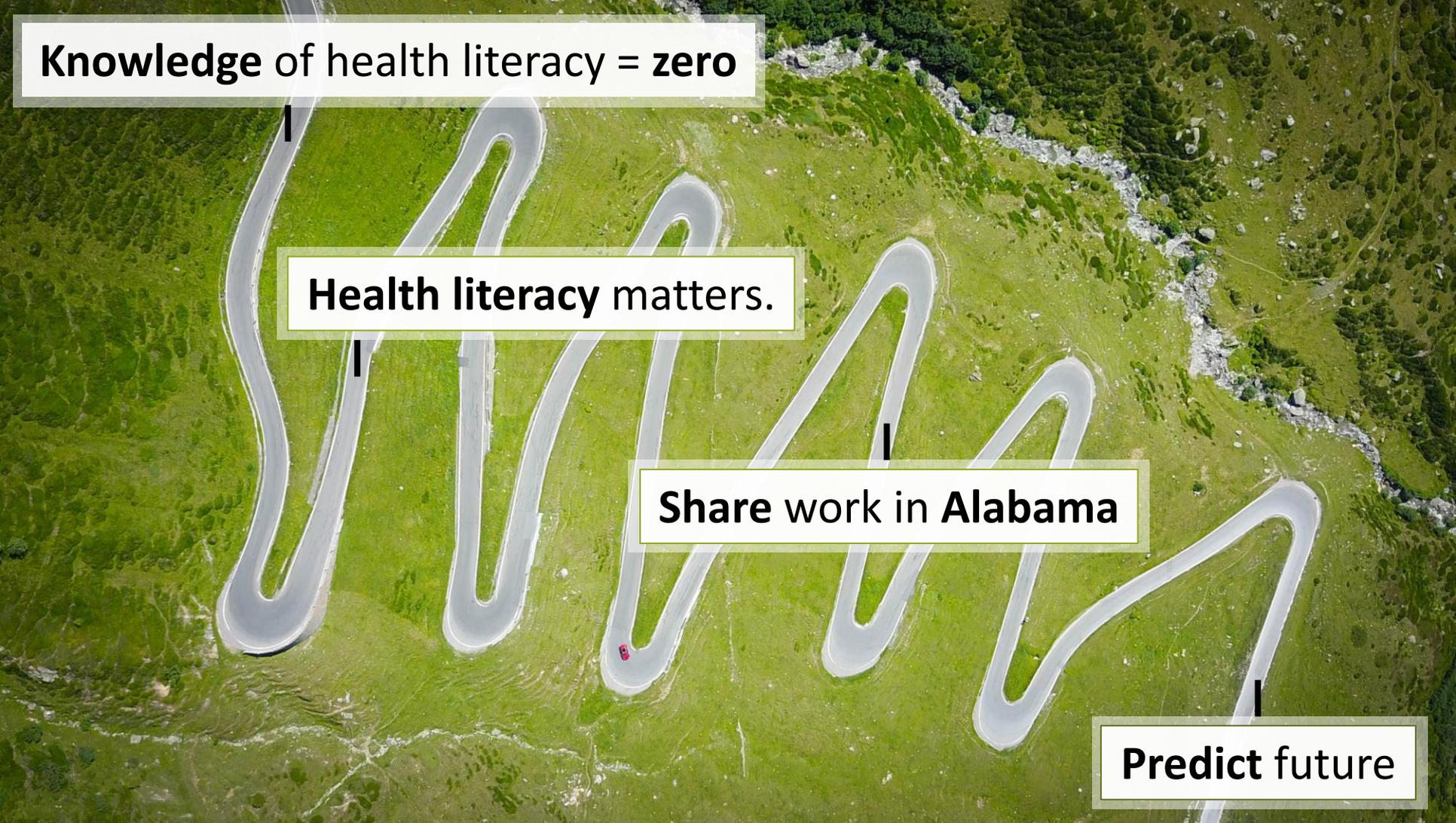
James A. Pittman MD Scholar Award (2018-2023)

UAB Health Services Foundation General Endowment Fund (2018-2020)

SSAT Health Disparities Research Award (2016-2018)

VA Office of Health Equity (2017-2018)

ASCRS Medical Student Research Initiation Grant (2017)

An aerial photograph of a winding asphalt road on a lush green hillside. The road curves through the landscape in a series of loops. A small red car is visible on one of the curves. The background shows more greenery and a rocky area in the upper right. Four white text boxes with black borders are overlaid on the image, each containing a different message. Vertical black lines connect the text boxes to the road.

Knowledge of health literacy = zero

Health literacy matters.

Share work in Alabama

Predict future

An aerial photograph of a winding asphalt road on a lush green hillside. The road curves through the landscape in a series of loops. A small red car is visible on one of the curves. Several text boxes are overlaid on the image, connected to the road by vertical lines. The text boxes contain the following phrases: 'Knowledge of health literacy = zero', 'Health literacy matters.', 'Share work in Alabama', and 'Predict future'.

Knowledge of health literacy = zero

Health literacy matters.

Share work in **Alabama**

Predict future

Why is **health literacy** important?



Getting access



Communication



Analyze risk/benefit



Calculate dosages



Evaluating credibility

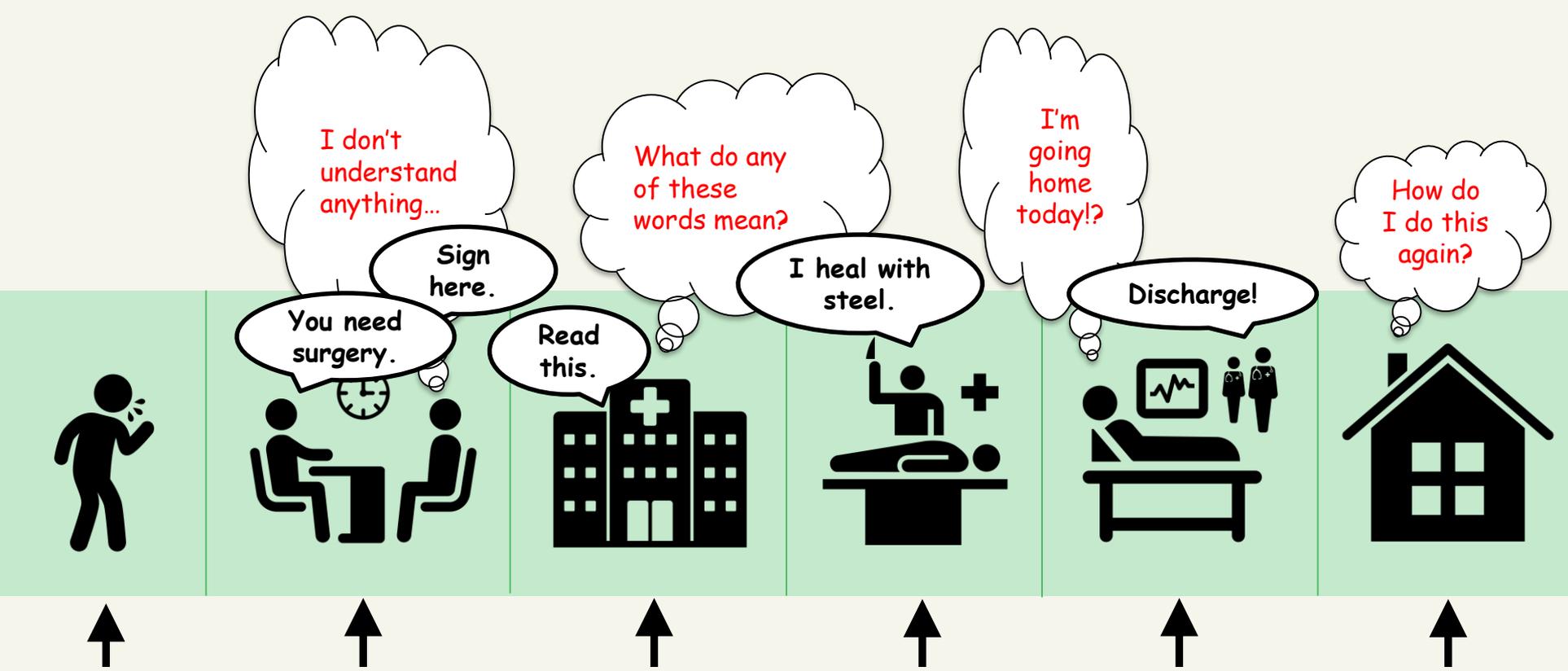


Interpret test results



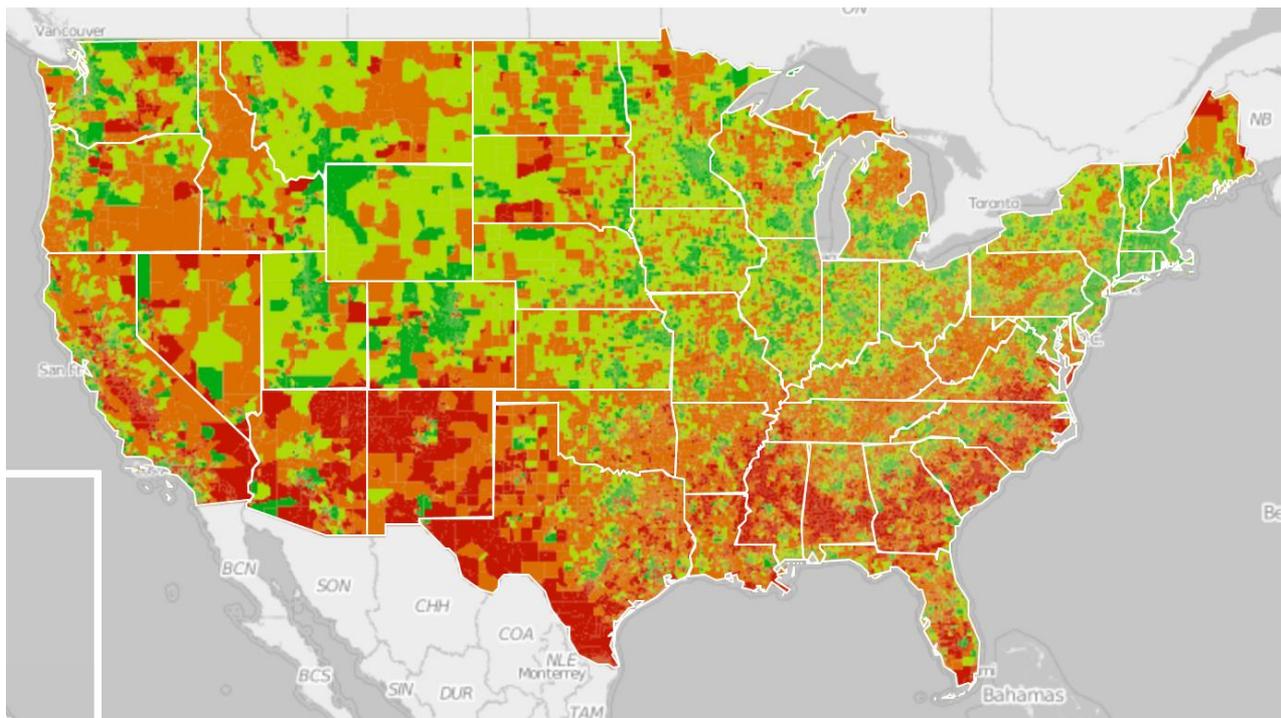
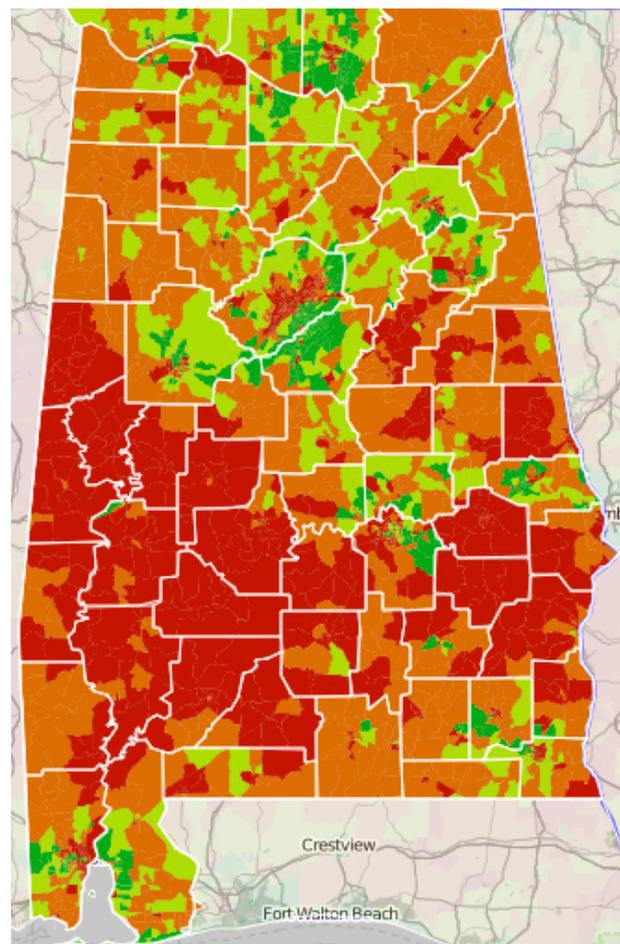
Navigating

All of this applies in surgery.



Where and how do your patients **obtain, process and understand** health information during the surgical journey?

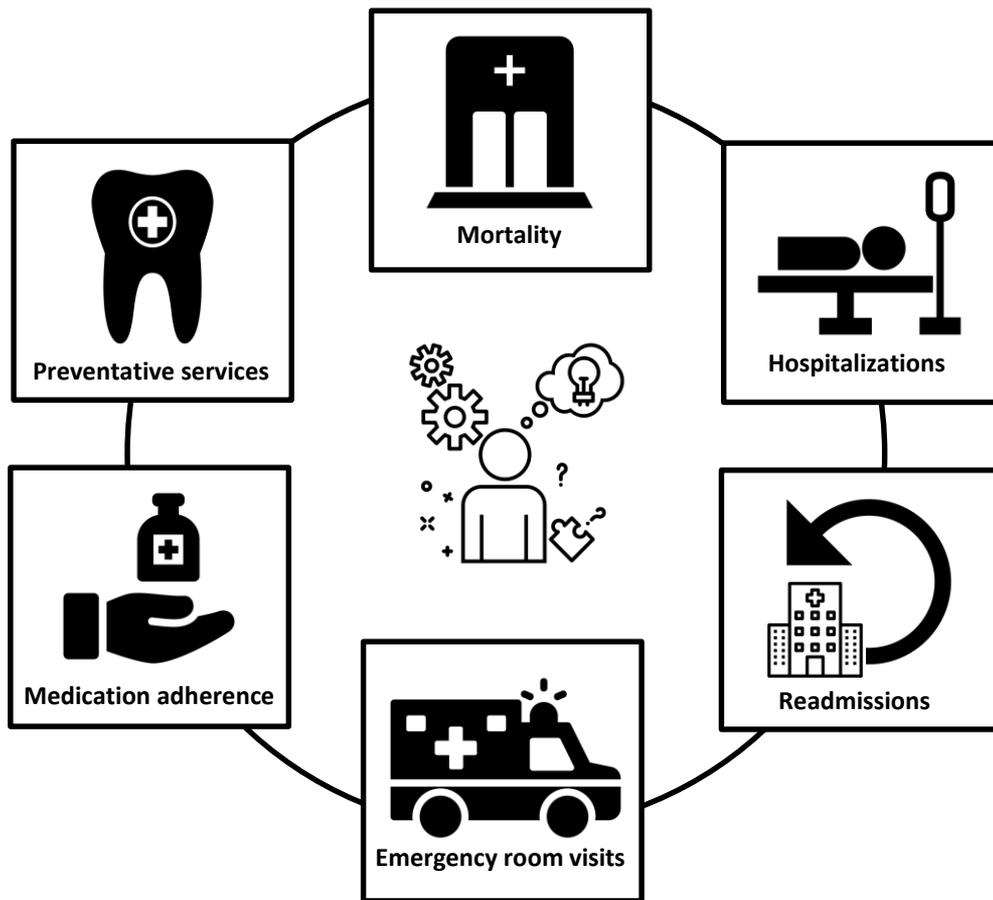
National Assessment of **Adult Literacy** (2003 NAAL)



Health Literacy Levels

- | | |
|---|--|
|  Proficient |  Basic |
|  Intermediate |  Below Basic |

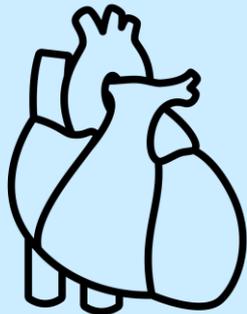
Health literacy is a determinant of health outcomes



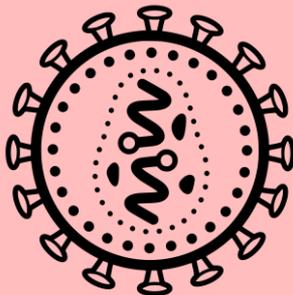
Major work on **health literacy** in **non-surgical fields**



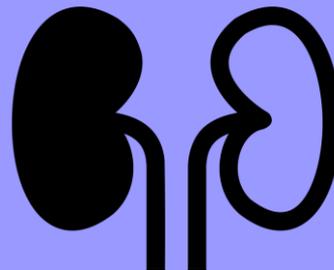
Diabetes



CHF



HIV



ESRD



Surgery

JAMA Surgery | **Original Investigation**

Association of Health Literacy With Postoperative Outcomes in Patients Undergoing Major Abdominal Surgery

Jesse P. Wright, MD; Gretchen C. Edwards, MD; Kathryn Goggins, MPH; Vikram Tiwari, PhD; Amelia Maiga, MD, MPH; Kelvin Moses, MD, PhD; Sunil Kripalani, MD, MSc; Kamran Idrees, MD, MSCI

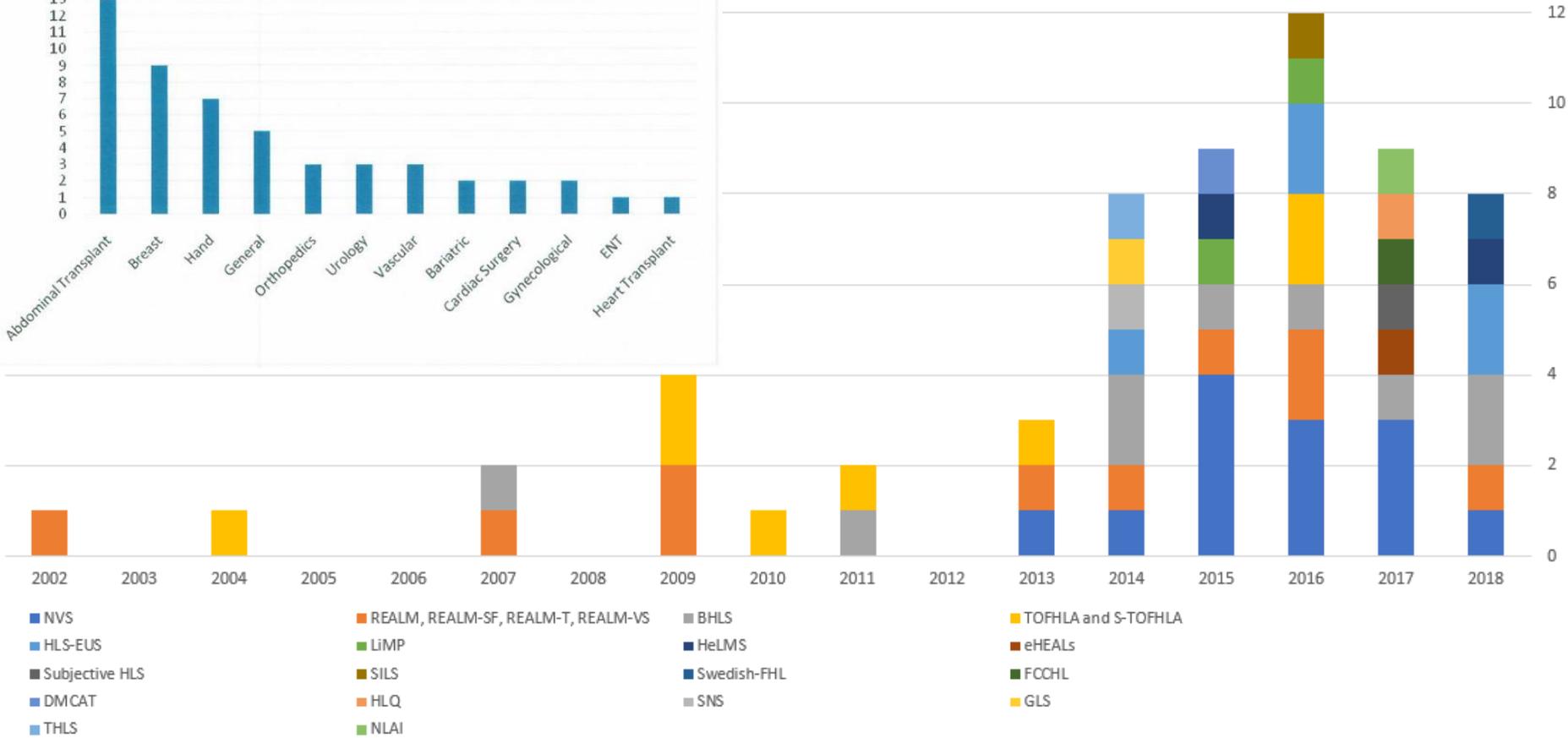
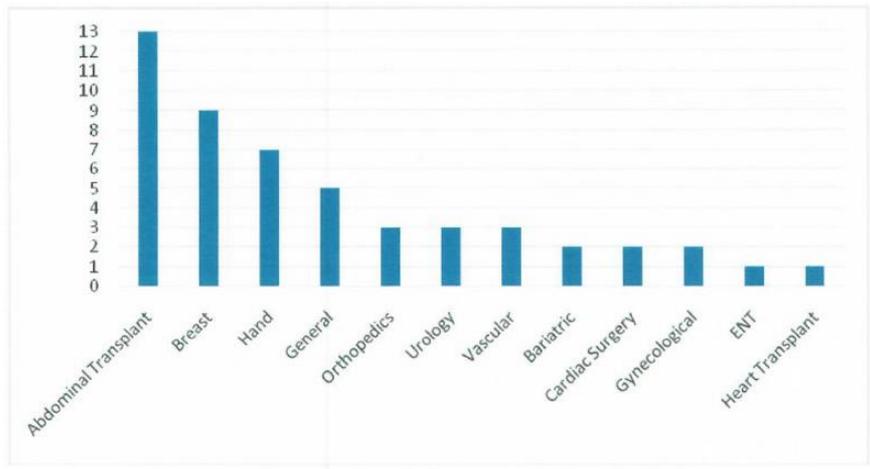
VANDERBILT  HEALTH

JAMA Surgery | **Original Investigation**

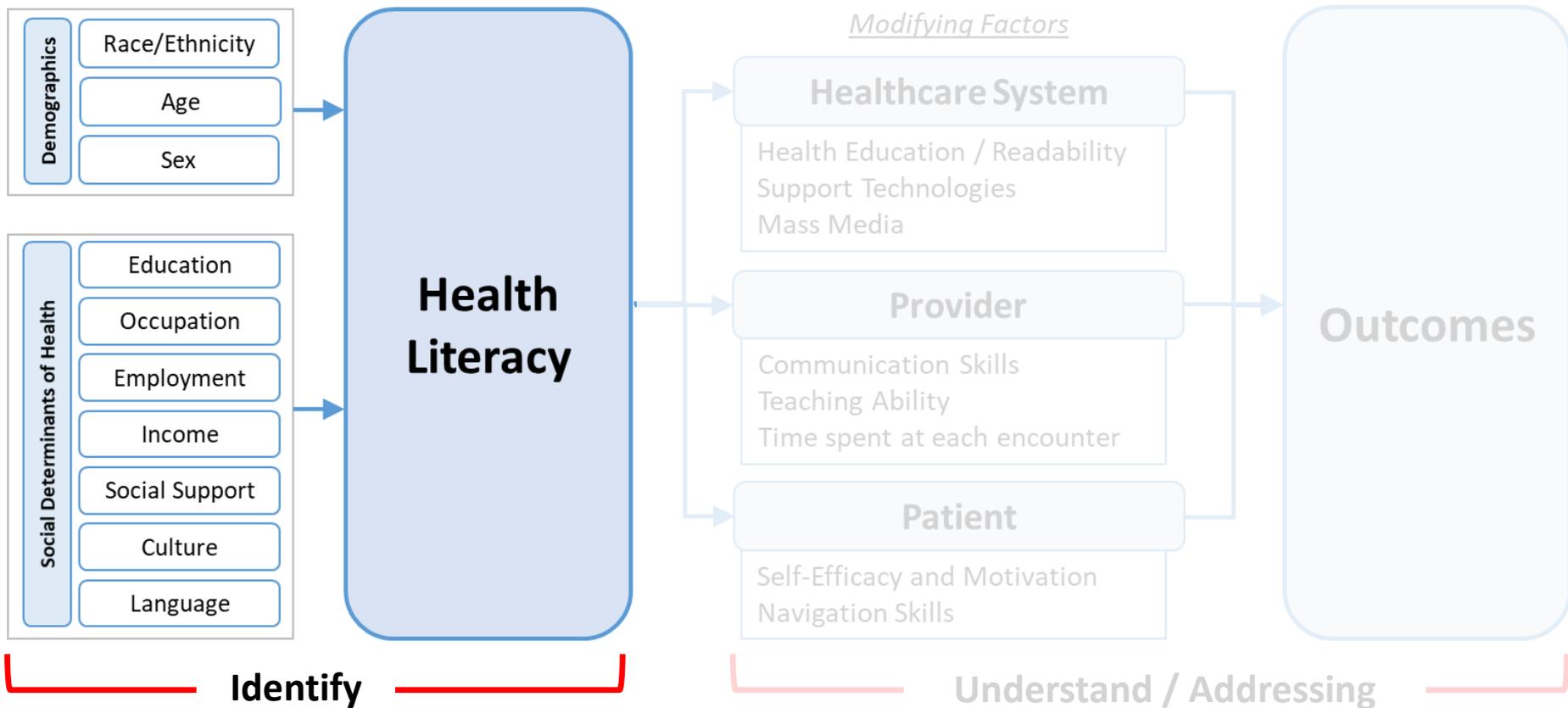
Association Between Functional Health Literacy and Postoperative Recovery, Health Care Contacts, and Health-Related Quality of Life Among Patients Undergoing Day Surgery Secondary Analysis of a Randomized Clinical Trial

Maria Hälleberg Nyman, PhD; Ulrica Nilsson, PhD; Karuna Dahlberg, MSc; Maria Jaensson, PhD

Current state of **health literacy** research in surgery



Framing an approach to **health literacy** in surgery...



2018

BRIEF
(4-items)

1. How often do you have someone **help you read** hospital materials?
2. How often do you have problems learning about your medical condition because of **difficulty understanding written information**?
3. *How often do you have a problem understanding **what is told to you** about your medical condition?*
4. How confident are you **filling out medical forms by yourself**?



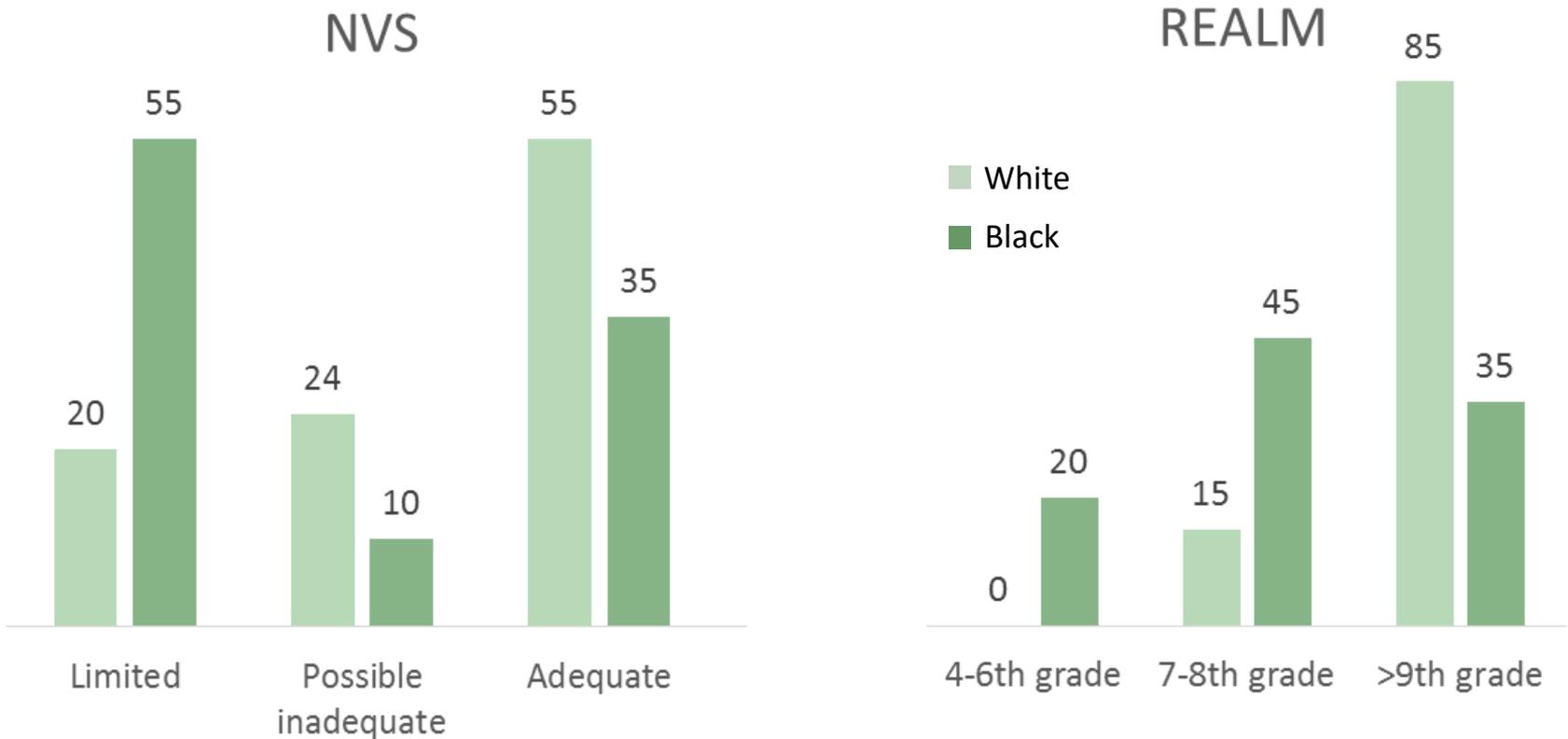
2017

REALM-SF
S-TOFH
LA
NVS

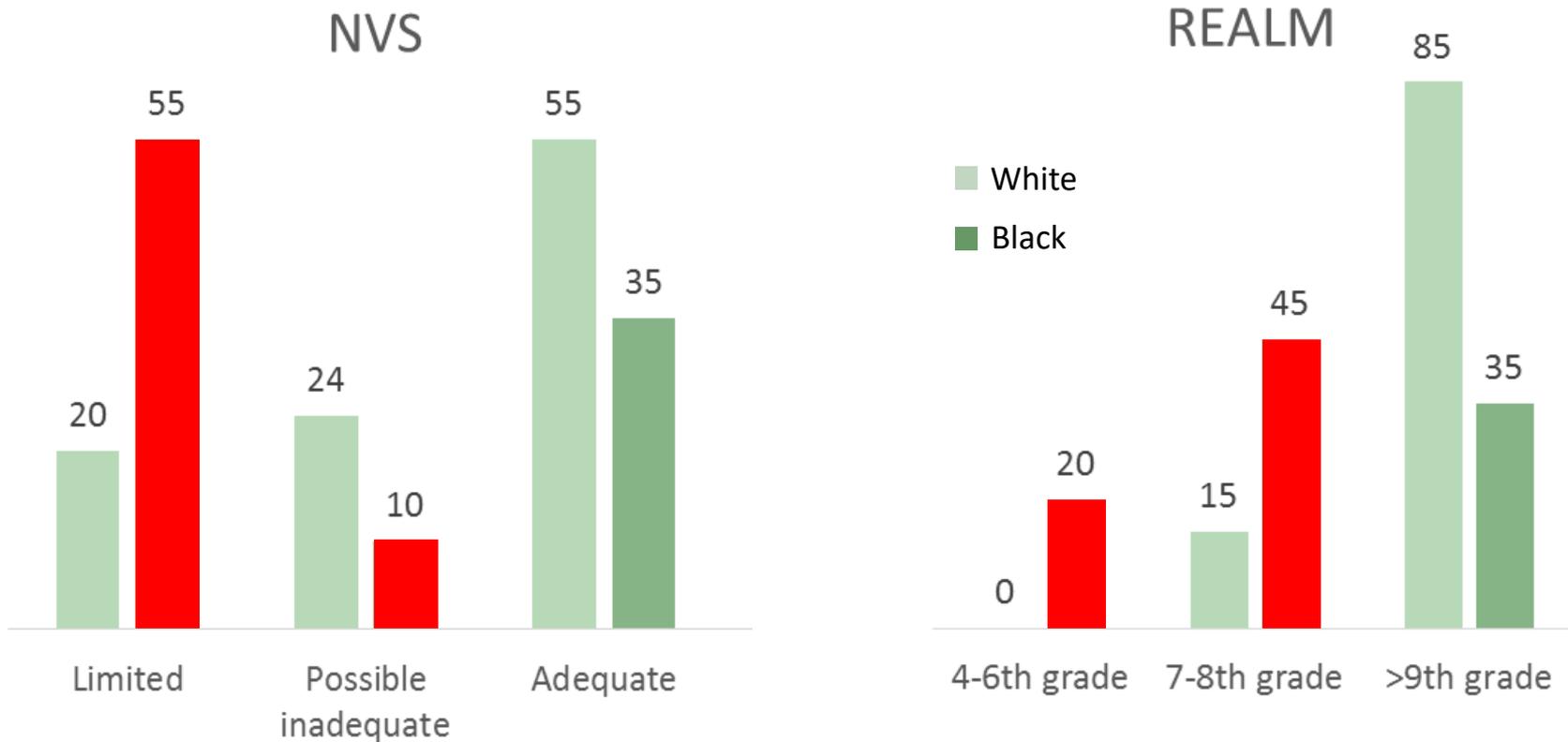
Max 45 seconds
Max 7 minutes
Max 3 minutes

Average 7 minutes

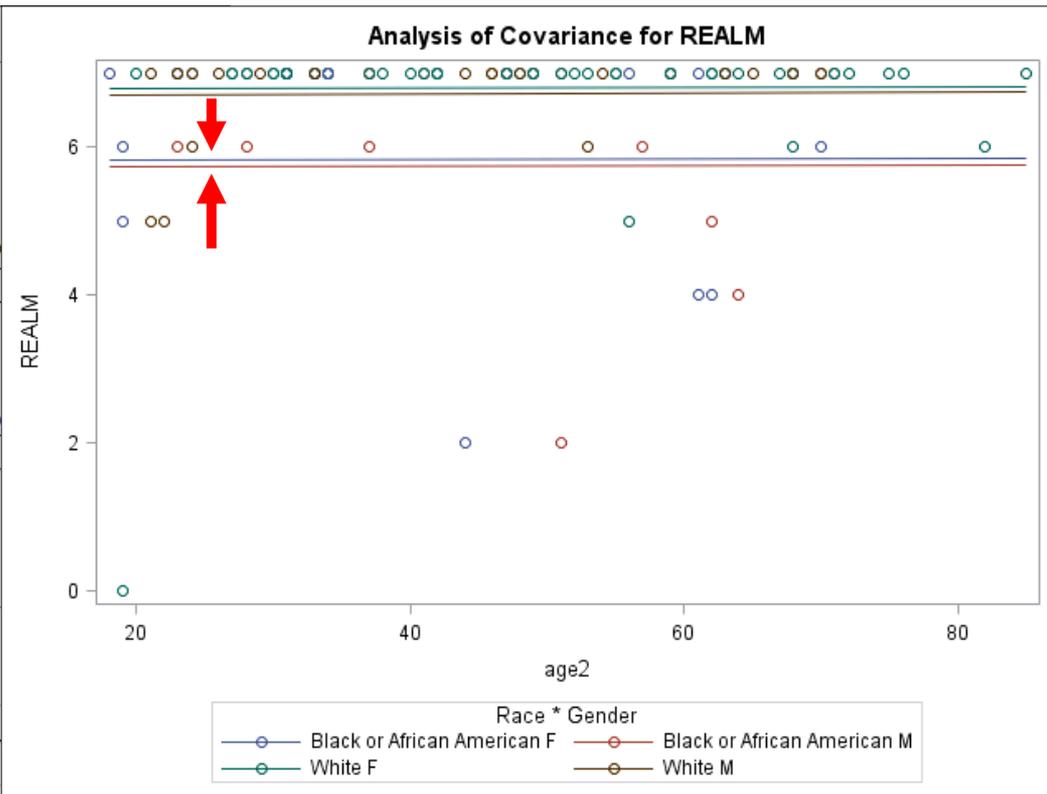
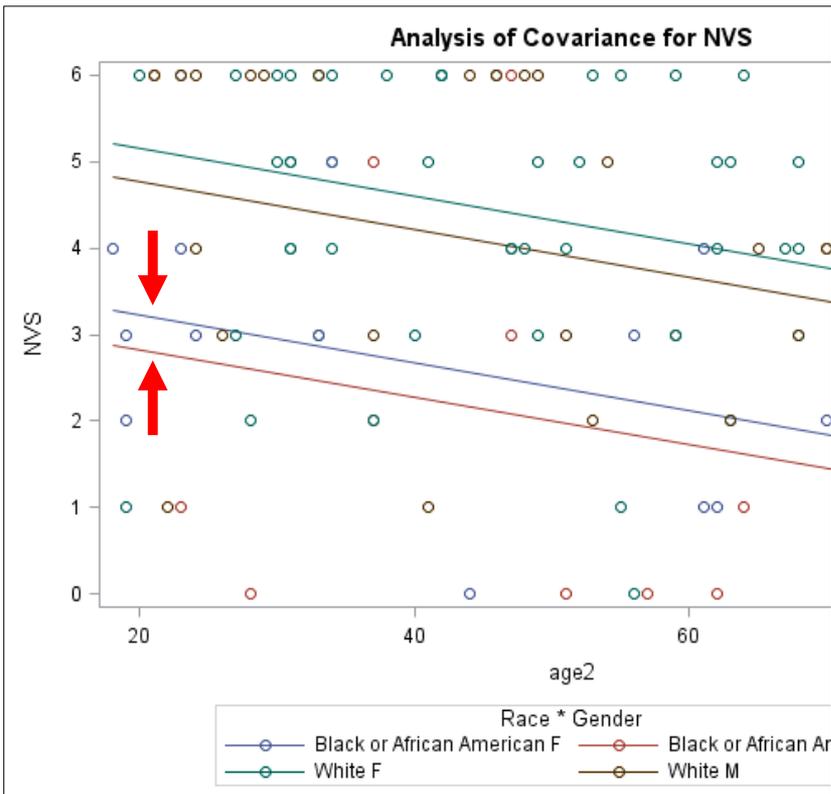
Low health literacy exists in IBD surgical population...



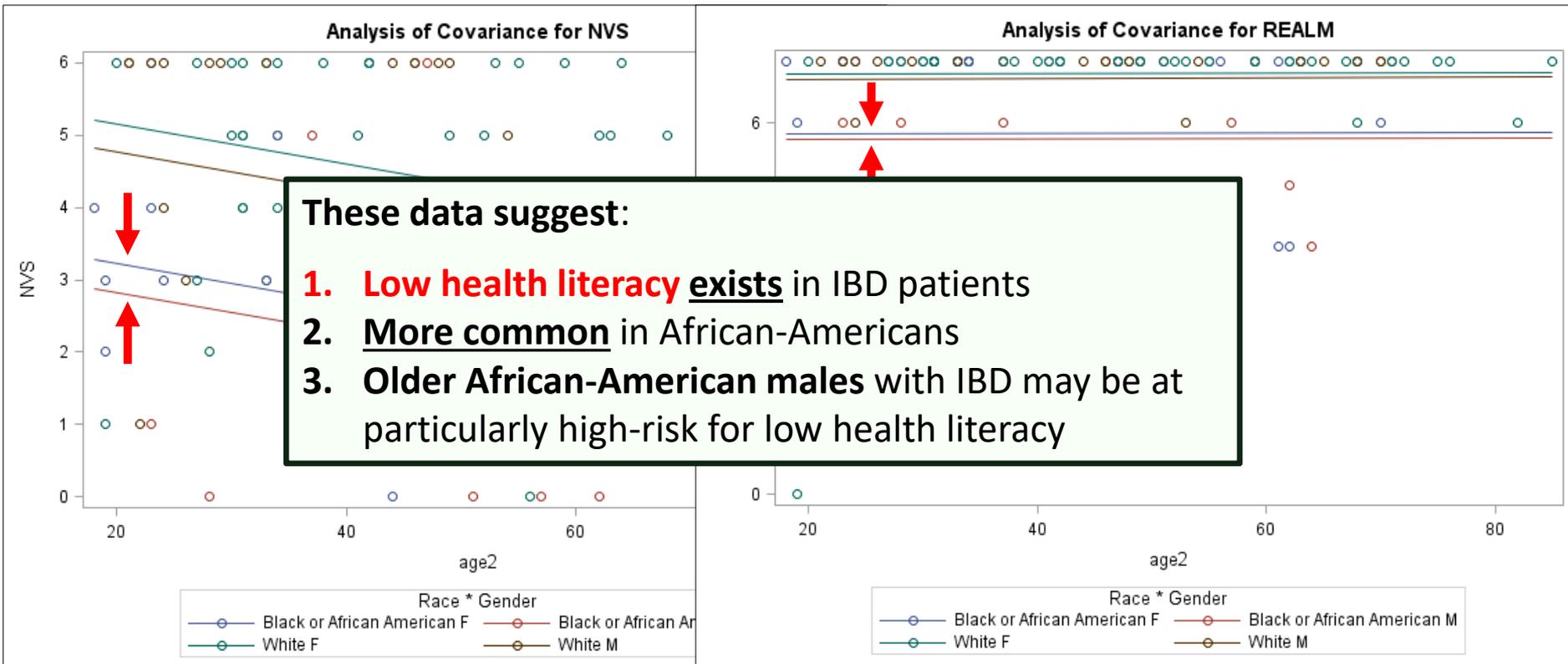
Low health literacy exists in IBD surgical population...



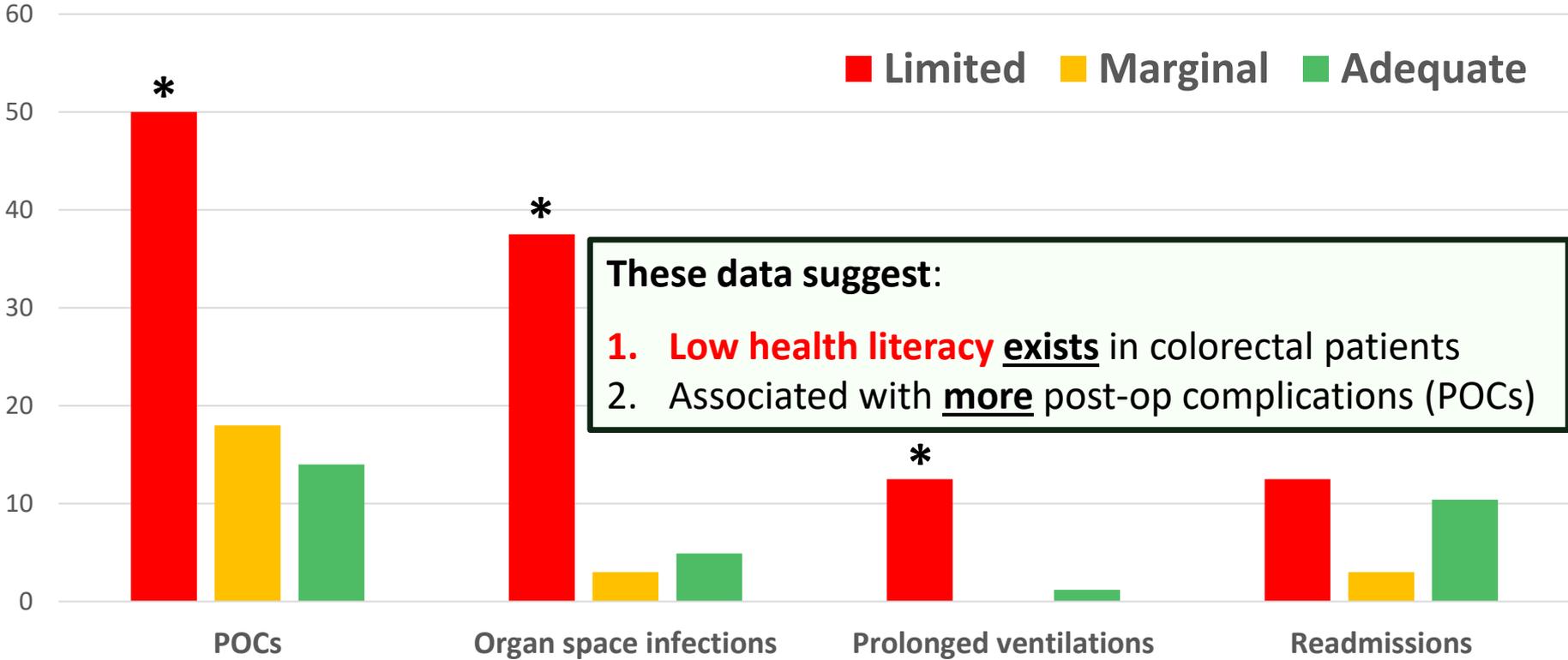
Literacy in surgical pts varies by race, sex and age...



Literacy in surgical pts varies by race, sex and age...



Associations of health lit with **poor** surgical outcomes



These data suggest:

1. **Low health literacy** exists in colorectal patients
2. Associated with more post-op complications (POCs)

* p<0.05

Low health literacy associated w ↑ readmissions

Adjusted Model of Readmission

	Unadjusted			Most Parsimonious*		
	OR	(95% CI)	p-value	OR	(95% CI)	p-value
Adequate	Ref.			Ref		
Possibly Inadequate	1.83	(1.23-2.73)	0.003	1.53	(1.01-2.31)	0.04

* Adjusted for Charlson Comorbidity Index, Health Survey Physical Component Score and Mental Component Score at the time of discharge



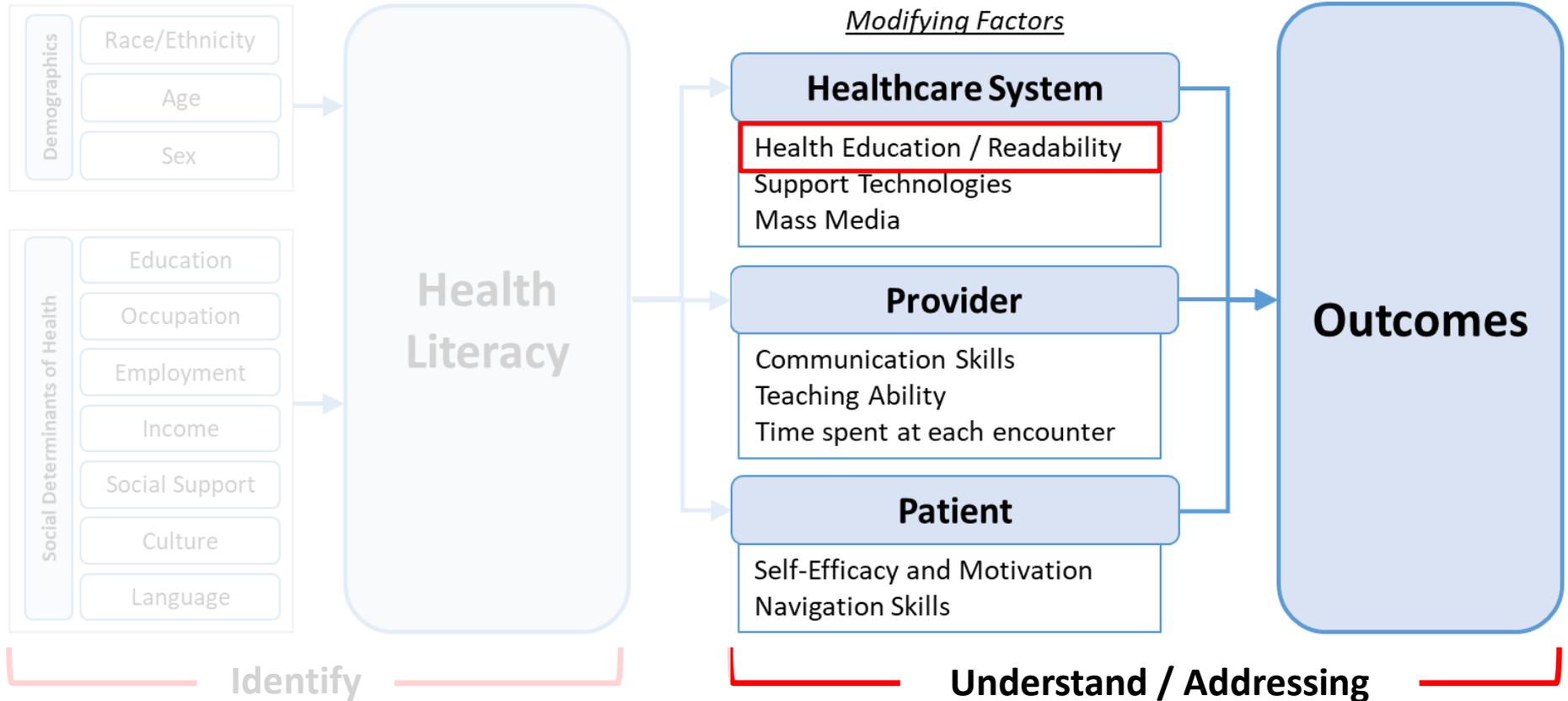
U.S. Department
of Veterans Affairs

Patients with possibly inadequate HL are **at 53% higher odds of being readmitted** as compared to patients with adequate health literacy.

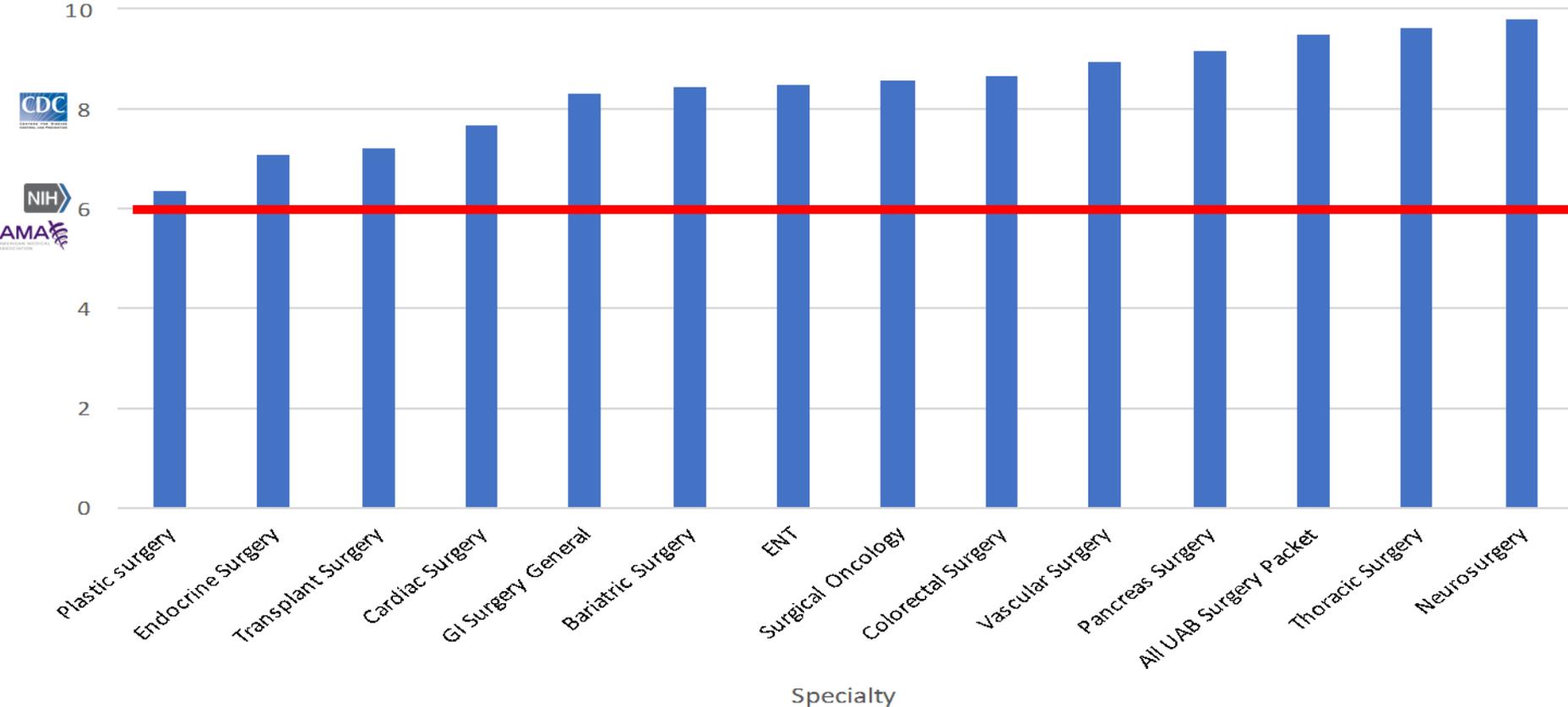
Identify

Understand

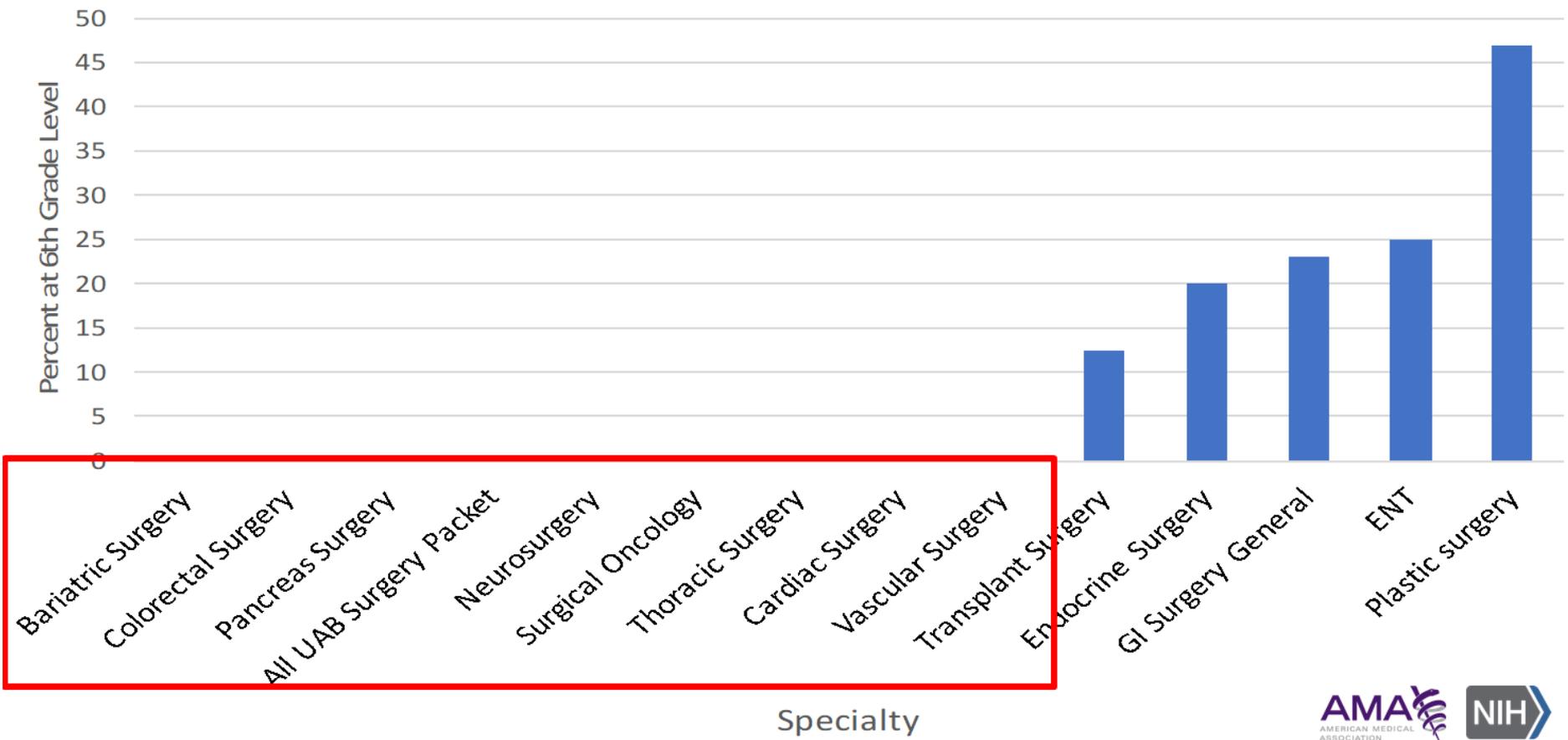
Intervene



System-Level: Readability of surgery education material



System-Level: Readability of surgery education material



System-Level: Readability of surgery education material

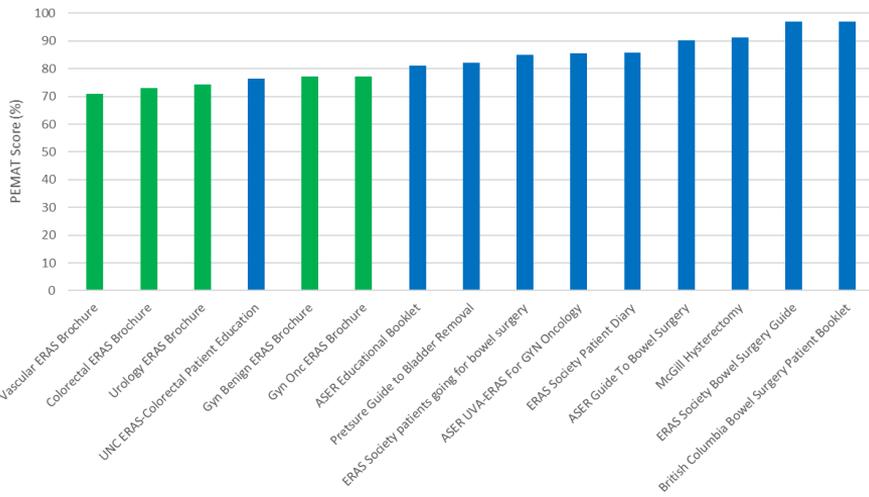
The Patient Education Materials Assessment Tool (PEMAT) and User's Guide

An Instrument To Assess the Understandability and Actionability of Print and Audiovisual Education Materials

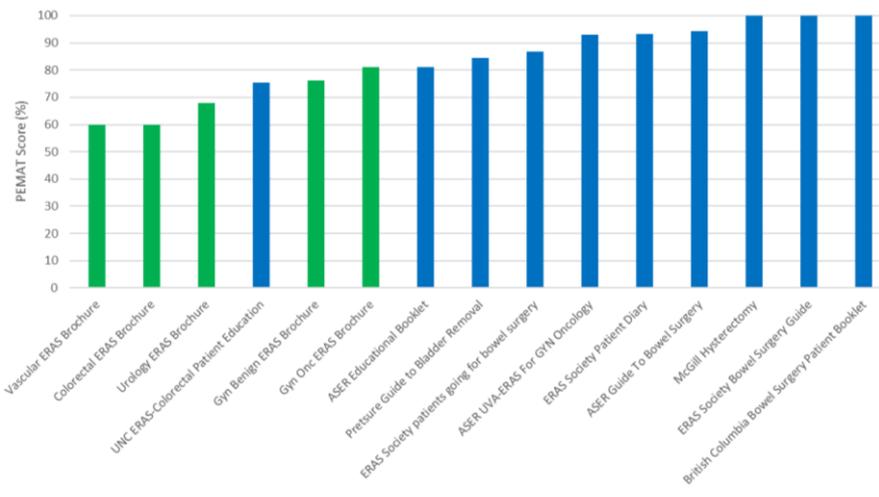


Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

Understandability



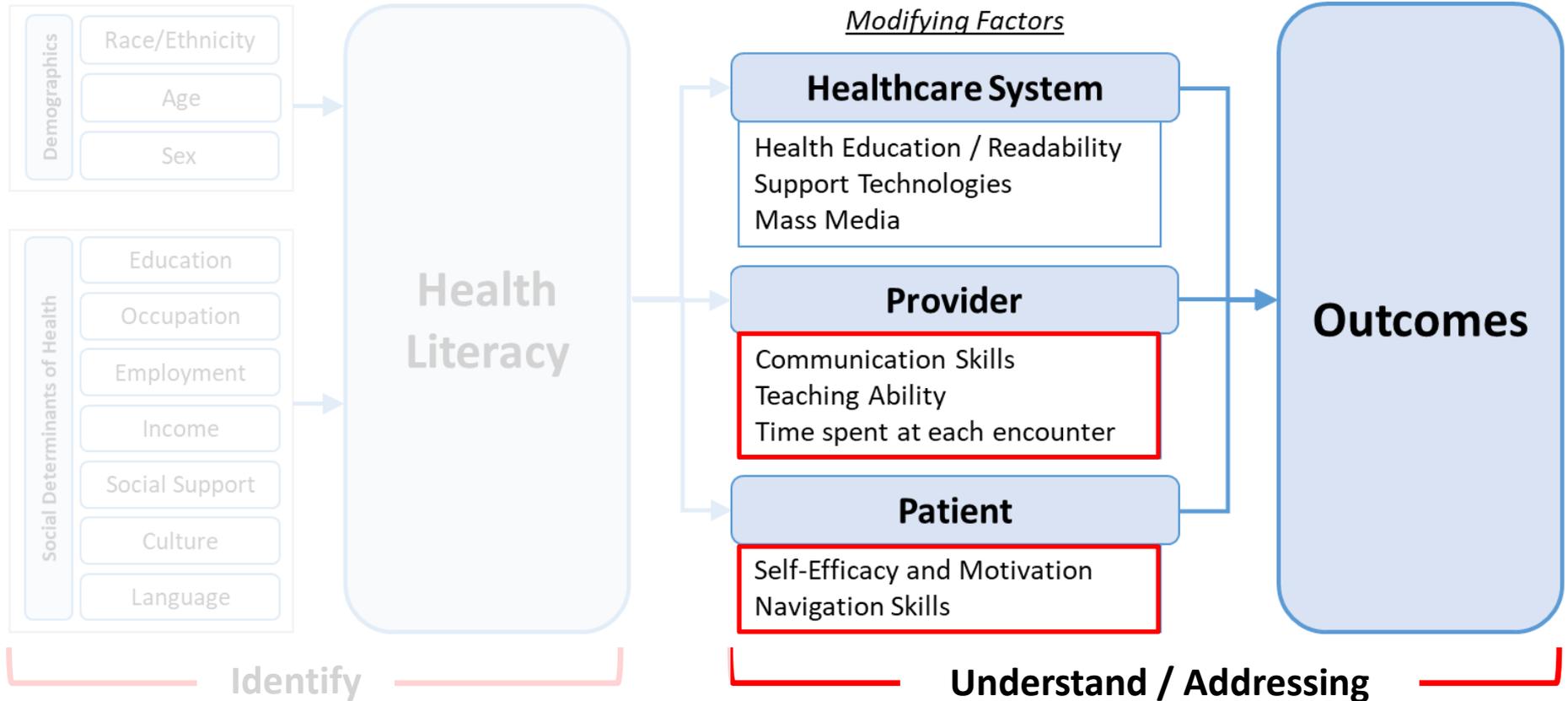
Actionability



Identify

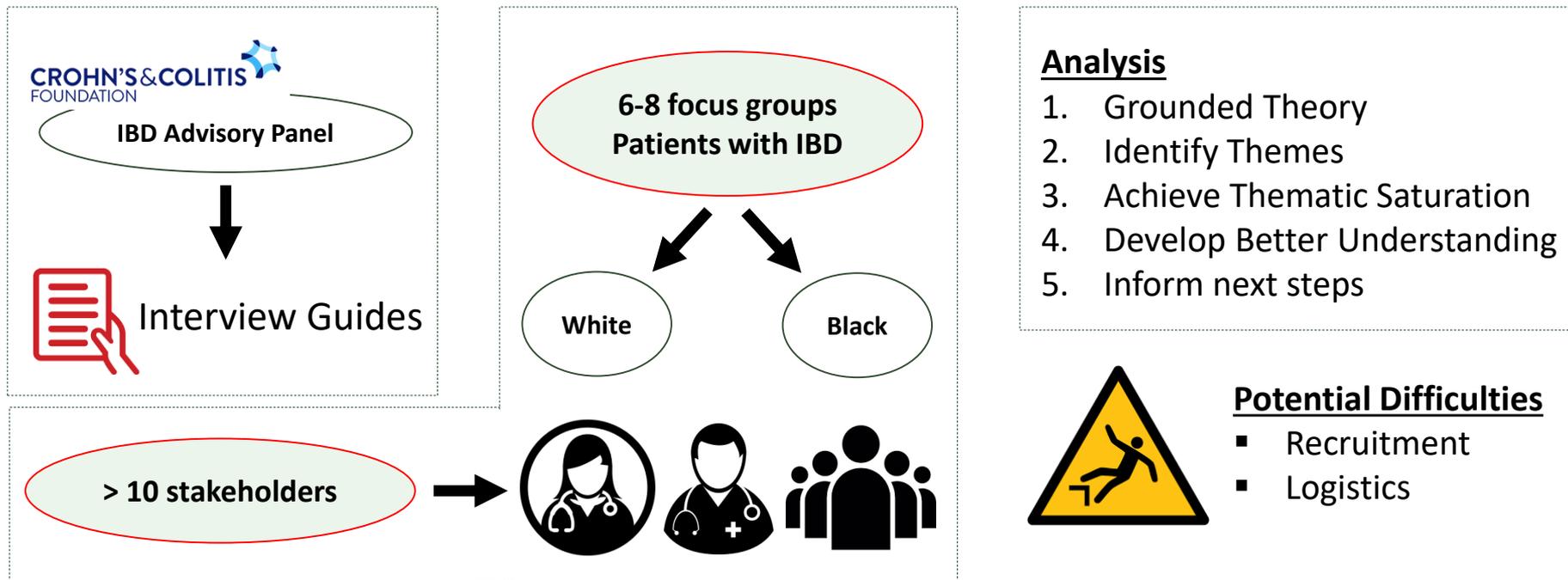
Understand

Intervene



Exploring Barriers to Health Literacy using **QUAL**

Sequential explanatory mixed-methods design (QUANT → QUAL)



Exploring Barriers to Health Literacy using **QUAL**



Obtain

“On the **internet**. I would just constantly just look it up and look at **pictures** and all kinds of things. It was the **only way I could learn.**”



Process

“We're all experienced at different things, and the **majority of** individuals **don't know medical terminology** very well.



Understand

“Doctors **talk fast**. They say things **you don't necessarily understand**, especially if it's new information. I would take notes.”

Exploring Barriers to Health Literacy using **QUAL**



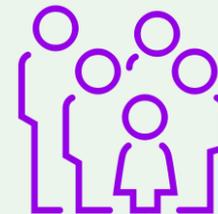
Use visual aids



Keep it simple



Slow down



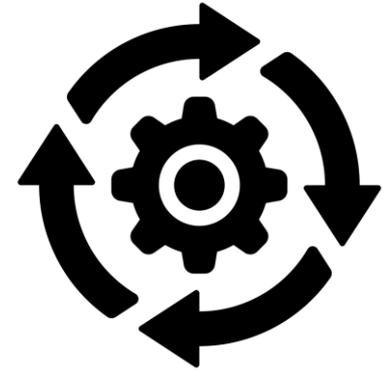
Engage family

Providers are important barriers/facilitators to understanding.

Identify

Understand

Intervene

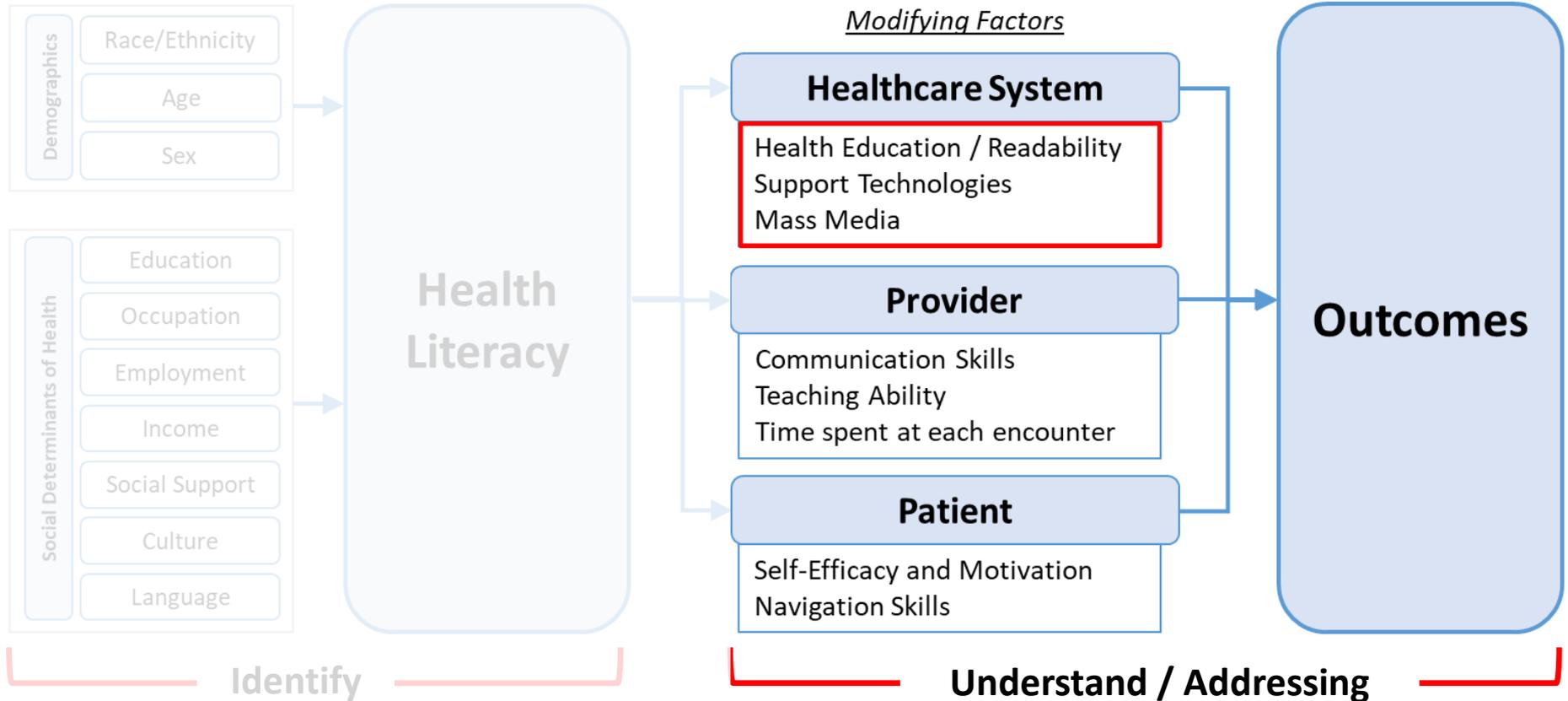


Intervene

Identify

Understand

Intervene



System-Level: Intervening on Health Ed/Readability

“Strenuous” 21 FKGL

- *Instead try: **Hard** (3.4), **Heavy lifting** (8.4)*

“Anesthesia” 26 FKGL

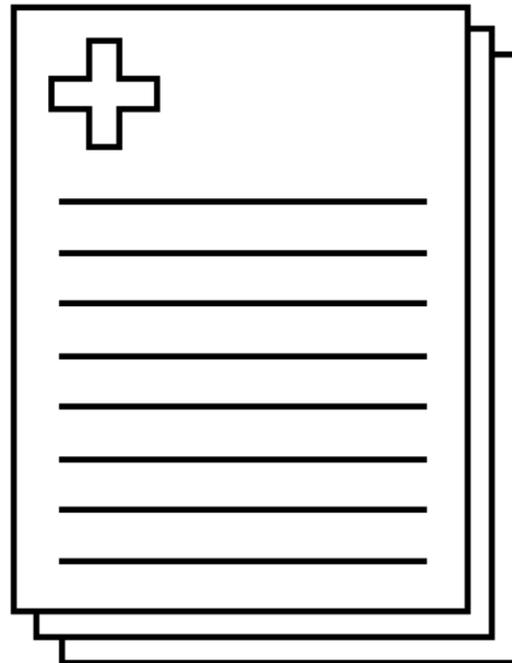
- *Instead try: **Put you to sleep** (2.2)*

“Narcotic” 22 FKGL

- *Instead try: **Pain meds** (3)*

“Incision” 17 FKGL

- *Instead try: **Scar** (2)*



System-Level: Intervening on Health Ed/Readability

College reading level

With the onset of nausea, diarrhea or other gastrointestinal disturbances, consult your physician immediately.

12th Grade reading level

If you experience nausea, diarrhea or other stomach or bowel problems, call your physician immediately.

8th Grade reading level

If you start having nausea, loose bowel movements or other stomach problems, call your doctor immediately.

4th Grade reading level

If you start having an upset stomach, loose bowel movements, or other problems, call your doctor right away.

Best – 3rd grade

Call your doctor right away if you have:

- Upset stomach
- Loose bowel movements
- Other stomach problems.

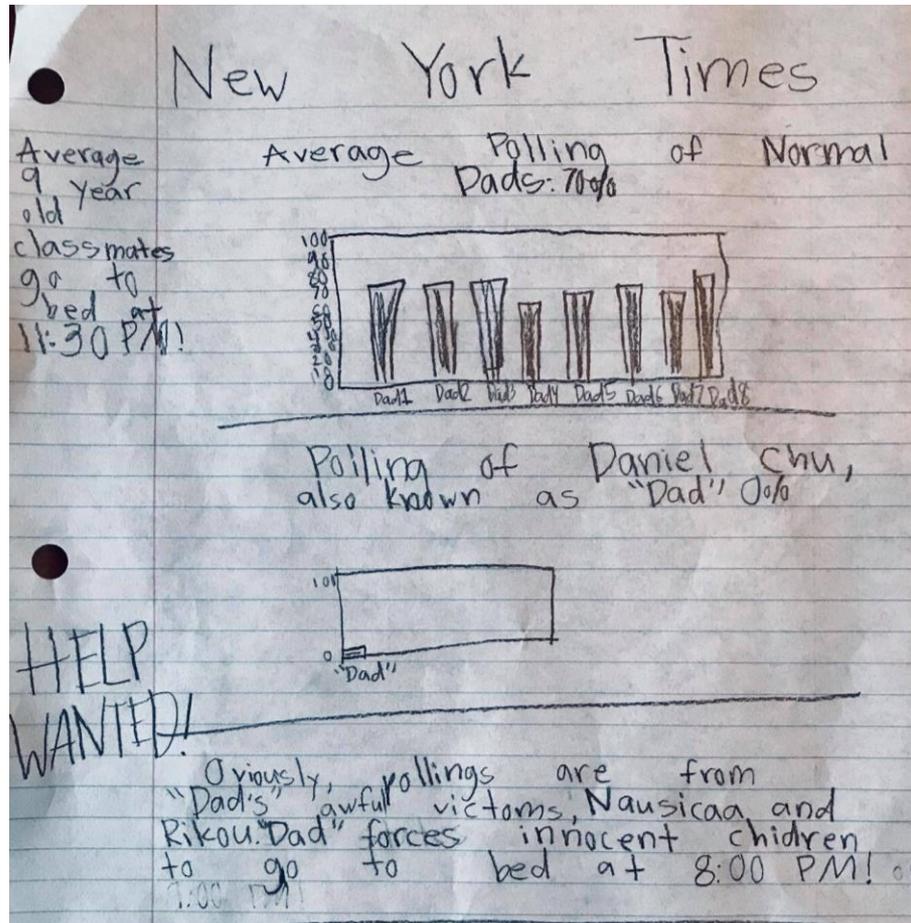
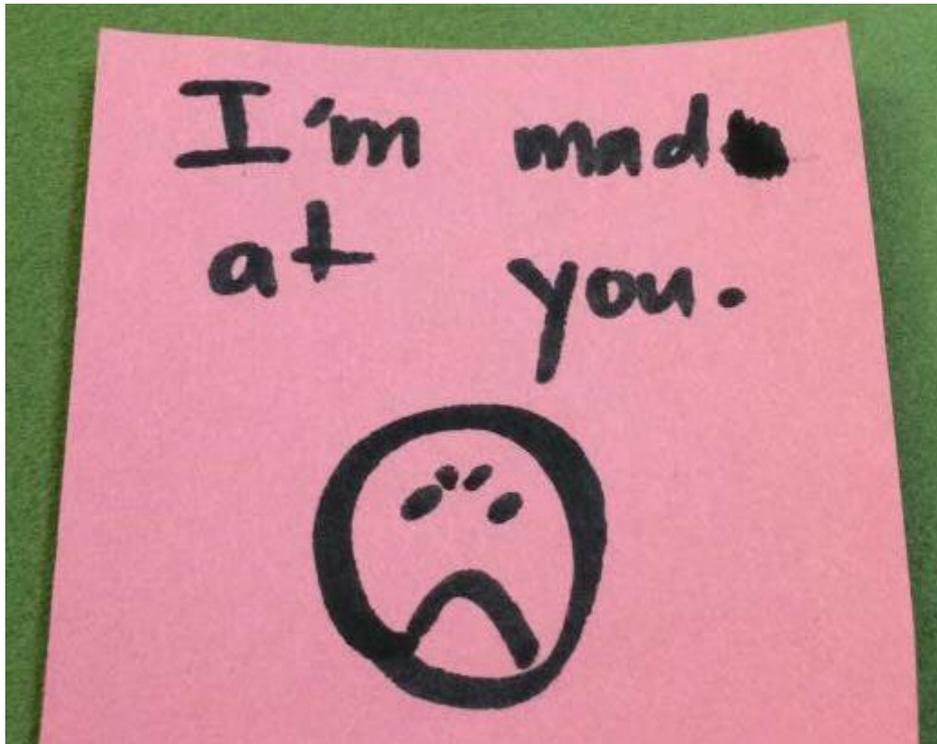


System-Level: Intervening on Health Ed/Readability

The Patient Education Materials Assessment Tool (PEMAT) and User's Guide

An Instrument To Assess the Understandability and Actionability of Print and Audiovisual Education Materials

Print Communication Rating (PCR)



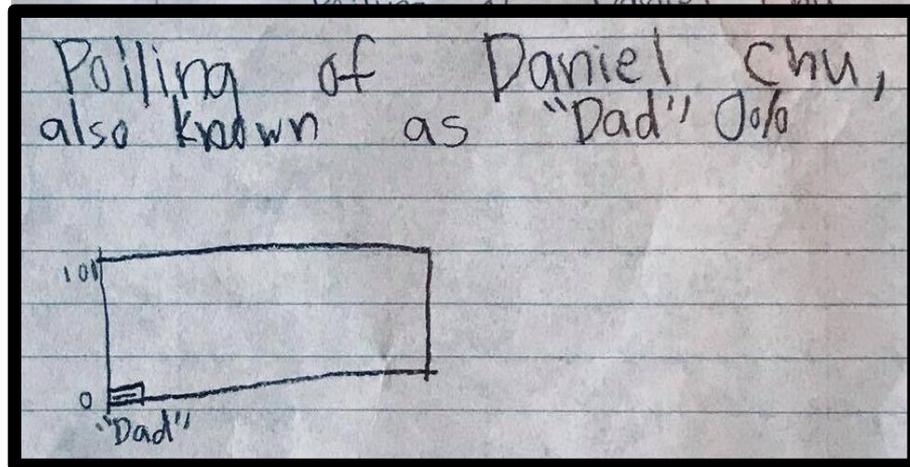
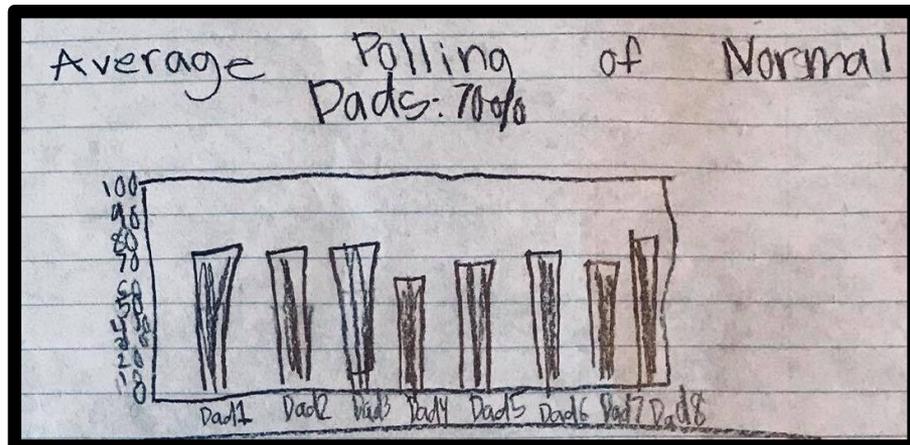
System-Level: Intervening on Health Ed/Readability

The Patient Education Materials Assessment Tool (PEMAT) and User's Guide

An Instrument To Assess the Understandability and Actionability of Print and Audiovisual Education Materials

Print Communication Rating (PCR)

- Use **visual aids**
- At least 12-point font
- Keep words short (<2 syllables)
- Layout (include white space)
- Keep stem short, petals simple (bullets)
- Include blanks, check-lists
- Get patients to **use** rather than read it



ENHANCED RECOVERY AFTER SURGERY

PATIENT EDUCATION

Enhanced Recovery After Surgery (ERAS) is a clinically proven pathway that helps you recover quickly after major surgery. ERAS uses best medical and surgical practices to **reduce post-surgery pain, increase early physical activity, and promote bowel function**. ERAS has been shown to significantly **reduce complications and hospital stay** in many institutions across Europe and the United States. ERAS is effective, safe, and beneficial for patients like you who will be undergoing major surgery. We will discuss with you the pre-surgery preparations, surgical techniques, and post-surgery expectations that are involved in ERAS.

What should you expect?

BEFORE surgery

- ❖ A well-described surgical plan with specific education
- ❖ Online educational videos from Emmi
- ❖ A bowel preparation to be taken the day before surgery
- ❖ Chlorhexidine/ CHG washes (2 days before, 1 day before, morning of surgery)
- ❖ Drink clear liquids up to 2 hours before surgery
- ❖ Do not eat any solid food after midnight
- ❖ If you are a patient with diabetes, medication instructions will be given to you so that you will know which medications to take and which to hold

DAY of surgery

- ❖ An electrolyte enriched drink or juice (apple, cranberry, or grape) 2 hours before surgery
 - If you are a patient with diabetes, you may have sips of water instead of an electrolyte enriched drink up to 2 hours before surgery
- ❖ Special preparations to help reduce post-surgery pain including:
 - A spinal injection or other regional block by the UAB Pain Service
 - Taking several pills by mouth including Gabapentin, Celebrex and Tylenol

AFTER surgery

- ❖ Immediately after your surgery, you will be monitored in the Post-Anesthesia Care Unit (PACU). There you will be given medications as needed for pain or nausea before transferring to a regular hospital room, where you will be monitored overnight. There may be a sign on the door indicating that you are part of the ERAS protocol. Your recovery will continue under the care of the surgical team with assistance of the UAB Pain Service.
- ❖ Optimal pain control tailored to your unique needs with minimal narcotic usage
- ❖ Eating a regular diet, as tolerated, on the same day of surgery
 - If you are a patient with an ostomy after surgery, you will be provided a low fiber diet
- ❖ If you are a patient with diabetes, you will be placed on insulin while in the hospital; even if you take oral medications at home
- ❖ Walking in the hall on the same day of surgery
- ❖ The day following your surgery, you will be asked to walk 3-5 times in the hall and obtain your weight by 10 AM
- ❖ Early removal of urinary catheter on the day after surgery (except in special circumstances)
- ❖ Continued education on diet, wound, drain, or stoma care, if applicable
- ❖ You will be ready for discharge when you are tolerating a diet with bowel function, your pain is controlled, you are out of bed or walking, and all unique management needs are met
- ❖ If you are a patient with diabetes, you can likely go home on the same medications that you were taking for diabetes before surgery. Your doctor will determine if changes to your diabetes medications are needed while you are in the hospital

Day of:
Come at _____ on _____
(time) (date)

Short words

Don't Forget:

- ID
- Insurance Cards
- Gum
- Tooth Brush
- Comfy Clothes
- Meds
- Other: _____



Things to Leave at Home:

- A lot of cash
- Jewelry
- Nail Polish
- Other: _____

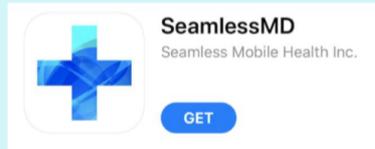


White space

Short stem,
simple petals



Download The App:



Numbers to Know:

- Dr. Chu's Office: 205-975-1932
- UAB Pre-Testing: 205-934-4011
- Your Ride Home: _____
(name)

(phone number)
- Emergency Contact: _____
(name)

(phone number)

Visual aids

Post-Op Days 1 & 2

Gum, protein drinks, food

Pills

1 2 3 4 5 6 7 8 9 10
pain should be kept below 4

Interactive

- HAVE YOU:
- Pooped?
 - Chewed gum?
 - Eaten Food?
 - Walked?
 - Talked to nurse about pain?

Simple layout

12-pt font

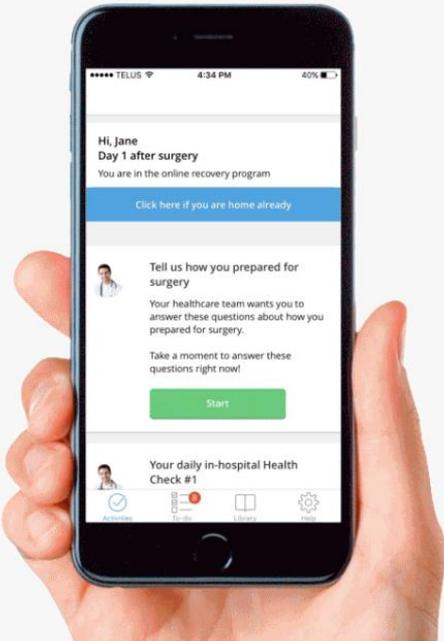
Any questions? Write them here:

System-Level: Intervening with Support Technology

The Most Robust Platform For Value-Based Care

Leading health systems partner with SeamlessMD to deliver a number of solutions:

-  [Enhanced Recovery After Surgery](#)
-  [Remote Patient Monitoring](#)
-  [Patient Education](#)
-  [Collect Patient Reported Outcomes](#)
-  [CABG Bundled Payments](#)
-  [CJR Bundled Payments](#)
-  [Perioperative Surgical Home](#)
-  [Prehabilitation & Preoperative Optimization](#)



SEE ALL SOLUTIONS

System-Level: Intervening with Support Technology

SeamlessvID Patients Help Daniel Chu UAB Medicine Admin

Patients Filters & Sorting Export Add a Patient

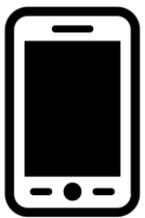
Pre-Op In-Hospital Post-Discharge Archived All Active Show All Quick Search A filter is applied. Reset Filters

ID	Last Name	First Name	Post-Op Day	Channels	Care Plan	Surgeon	Surgery Date	Last Activity	Last Status	Status	Actions
2272	[REDACTED]	[REDACTED]	0	[Icons]	Colorectal	Daniel Chu	January 23, 2018	about 17 hours	--	--	View Edit Star
2212	[REDACTED]	[REDACTED]	-16	[Icons]	Colorectal	Daniel Chu	February 8, 2018	2 days	--	--	View Edit Star
2211	[REDACTED]	[REDACTED]	0	[Icons]	Colorectal	Daniel Chu	January 23, 2018	about 8 hours	--	--	View Edit Star
2210	[REDACTED]	[REDACTED]	-14	[Icons]	Colorectal	Daniel Chu	February 6, 2018	about 1 hour	--	--	View Edit Star
2168	[REDACTED]	[REDACTED]	7	[Icons]	Colorectal	Daniel Chu	January 16, 2018	about 7 hours	about 7 hours	OK	View Edit Star
2167	[REDACTED]	[REDACTED]	7	[Icons]	Colorectal	Daniel Chu	January 16, 2018	about 22 hours	1 day	Try these self-care tips	View Edit Star
2163	[REDACTED]	[REDACTED]	6	[Icons]	Colorectal	Daniel Chu	January 17, 2018	1 day	--	--	View Edit Star
2161	[REDACTED]	[REDACTED]	-17	[Icons]	Colorectal	Daniel Chu	February 9, 2018	4 days	--	--	View Edit Star

Patients Per Page



Real-time



Engaging



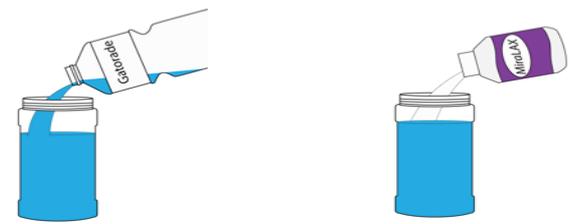
Records PROs

System-Level: Intervening with Support Technology

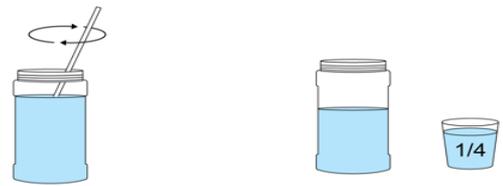
Why do I need to empty my colon before surgery?

This is for your safety. Your waste (poo) carries germs. So, it is safer if your surgery area is not full of poo during surgery.

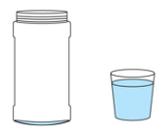
How do I drink Miralax®?



Step 1. Pour the Gatorade® into a jug. **Step 2. Pour the entire bottle of Miralax® into the jug.**



Step 3. Stir the Gatorade® and Miralax®. **Step 4. Drink 1/4 of the mixture every 30 minutes.**



Step 5. Keep drinking until you have finished the whole jug. You will have diarrhea (watery poo) for a few hours after drinking this.

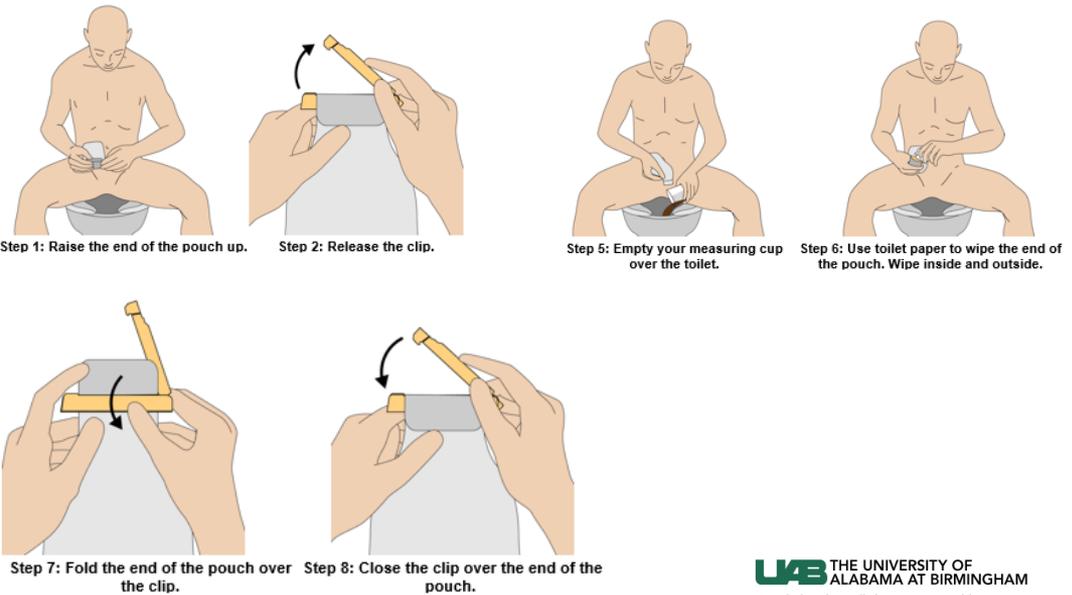
How to empty your pouch

When do I empty the pouch?

Empty your pouch when it is 1/3 to 1/2 full. A lighter pouch will pull less on your skin. This will help prevent your pouch from leaking.

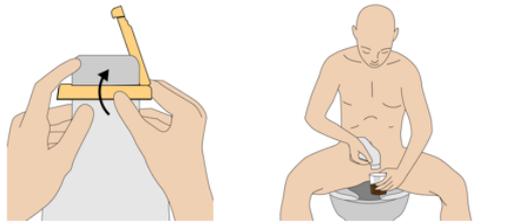
How to empty your pouch:

The instructions below are for your 1-piece clip close pouch. If you use a different pouch, follow the directions that came with your pouch.



Step 1: Raise the end of the pouch up. **Step 2: Release the clip.** **Step 3: Empty your measuring cup over the toilet.** **Step 4: Use toilet paper to wipe the end of the pouch. Wipe inside and outside.**

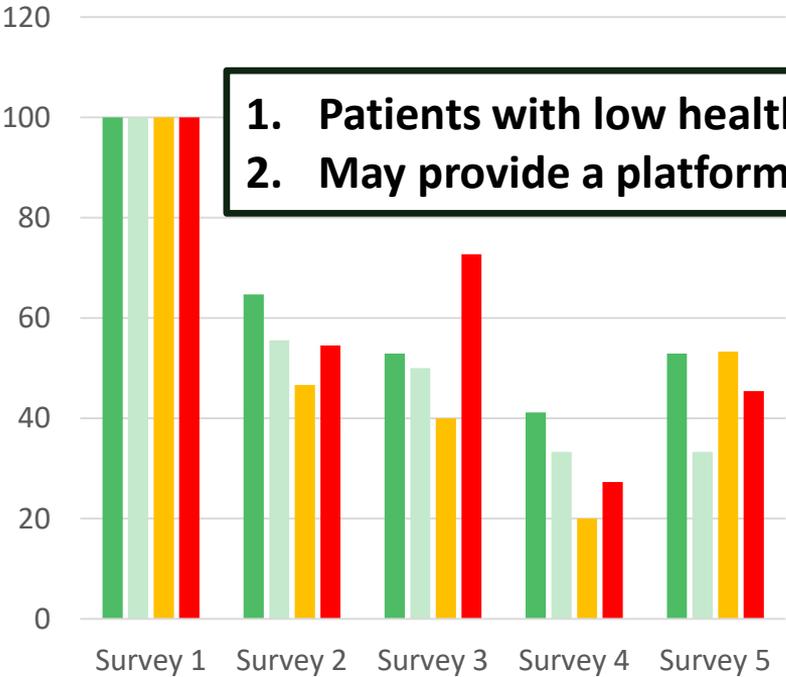
Step 5: Empty your measuring cup over the toilet. **Step 6: Use toilet paper to wipe the end of the pouch. Wipe inside and outside.** **Step 7: Fold the end of the pouch over the clip.** **Step 8: Close the clip over the end of the pouch.**



Step 3: Unroll the end of the pouch. **Step 4: Lower the end of the pouch over the measuring cup. Slide your hands down the bag to push the waste (poo) out. Record the volume of your output.**

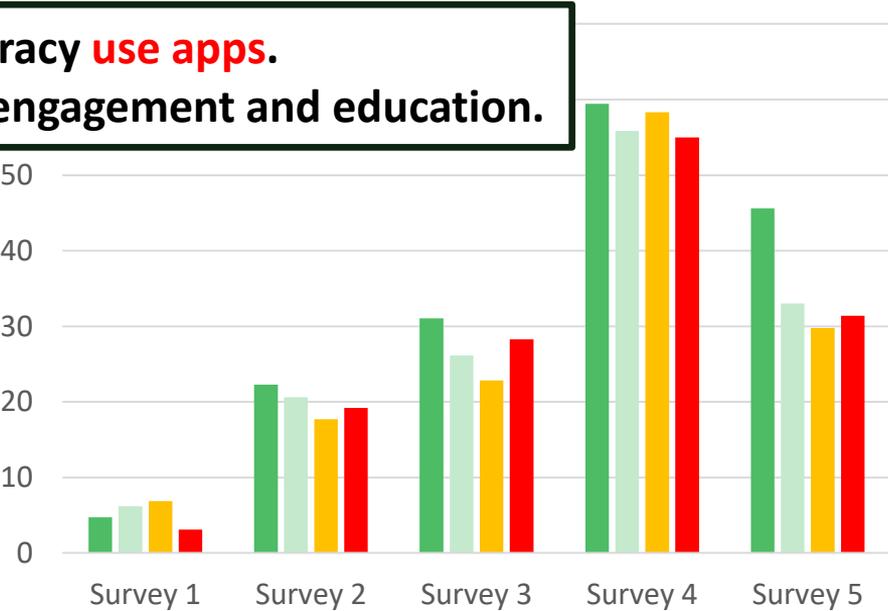
System-Level: Intervening with Support Technology

Response Rate, n (%)



- 1. Patients with low health literacy **use apps**.
- 2. May provide a platform for engagement and education.

Days from Sign-up to Survey Completion

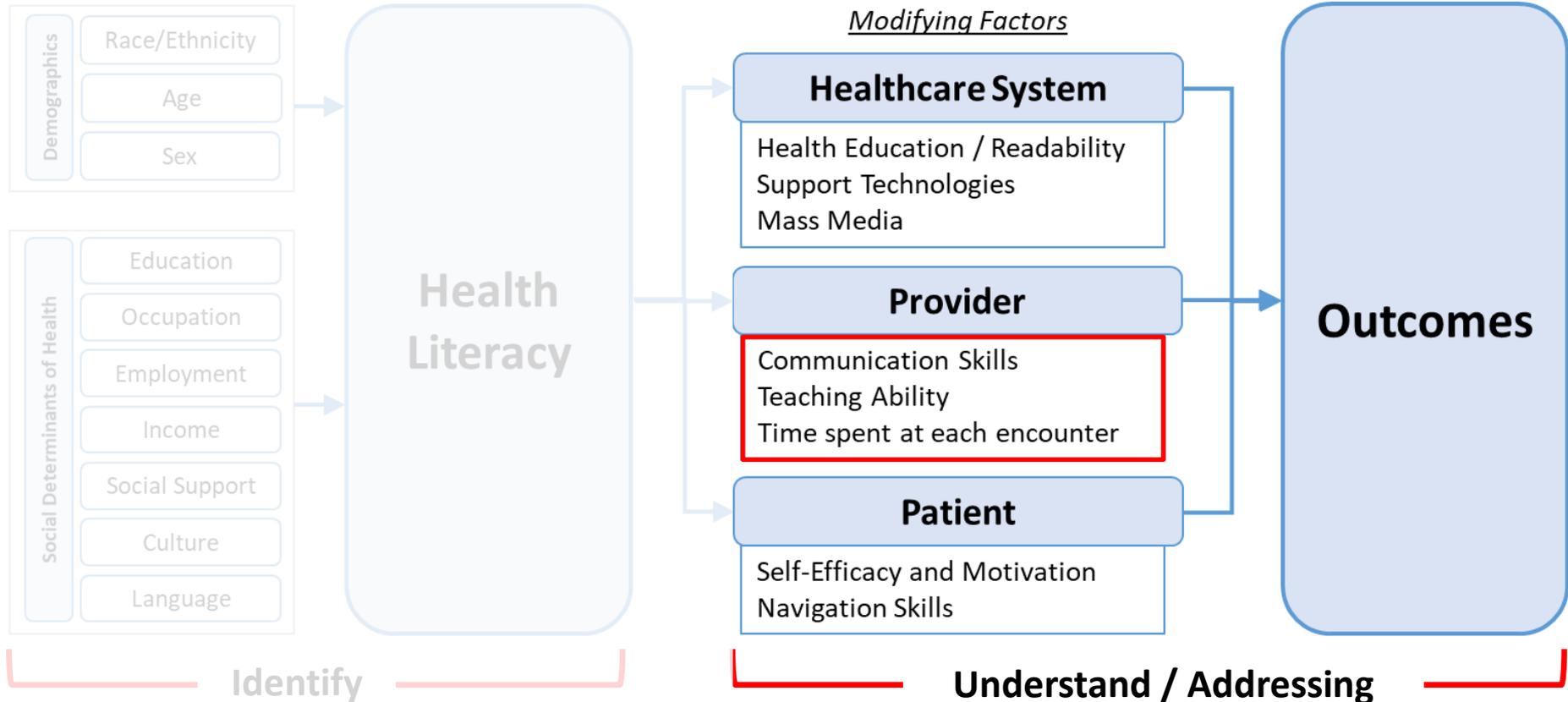


■ High ■ Intermediate High ■ Intermediate ■ Low

Identify

Understand

Intervene



Provider-Level: Intervening on Communication

- **Teach-back or show-back**
 - Tell me your understanding
 - How will you describe this to your family?
- **Ask Me 3[®]** (aim to answer these questions)
 - What is my main problem? [*diagnosis*]
 - What do I need to do? [*treatment*]
 - Why is it important that I do this? [*benefits/context*]
- **Slow down**
- Use plain language, **pictures** and teaching tools

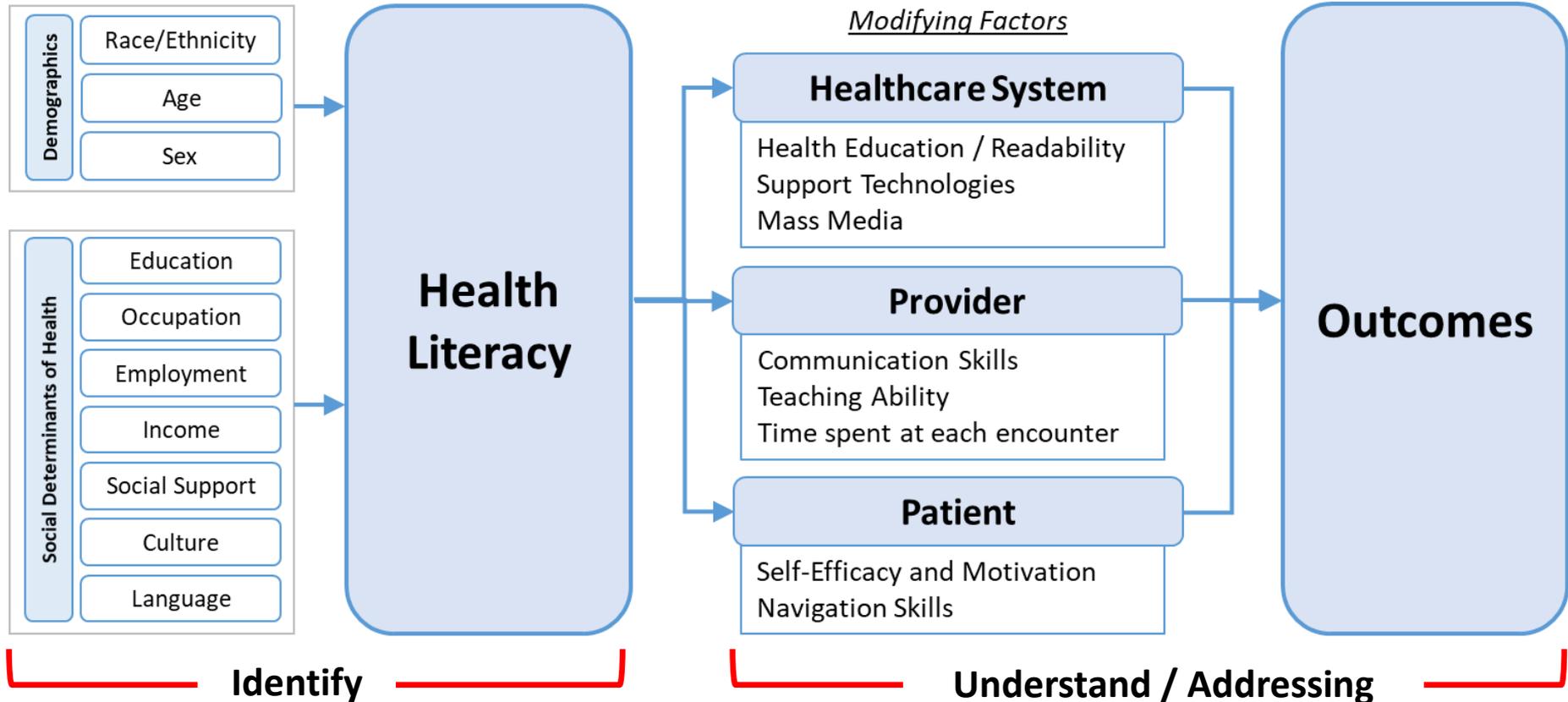
Avoid asking
Do you understand?
Do you have any questions?



Identify

Understand

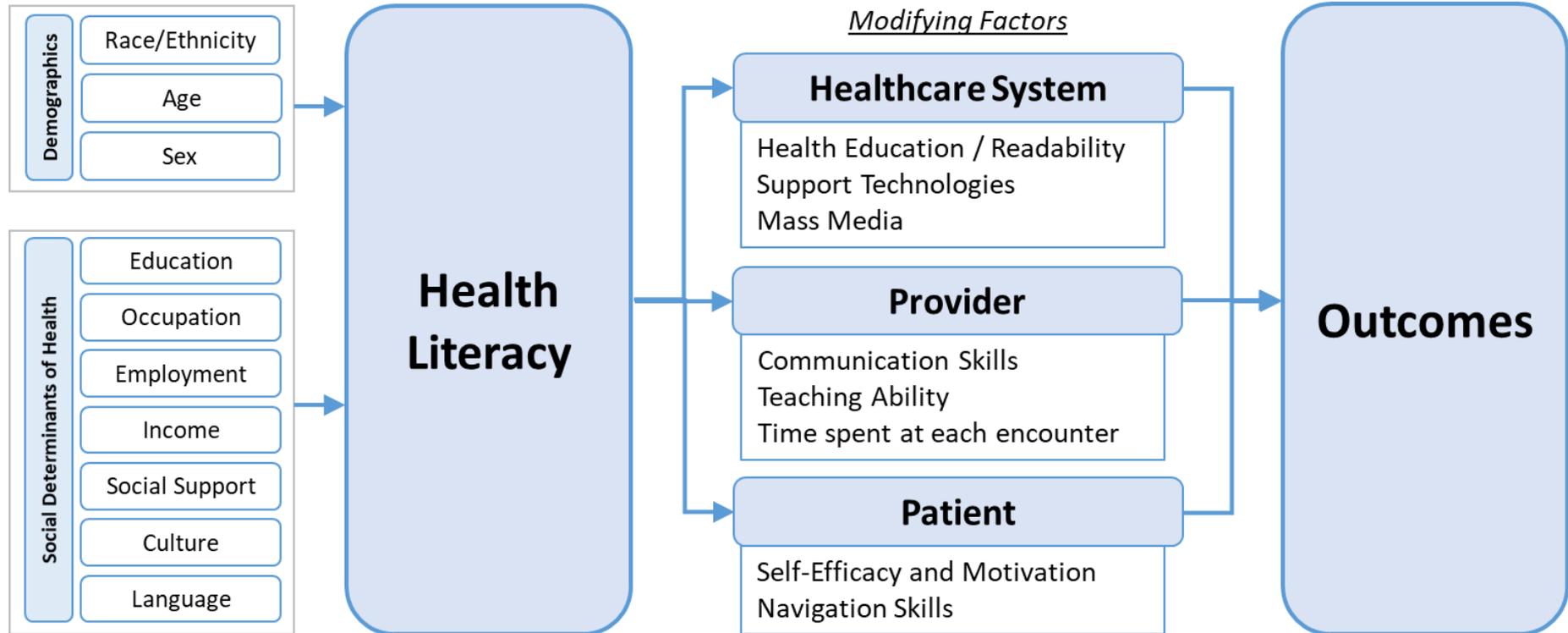
Intervene



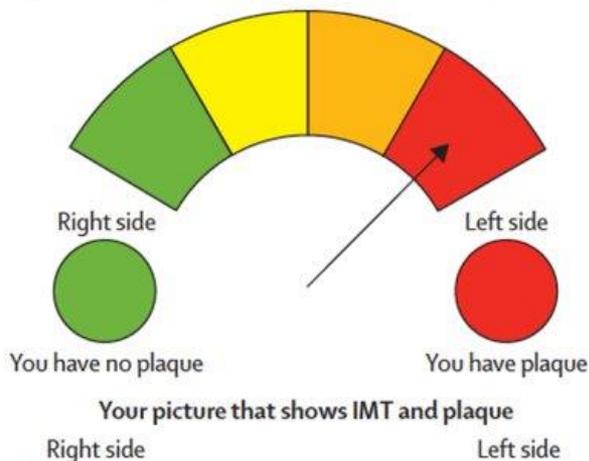
Identify

Understand

Intervene



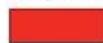
Your vascular wall thickness is presented as vascular age
The green sector corresponds to wall thickness in patients being at least 10 years younger than your actual age, and the red sector at least 10 years older



IMT shown with a coloured line



Plaque shown with a marking



Visualization of asymptomatic atherosclerotic disease for optimum cardiovascular prevention (VIPVIZA): a pragmatic, open-label, randomised controlled trial



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Summary

Background Primary prevention of cardiovascular disease often fails because of poor adherence among practitioners and individuals to prevention guidelines. We aimed to investigate whether ultrasound-based pictorial information about subclinical carotid atherosclerosis, targeting both primary care physicians and individuals, improves prevention.

Methods Visualization of asymptomatic atherosclerotic disease for optimum cardiovascular prevention (VIPVIZA) is a pragmatic, open-label, randomised controlled trial that was integrated within the Västerbotten Intervention Programme, an ongoing population-based cardiovascular disease prevention programme in northern Sweden. Individuals aged 40, 50, or 60 years with one or more conventional risk factors were eligible to participate. Participants underwent clinical examination, blood sampling, and ultrasound assessment of carotid intima media wall thickness and plaque formation. Participants were randomly assigned 1:1 with a computer-generated randomisation list to an intervention group (pictorial representation of carotid ultrasound plus a nurse phone call to confirm understanding) or a control group (not informed). The primary outcomes, Framingham risk score (FRS) and European systematic coronary risk evaluation (SCORE), were assessed after 1 year among participants who were followed up. This study is registered with ClinicalTrials.gov, number NCT01849575.

Findings 3532 individuals were enrolled between April 29, 2013, and June 7, 2016, of which 1783 were randomly assigned to the control group and 1749 were assigned to the intervention group. 3175 participants completed the 1-year follow-up. At the 1-year follow-up, FRS and SCORE differed significantly between groups (FRS 1.07 [95% CI 0.11 to 2.03, $p=0.0017$] and SCORE 0.16 [0.02 to 0.30, $p=0.0010$]). FRS decreased from baseline to the 1-year follow-up in the intervention group and increased in the control group [-0.58 [95% CI -0.86 to -0.30] vs 0.35 [0.08 to 0.63]]. SCORE increased in both groups [0.13 [95% CI 0.09 to 0.18] vs 0.27 [0.23 to 0.30]].

Interpretation This study provides evidence of the contributory role of pictorial presentation of silent atherosclerosis for prevention of cardiovascular disease. It supports further development of methods to reduce the major problem of low adherence to medication and lifestyle modification.

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Introduction

Smoking cessation, physical activity, statins, and anti-hypertensive medication to prevent cardiovascular disease are among the most evidence-based and cost-effective treatments in health care. However, in the real world, prevention fails because of low and non-sustained adherence to prevention guidelines among practitioners and individuals.^{1,2} Statistical modelling based on clinical risk factors is recommended for risk assessment of cardiovascular disease, and the Framingham risk score (FRS) and the European systematic coronary risk evaluation (SCORE) are the most widely used measures.^{3,4} Evidence showing that use of these scores translates into reduction of cardiovascular disease morbidity or mortality is scarce.⁵ These risk scores might be too abstract and

therefore fail to communicate risk in order to stimulate appropriate pharmacological prescription and enhanced motivation for a healthier lifestyle.

Information alone rarely leads to rational behavioural modification.⁶ The recall of advice regarding exercise and diet is poorer than advice to take medications.⁷ The risk of cardiovascular disease is usually communicated to individuals verbally;⁸ visual tools are seldom used.^{9,10} A more person-centred approach by adding pictorial information about the individual's atherosclerosis would increase motivation and adherence to guidelines.¹¹ It could be argued that this is as important as development of new treatment modalities for prevention of cardiovascular disease. Providing information to physicians concerning their patients' risk of cardiovascular disease has been

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Teach-back,
Improve consent

Optimize education
material

Improve
family updates

Improve discharge
process

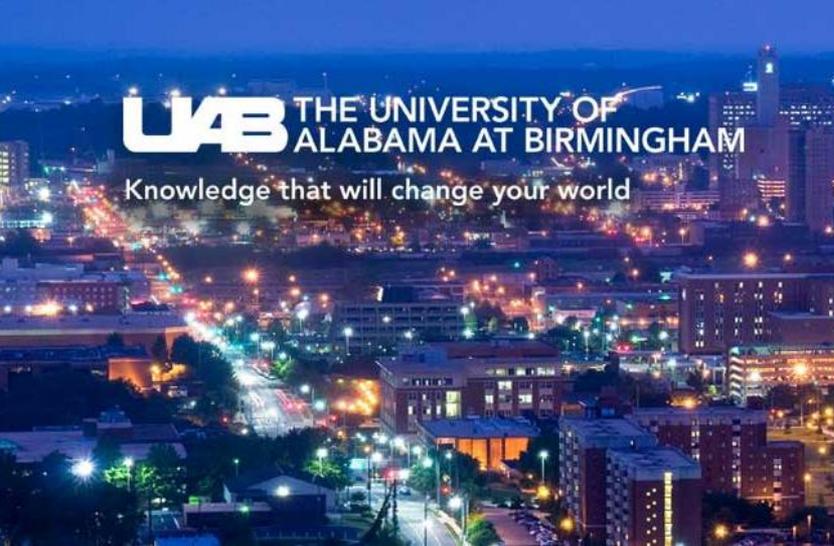
Targeted
follow-up

Equip each level of surgical care with best-evidence health literacy practices



Bottom Line

Health literacy matters in surgery and opportunities exist to make surgical care more health literate.



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