

Health and Digital Literacy

SHTM

Hants Williams, PhD, RN

Overview

- What is health literacy
- Why is health literacy important - Why Care
- How can we improve health literacy - technology? people?

Health Literacy Defined

Health Literacy

Definitions

ACA: “...the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions”

At least two levels...

Personal health literacy is the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others.

Organizational health literacy is the degree to which organizations equitably enable individuals to find, understand, and use information and services to inform health-related decisions and actions for themselves and others.

What the define translates into...

- Emphasize people's ability to **use** health information rather than just understand it
- Focus on the ability to make “well-informed” **decisions** rather than “appropriate” ones
- Incorporate a public health perspective
- Acknowledge that **organizations have a responsibility** to address health literacy

Why care

Why Care Health Literacy

1. Healthcare is complicated...

- Adults **with proficient health literacy skills** can perform complex and challenging literacy activities—such as integrating, synthesizing, and analyzing multiple pieces of information in a complex document.

Why Care Health Literacy

COMPUTER POSTING DATE	UNIT	SERVICE CODE	SERVICE DESCRIPTION
Date	Number of units of a medical procedure, supply, drug or test provided	Internal hospital billing code	Description of a medical procedure, supply, drug or test provided
2/17/13	1 6100002	4FAS ROOM CHARGE SEMI-P	5,842.00
2/18/13	1 6100002	4FAS ROOM CHARGE SEMI-P	5,842.00
2/18/13	1 6100004	4FAS ROOM CHARGE SEMI-P	5,842.00
2/18/13	1 6100004	4FAS ROOM CHG MED JUST	5,842.00
		SUBTOTAL	23,368.00
2/20/13	1 6608008	MAJOR SURGERY - 2 HOURS	4,765.00
		SUBTOTAL	4,765.00
2/20/13	1 6653022	RECOVERY ROOM 1 1/4 HR	844.00
		SUBTOTAL	844.00
2/17/13	1 6716452	IV. SINDEX/0.45% NACL 1000	11.00
2/17/13	1 6716412	IVPB 50ML DSW	5.00
2/18/13	1 6716412	IVPB 50ML DSW	5.00
2/19/13	1 6716412	IVPB 50ML DSW	5.00
2/20/13	1 6716512	IV. LACTATED RINGERS 1000	11.00
		SUBTOTAL	37.00
2/17/13	1 6756203	IV. SET SECONDARY 2C7431	2.00
2/17/13	1 6756232	IV TUBING, CONTINUOFLO 110	4.00
2/17/13	1 6757010	STOCKING DVT REGULAR	28.00
2/17/13	1 6756232	IV. TURBING, CONTINUOFLO 110	4.00
2/17/13	1 6756237	IV TURBING-CENT LINE BLOOD	12.00
2/18/13	1 6756203	IV. SET SECONDARY 2C7431	2.00
2/18/13	1 6756232	IV TUBING, CONTINUOFLO 110	4.00
2/20/13	1 6756232	IV TUBING, CONTINUOFLO 110	4.00
2/20/13	1 6756203	IV. SET SECONDARY 2C7431	2.00
2/20/13	1 6756205	IV TURBING, SOG ADMIN W/TIN	8.00
2/20/13	1 6756980	CUFF TOURNIQUE \$20-\$30	50.00
2/20/13	1 6751851	PLATE \$1270-\$1279	2,550.00
2/20/13	1 6754945	C1713	
2/20/13	1 6755074	GHS ANESTHESIA SET-UP	461.00
2/20/13	2 6755074	INHALATION AGENT PER HR	228.00
2/20/13	5 6757795	C1713	
2/20/13	1 6756939	SCREEN \$140-\$149	1,450.00
2/20/13	8 6758081	STAPLE \$20-\$29	50.00
2/20/13	1 6756931	SCREW END CAP	2,768.00
		SUBTOTAL	7,000.00
2/16/13	1 6780008	ER FACILITY PRE-LEVEL IV	1,018.00
2/16/13	1 6780026	ROCK CHARGE AED/SURG	5,842.00
		SUBTOTAL	7,652.00
2/16/13	1 7029350	BASIC METABOLIC PROFILE	147.00
2/16/13	1 7029951	ACUPUNCTURE	41.00
2/16/13	1 7028050	PIT PART THROMBOLYT	81.00
2/16/13	1 7028110	PRF TIME	73.00
2/16/13	1 7028110	OCU	118.00
2/17/13	1 7028300	CRK	118.00
2/17/13	1 7025120	IMMUNOGLOBULIN A	199.00
2/17/13	1 7025122	IMMUNOGLOBULIN G	169.00
2/17/13	1 7020229	HEPATITIS C ANTIBODY	264.00
2/17/13	1 7025123	IMMUNOGLOBULIN M	111.00
2/17/13	7 7028110	IV. "A" IN"Y"	0.00
		SUBTOTAL	15,947.00
2/17/13	1 7500604	DIPHENHYDRAMINE CAP 25MG	1.00
2/17/13	1 7502013	PANTOPRAZOLE 40MG TAB	1.00
2/17/13	1 7502013	DECONGESTANT 4MG/5ML 5ML TAB	16.00
2/17/13	1 7502609	PRIVIGEN 10% 10 ML PER 500MG	11,700.00
2/17/13	150 7503206	ALSTANACOPHEN TAB 25MG	2.00
2/17/13	2 7502920	DIPHENHYDRAMINE CAP 25MG	1.00
2/17/13	1 7505054	DS/0.45NS 1000.000 ML	8.00
2/17/13	1 7305723	PANTOPRAZOLE 40MG TAB	1.00
2/17/13	1 7502013	SUBTOTAL	12,036.15
2/21/13	1 7104617	DULTRARATIL SOL 50ML/100ML	55.00
2/21/13	200 7303177	ACETAMINOPHEN 1GM/10ML	50.00
2/21/13	1 7305543	CEFAZOLID PREMIX 500MG 9)	25.00
		SUBTOTAL	12,036.15
2/20/13	1 7359014	OR ANESTHESIA - 2 HOURS	1,928.00
		SUBTOTAL	1,722.00
2/20/13	1 7360120	I.S.	140.00
		SUBTOTAL	140.00
2/21/13	1 7370010	PP EXAMINATION	345.00
2/21/13	1 7371045	GAIT TRAINING-EACH 15 MIN	151.00
		SUBTOTAL	527.00
2/17/13	1 9731001	CARDIAC PHY- ECG INTERPRE	26.00
		SUBTOTAL	26.00
		BALANCE DUE	13,916.20
		PATIENT BALANCE DUE	13,916.20

...the medical bill



Stony Brook School of Health Technology and Management

2/20/13	1	6756980	C1713	CUFF TOURNIQUE \$20-\$30	50.00
2/20/13	1	6751851	C1713	PLATE \$1270-\$1279	2,550.00
2/20/13	1	6754945	C1713	SURGEON \$600-600	600.00
2/20/13	1	6755070	C1713	GEN ANESTHESIA SET-UP	461.00
2/20/13	2	6755074		INHALATION AGENT PER HR	228.00
2/20/13	5	6757795	C1713	SCREW \$140-\$149	1,450.00
2/20/13	1	6756939		STAPLE \$20-\$29	50.00
2/20/13	8	6758081		SCREW END CAP	2,768.00
2/20/13	1	6756931		PHYSIO STIM BONE GROWTH	7,000.00

Example of a medical supply code

2/16/13	1	6780008	99284	ER FACILITY FEE-LEVEL IV	1,010.00
2/16/13	1	6780026		ROOM CHARGE RED/SURG	5,842.00
				SUBTOTAL	7,652.00
2/16/13	1	7029350	80048	BASIC METABOLIC PROFILE	147.00
2/16/13	1	7029991	36415	VENIPUNCTURE	41.00
2/16/13	1	7028090	85730	PTT PART THROMBOPLAST	81.00
2/16/13	1	7028110	85610	PRO TIME	73.00
2/16/13	1	7029300	85025	CBC	118.00
2/17/13	1	7029300	85025	CRP	118.00
2/17/13	1	7025120	82784	IMMUNOGLOBULIN A	70.00
2/17/13	1	7025122	82784	IMMUNOGLOBULIN G	169.00
2/17/13	1	7020029	86803	HEPATITIS C ANTIBODY	264.00
2/17/13	1	7025123	82784	IMMUNOGLOBULIN M	131.00
2/17/13	1	7028111	577	HIV 'A' ANTIBODY	110.00

Hospital ER Level Facility Code:
Amount of resources needed by the
hospital to treat you

2/17/13	1	7300604		DIPHENHYDRAMINE CAP 25MG	1.00
2/17/13	1	7302039		PANTOPRAZOLE 40MG TAB	1.00
2/17/13	2	7303537		DEXAMETHAS 4MG/ML 5ML INJ	16.00
2/17/13	1	7302609		PREMIX	0.00
2/17/13	150	7303206	J1459	PRIVIGEN 10% LG PER 500MG	11,700.00
2/17/13	2	7302920		ACETAMINOPHEN TAB 325MG	12.00
2/17/13	1	7300604		DIPHENHYDRAMINE CAP 25MG	1.00
2/17/13	1	7309723		D5/0.4NSNS 1000.000 ML	8.00
2/17/13	1	7302039		PANTOPRAZOLE 40MG TAB	1.00

Example of a red flag: Unit that
appears particularly high

Drug administered and its dosage

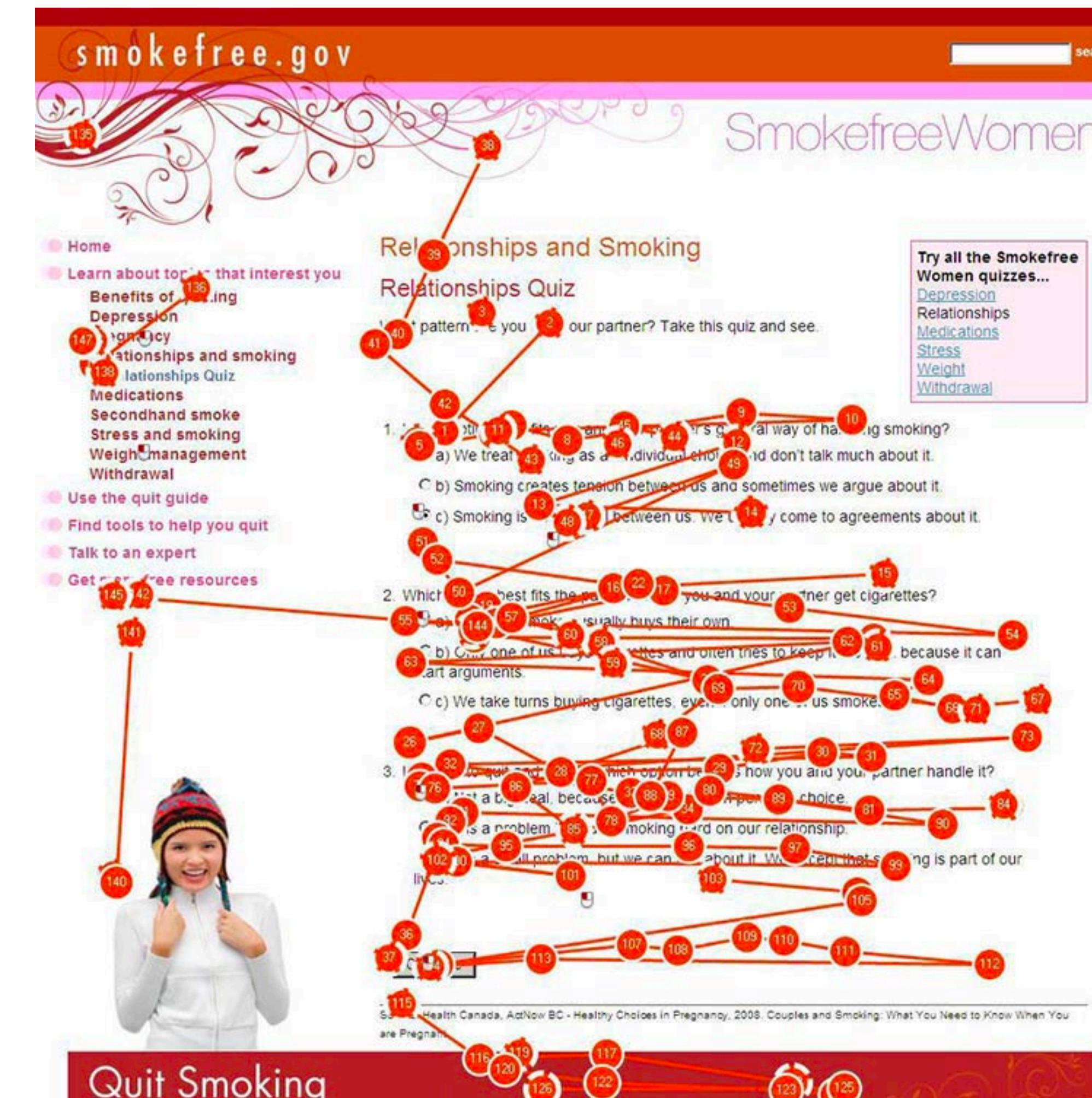
Example of charges that appear too
high

Time anesthesia provided while in
the operating room

Example of a medical procedure
code. In this case a physical
therapy evaluation.

2/21/13	1	7304617		DAUSTRARIN SOL SOL/JIU/.2M	55.00
2/21/13	200	7303177	J0131	ACETAMINOPHEN 1GM/10MG	50.00
2/21/13	2	7303543	J0690	CEFAZOLIN PREMX 500MG 9)	25.00
				SUBTOTAL	12,036.15
2/20/13	1	7359014		OR ANESTHESIA - 2 HOURS	1,722.00
				SUBTOTAL	1,722.00
2/20/13	1	7360120	94799	I.S.	140.00
				SUBTOTAL	140.00
2/21/13	1	7370010	97001	PT EVALUATION	916.00
2/21/13	1	7371045	97116	GAIT TRAINING-EACH 15 MIN	151.00
				SUBTOTAL	527.00
2/17/13	1	9731001	93010	CARDIAC PHY- ECG INTERPRE	26.00
				SUBTOTAL	26.00

Why Care Health Literacy

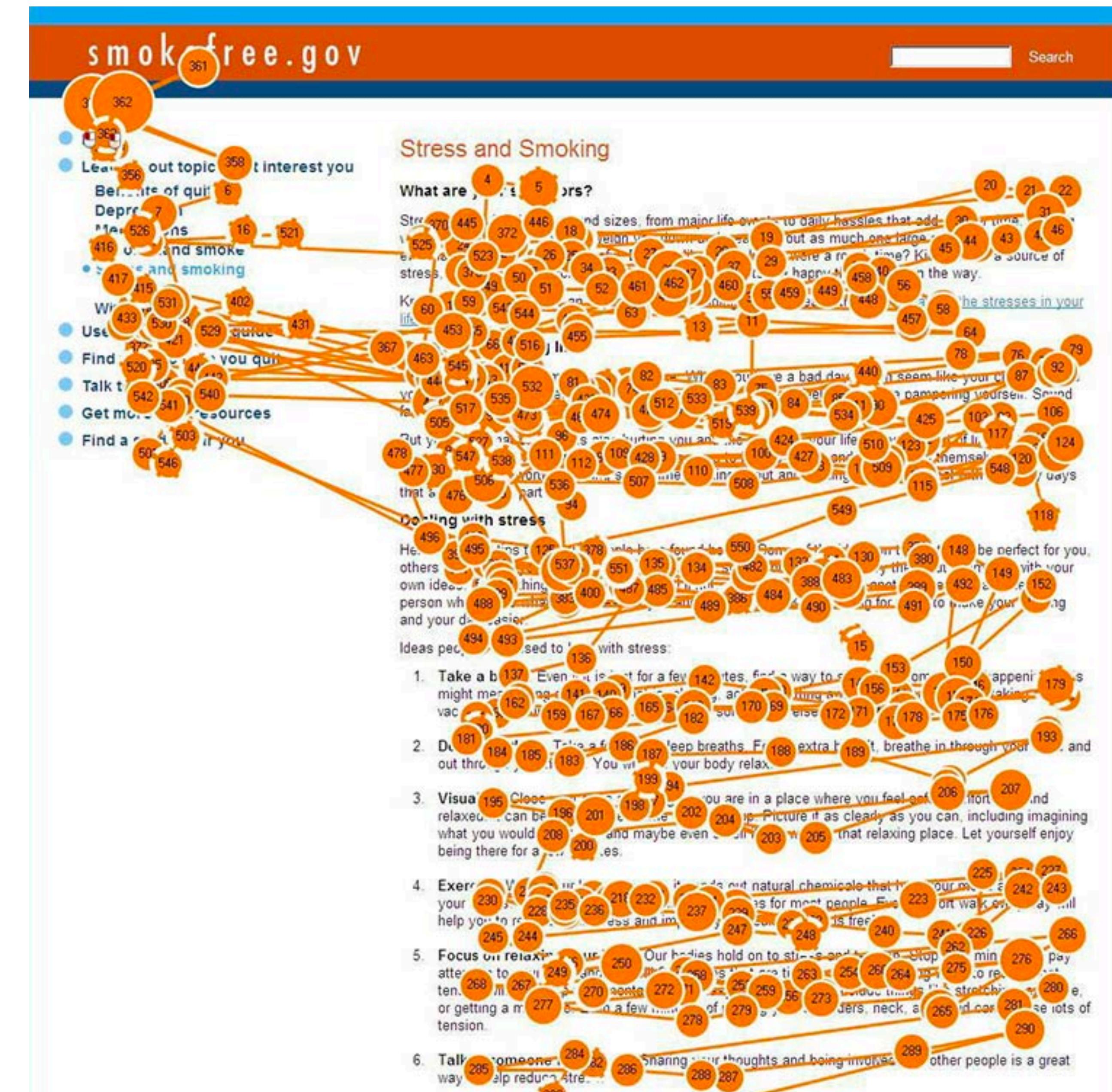


...reading health literature



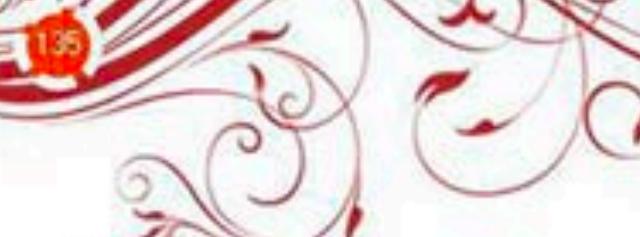
Gaze path of a reader who does not have limited literacy skills skimming a page.





Gaze path of a user who has
**limited literacy skills reading
(and re-reading) every word.**

SmokefreeWomen



- [Home](#)
- [Learn about topics that interest you](#)
 - [Benefits of quitting](#)
 - [Depression](#)
 - [Fancy](#)
 - [Relationships and smoking](#)
 - [Relationships Quiz](#)
 - [Medications](#)
 - [Secondhand smoke](#)
 - [Stress and smoking](#)
 - [Weight management](#)
 - [Withdrawal](#)
- [Use the quit guide](#)
- [Find tools to help you quit](#)
- [Talk to an expert](#)
- [Get smokefree resources](#)



Relationships and Smoking

Relationships Quiz

What pattern do you see in your relationship? Take this quiz and see.

1. Which statement best fits the pattern you and your partner get cigarettes?
 - a) We treat each other as a individual and don't talk much about it.
 - b) Smoking creates tension between us and sometimes we argue about it.
 - c) Smoking is a way between us. We try come to agreements about it.
 2. Which best fits the pattern you and your partner get cigarettes?
 - a) You usually buys their own.
 - b) Only one of us smokes and often tries to keep it because it can start arguments.
 - c) We take turns buying cigarettes, even if only one of us smokes.
 3. Which option best describes how you and your partner handle it?
 - a) Not a big deal, because it's a choice.
 - b) It's a problem, smoking hard on our relationship.
 - c) It's a small problem, but we can live with it. We realize that smoking is part of our life.
- Sources: Health Canada, ActNow BC - Healthy Choices in Pregnancy, 2008; Couples and Smoking: What You Need to Know When You are Pregnant.

Quit Smoking

Try all the Smokefree Women quizzes...
[Depression](#)
[Relationships](#)
[Medications](#)
[Stress](#)
[Weight](#)
[Withdrawal](#)

Stress and Smoking

What are stressors?

Stressors are things from major life events to daily hassles that add up over time. Stressors can be as much one large event like a job loss or a source of stress, like a bad day at work.

Krishna's life

Krishna's life is full of stressors. She has a job, a family, and a social life. She also has a lot of responsibilities at work and at home.

Using the quit guide

The quit guide is a great resource for people who want to quit smoking. It provides tips and tricks for quitting, as well as information on the health benefits of quitting.

Talk to an expert

Talking to an expert can be a great way to get support and advice when you're trying to quit smoking. An expert can help you understand the reasons why you smoke and provide you with strategies to help you quit.

Getting resources

There are many resources available to help you quit smoking. These include quit lines, support groups, and online resources.

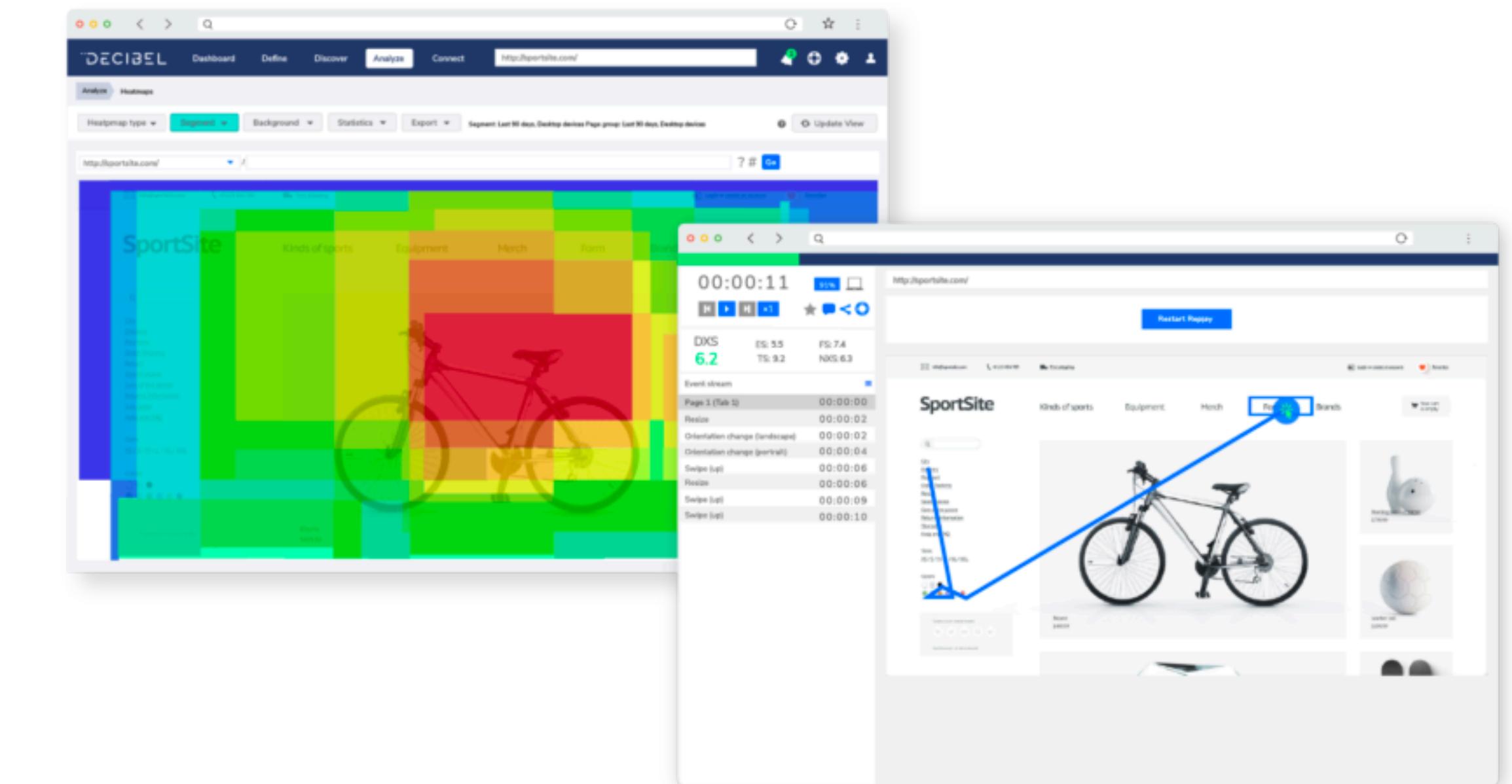
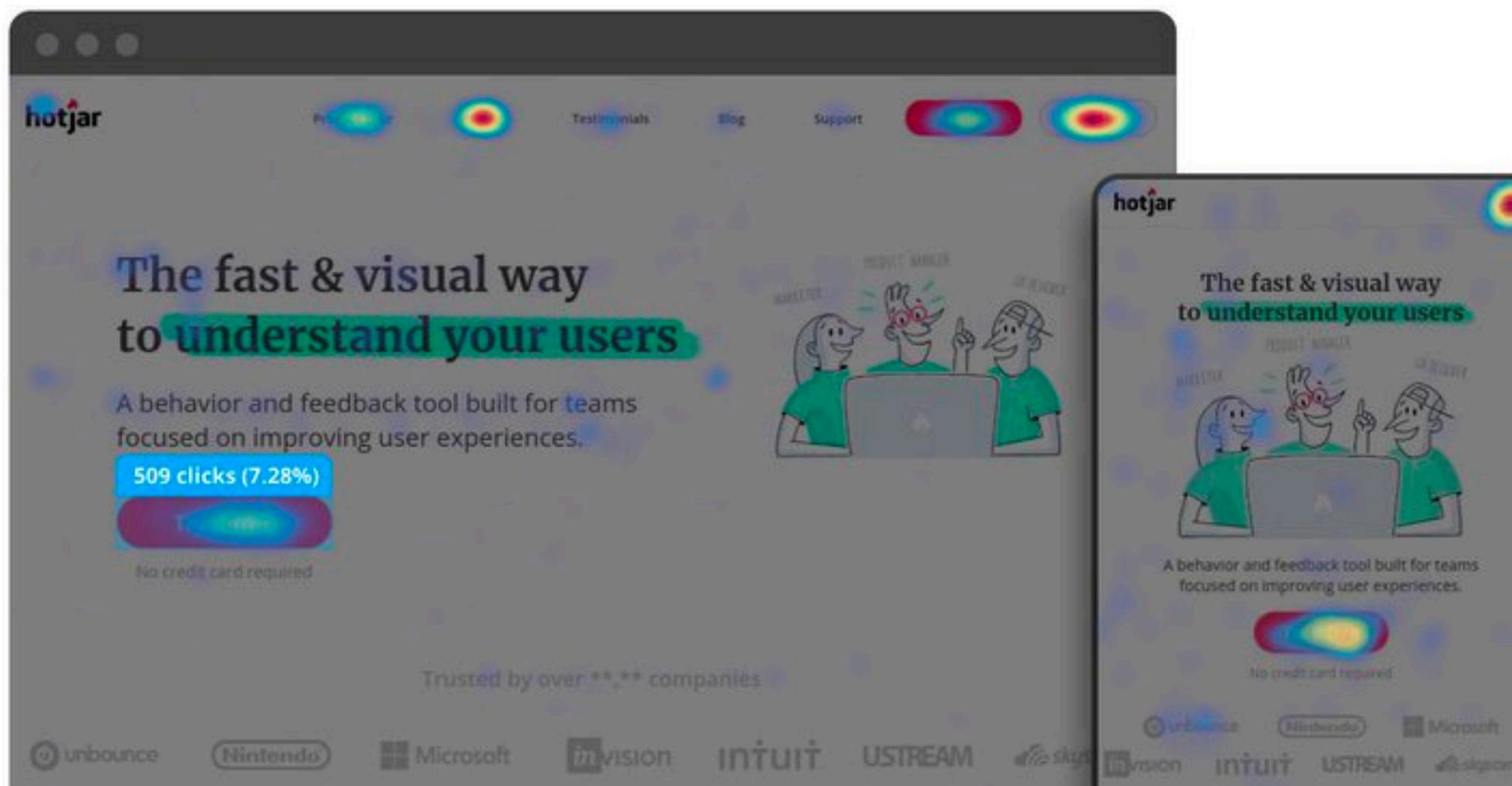
Dealing with stress

Dealing with stress is important for quitting smoking. Stress can trigger cravings and make it harder to quit. There are many ways to deal with stress, such as exercise, relaxation techniques, and healthy eating.

Ideas for dealing with stress:

1. Take a break. Even if it's just for a few minutes, find a way to relax. You might meditate, take a walk, or listen to music.
2. Deep breathing. Take a few deep breaths. Inhale through your nose and exhale through your mouth.
3. Visualization. Close your eyes and imagine you are in a place where you feel relaxed. You can be anywhere, like a beach or a forest.
4. Exercise. Exercise releases endorphins, which are natural chemicals that help you feel good. Find an activity you enjoy, like walking, running, or cycling.
5. Focus on relaxation. Try to focus on relaxing activities, like reading a book or listening to music.
6. Talking to someone. Talking to someone you trust can help reduce stress.

How we do this in AHI....



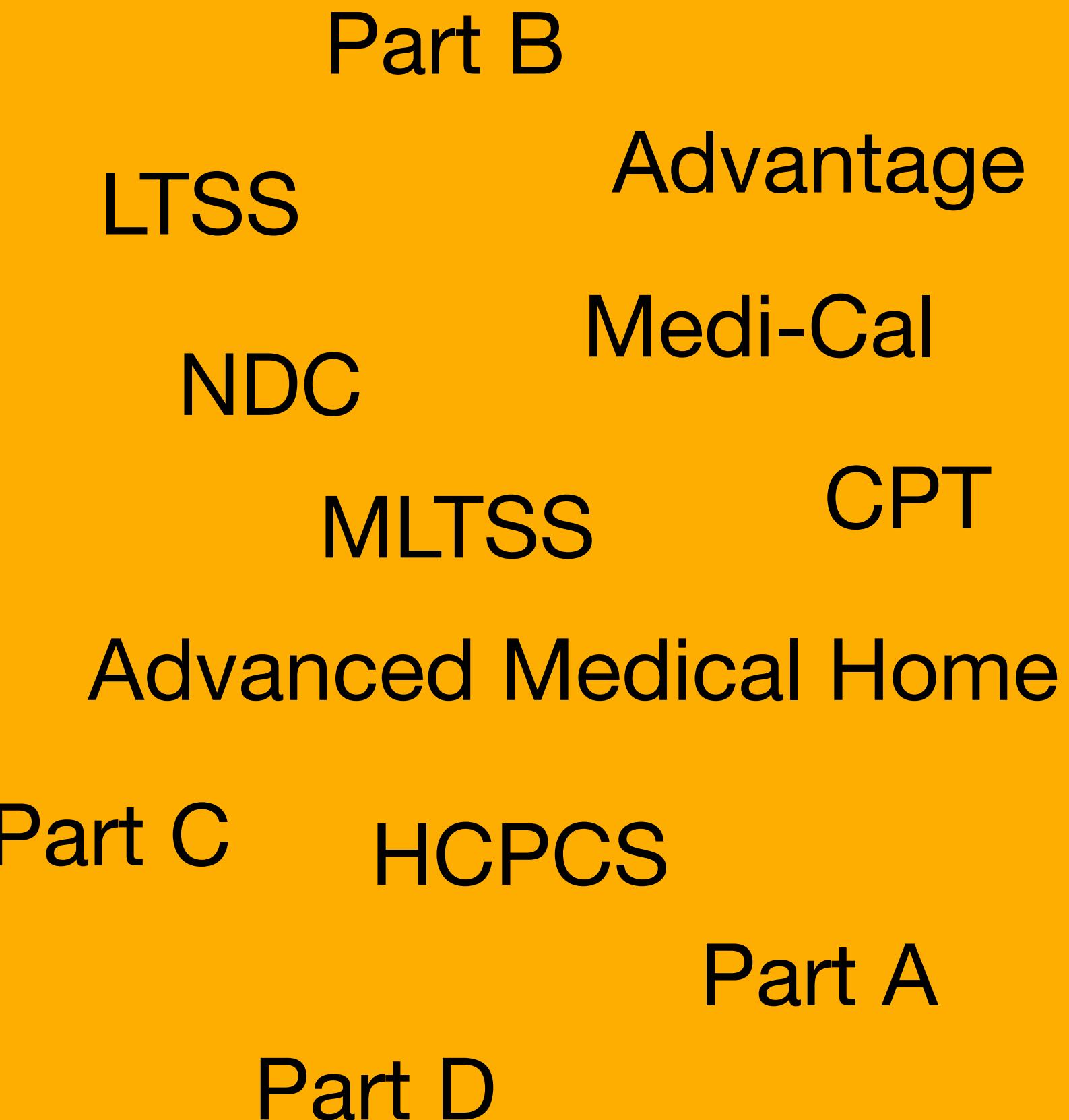
<https://www.hotjar.com/>

<https://decibel.com/>



Consumer of health care services

Medicare?



Medicaid?

Part B

LTSS

Advantage

NDC

Medi-Cal

MLTSS

CPT

Advanced Medical Home

Part C

HCPCS

Part A

Part D

Medicare?

Medicaid?

Medicare?

Part A

Part B

Part C

Part D

Advantage

NDC

CPT

HCPCS

Medicaid?

Medi-Cal

Advanced Medical Home

LTSS

MLTSS

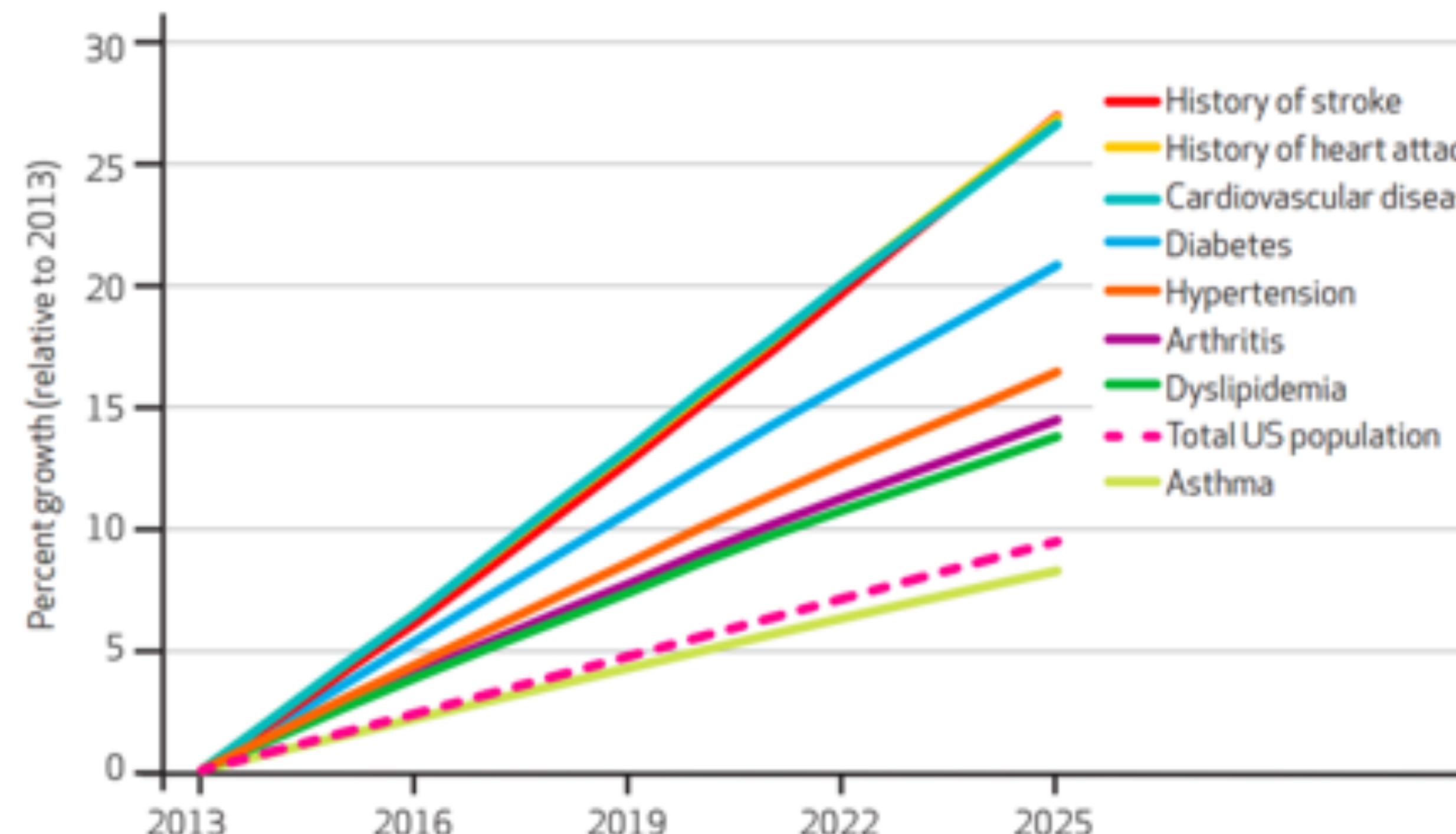
NDC

CPT

HCPCS

Combine this with potential physical and cognitive disabilities...

Projected Growth In Population With Chronic Conditions, 2013-25



Source: Timothy M. Dall, Paul D. Gallo, Ritasree Chakrabarti, Terry West, April P. Semilla and Michael V. StormAn Aging Population And Growing Disease Burden Will Require A Large And Specialized Health Care Workforce By 2025 Health Affairs, 32, no.11 (2013):2013-2020

Pre-covid estimates:

2030 estimate made in 2000: 49.2%

(Wu, Shin-Yi, and Green, Anthony. Projection of Chronic Illness Prevalence and Cost Inflation. RAND Corporation, October 2000.)

2030 estimate made in 2016: 80.0%

(http://www.fightchronicdisease.org/sites/default/files/IHS_Technical_Report.pdf)

- This estimate is 30% higher than the model in 2000
- This new model means that over the next 10 years, chronic diseases will increase by 2% year over year

Combine this with care provider shortage

physicians in the US: 950,000 ([citation](#))

nurses in the US: 3.8 million ([citation](#))

physical therapists in the US: 200,000 ([citation](#))

respiratory therapists in the US: 100,000 ([citation](#))

...serving 330+ million patients

- Lack of coordination among health care providers
- Confusing forms and instructions
- Limited use of multimedia to convey information
- Insufficient time and incentives for patient education
- Differences in language and cultural preferences and expectations between doctors and patients
- Overuse of medical and technical terms to explain vital information

Why Care Health Literacy

2. The general population is NOT HEALTH LITERATE

- Current population data on literacy and health literacy skills in the United States come from the 2003 National Assessment of Adult Literacy (NAAL)
- From the more than 19,000 adults surveyed, **only 12 percent demonstrated Proficient health literacy** = effecting nearly 9/10 adults in the United States

Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). The health literacy of America's adults: Results from the 2003 National Assessment of Adult Literacy (NCES 2006-483). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Assume 9 out of 10 people will not understand what you tell them the first time you tell them....

Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). The health literacy of America's adults: Results from the 2003 National Assessment of Adult Literacy (NCES 2006-483). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Why Care Health Literacy

3. Leads to POOR OUTCOMES

Negatively associated with...

- the use of preventive services (e.g., mammograms or flu shots),
- management of chronic conditions (e.g., diabetes, high blood pressure, asthma, and HIV/AIDS)
- self-reported health.

Positively associated with...

- preventable hospital visits
- preventable hospital admissions
- medication errors
- mortality

Davis, T. C., Wolf, M. S., Bass, P. F. III, Middlebrooks, M., Kennen, E., Baker, D. W., et al. (2006). Low literacy impairs comprehension of prescription drug warning labels. *Journal of General Internal Medicine*, 21(8), 847–851.

Davis, T. C., Wolf, M. S., Bass, P. F. III, Thompson, J. A., Tilson, H. H., Neuberger, M., et al. (2006). Literacy and misunderstanding prescription drug labels. *Annals of Internal Medicine*, 145(12), 887–894.

Wolf, M. S., Davis, T. S., Tilson, H. H., Bass, P. F., & Parker, R. M. (2006). Misunderstanding of prescription drug warning labels among patients with low literacy. *American Journal of HealthSystem Pharmacy*, 63, 1048–1055.

Juzych, M. S., Randhawa, S., Shukairy, A., Kaushal, P., Gupta, A., & Shalauta, N. (2008). Functional health literacy in patients with glaucoma in urban settings. *Archives of Ophthalmology*, 126(5), 718–724.

Why care COVID-19 - not wearing them



Why care

Vaccines - not taking them



Why care

Medications - improper use



Anyone think of other examples?

Present Issues

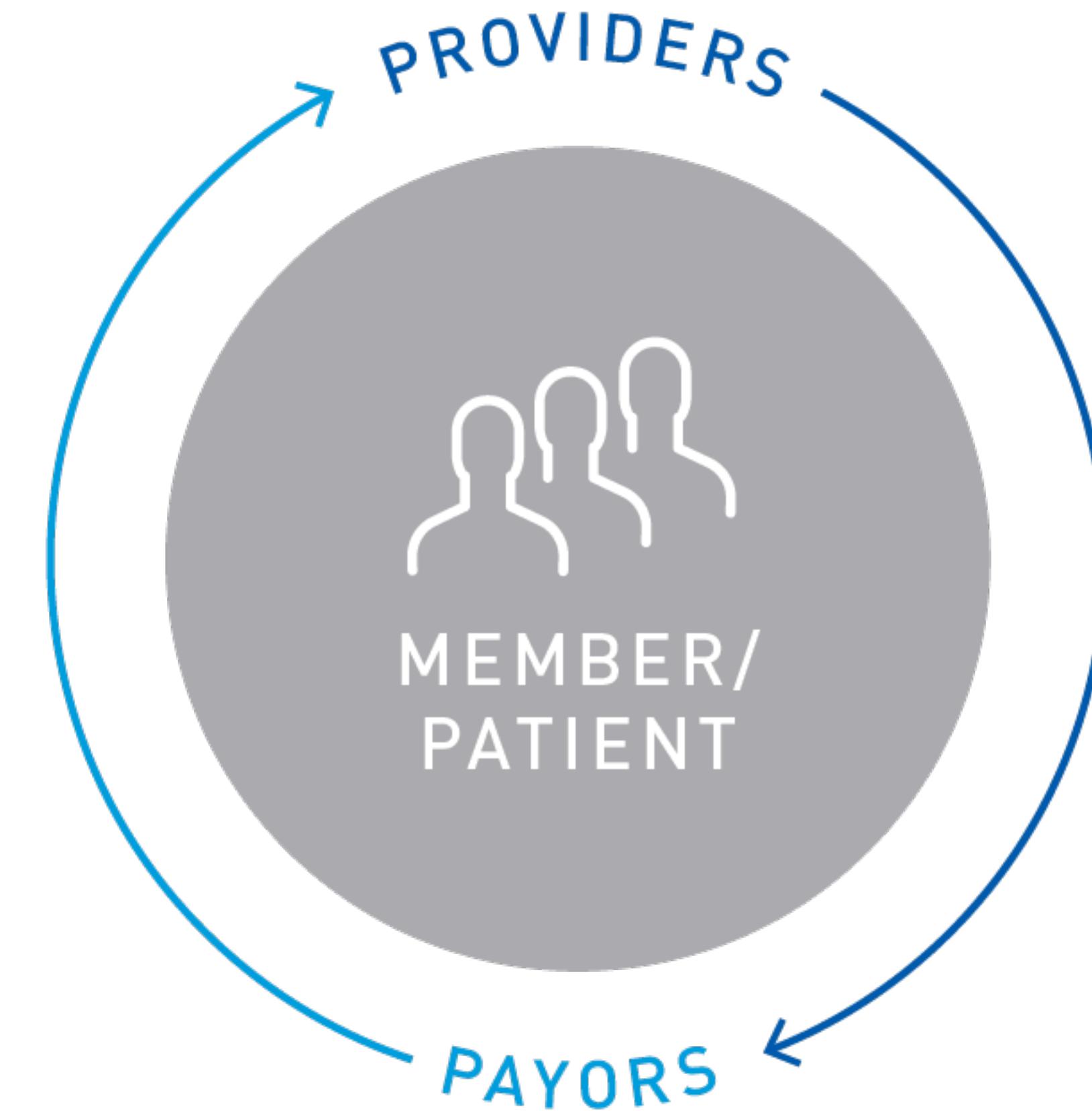
Health and Digital Literacy Levels

There 3 P's

....what are they?

Health and Digital Literacy Levels

There 3 P's



Key Issues

Health literacy

Individual level:

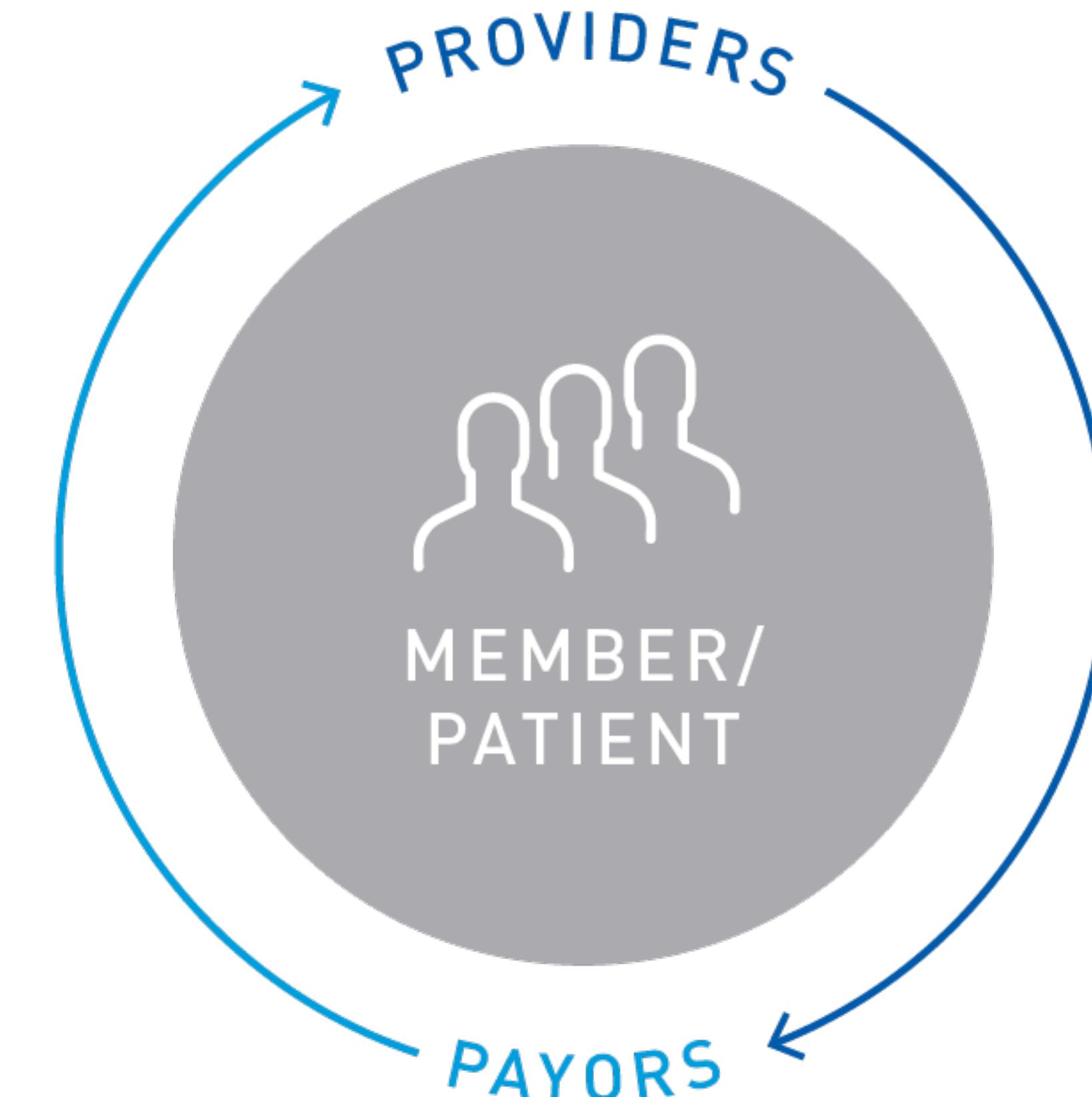
- those that are impoverished
- technologies to provide health information to the public and to patients and their potential for improving patient outcomes
- people have access to their health information when and where they need it (e.g., creation of user-friendly health apps)

Organizational level:

- reducing the complexity of health information and systems

Health and Digital Literacy Levels

- 1. Individual - Patient**
- 2. Individual - Patient Family**
- 3. Individual - Provider**
- 4. Group - Medical Center**
- 5. Group - Payer Organization**
- 6. State Level - New York**
- 7. Country Level - United States**

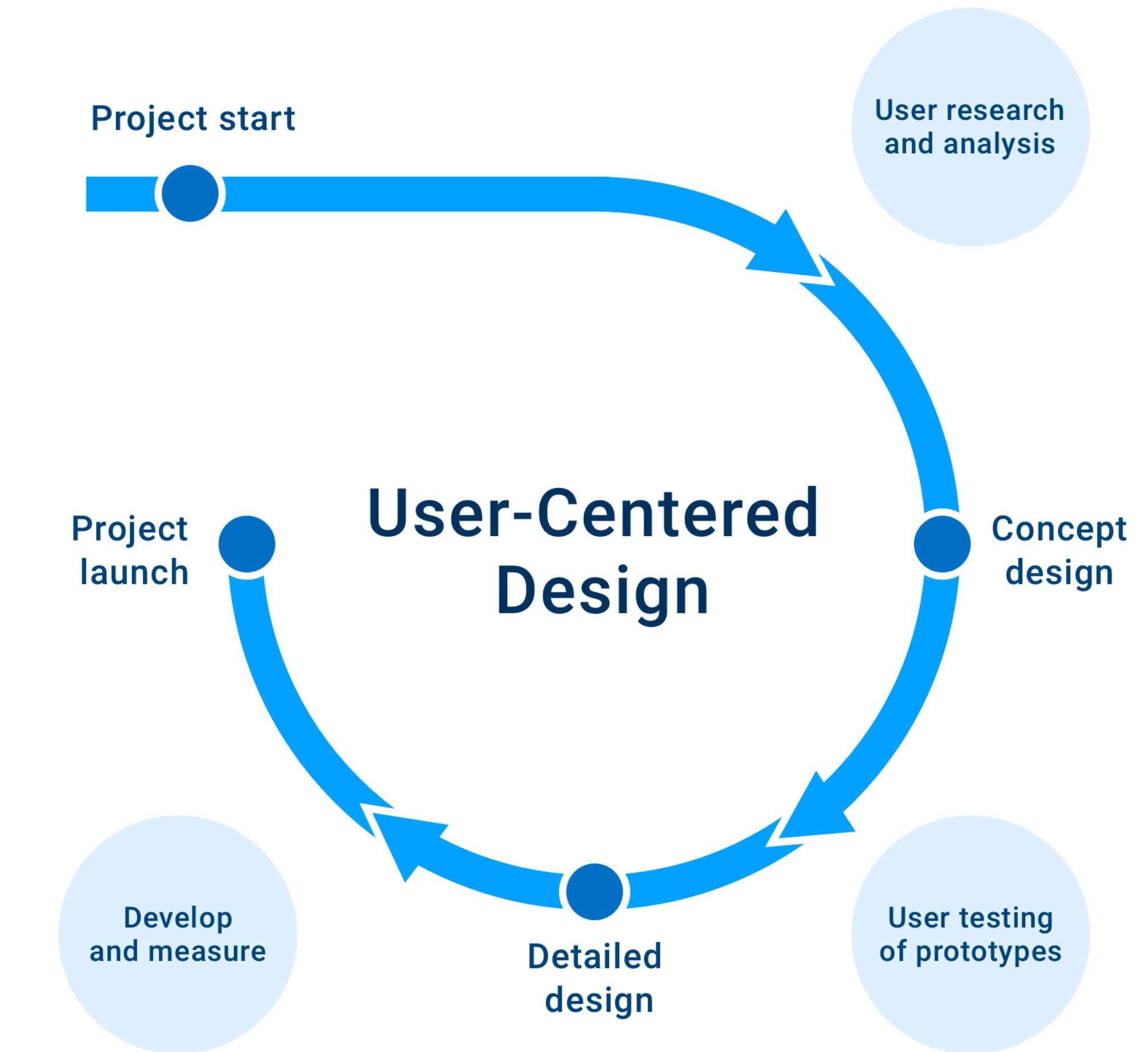


Interventions

Interventions: user centered design

User-centered Design

- Involving members of the target audience in the design and testing of communication products



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2818536/>

Table 4

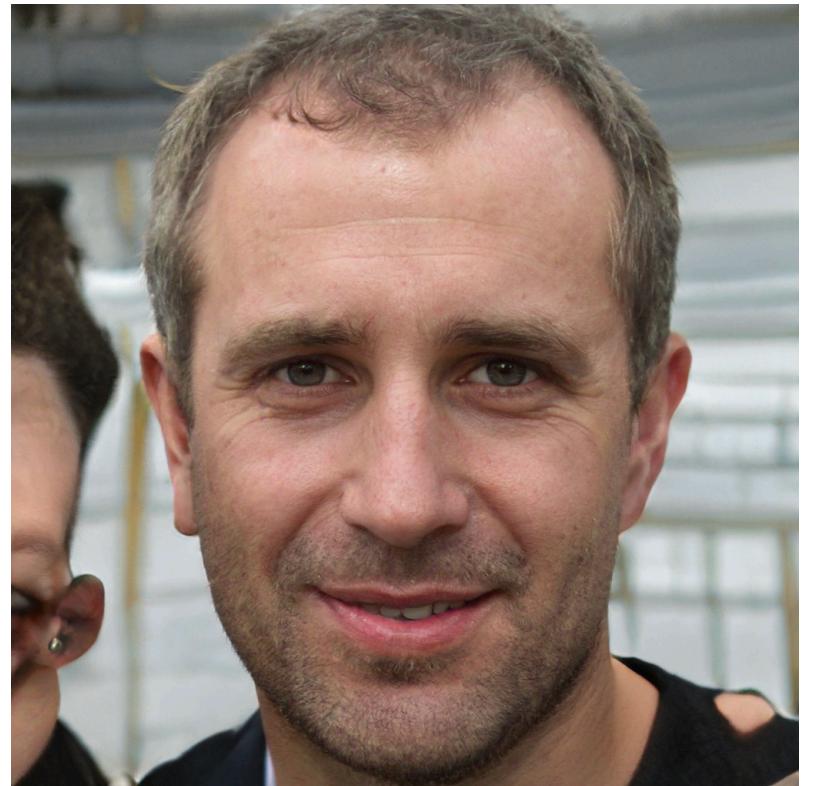
Mean PSSUQ Scores After the Field Study (N=6)

Items	M± SD
1. Easy to use system	1± 0
2. Simple to use system	1± 0
3. Effectively complete tasks & scenarios	1± 0
4. Quickly complete tasks & scenarios	1± 0
5. Efficiently complete tasks & scenarios	1± 0
6. Comfort using system	1± 0
7. Easy to learn to use system	1± 0
8. Believe could become productive using system	1± 0
9. Error messages were clear	2.0 + 1.7
10. Easily recover from mistakes	1± 0
11. Information about system was clear	1± 0
12. Easy to find needed information	1± 0
13. Easy to understand information	1± 0
14. Information helped complete the task	1± 0
15. Information was clearly organized	1± 0
16. Interface was pleasant	1± 0
17. Enjoyed using interface	1± 0
PSSUQ Overall	1.05 + .10

PSSUQ, Post-Study System Usability Questionnaire, PSSUQ scores range from 1-7 (lower scores = higher satisfaction).

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2818536/>

Interventions: universal approach



Universal Precautions

Duh....

- adopted the idea of “universal precautions” from infectious disease
- because it is **impossible to tell by looking who is affected by limited health literacy**
- if 9 of 10 English-speaking adults have less than proficient health literacy skills, it is an issue that affects everyone

Interventions: tailoring and targeting

Tailoring and Targeting

- Meeting a patient where they are at in their journal

- Acute vs Chronic

- Old vs Young

- Inpatient vs Outpatient

- Culture

- Education

- Device types: mobile, iOS, and/or

—> **Phenotype generation**

Interventions: organizational changes

Institute of Medicine (IOM)

10 traits of a health literate organization:

https://nam.edu/wp-content/uploads/2015/06/BPH_Ten_HLit_Attributes.pdf



The 10

10 traits of a health literate organization:

https://nam.edu/wp-content/uploads/2015/06/BPH_Ten_HLit_Attributes.pdf

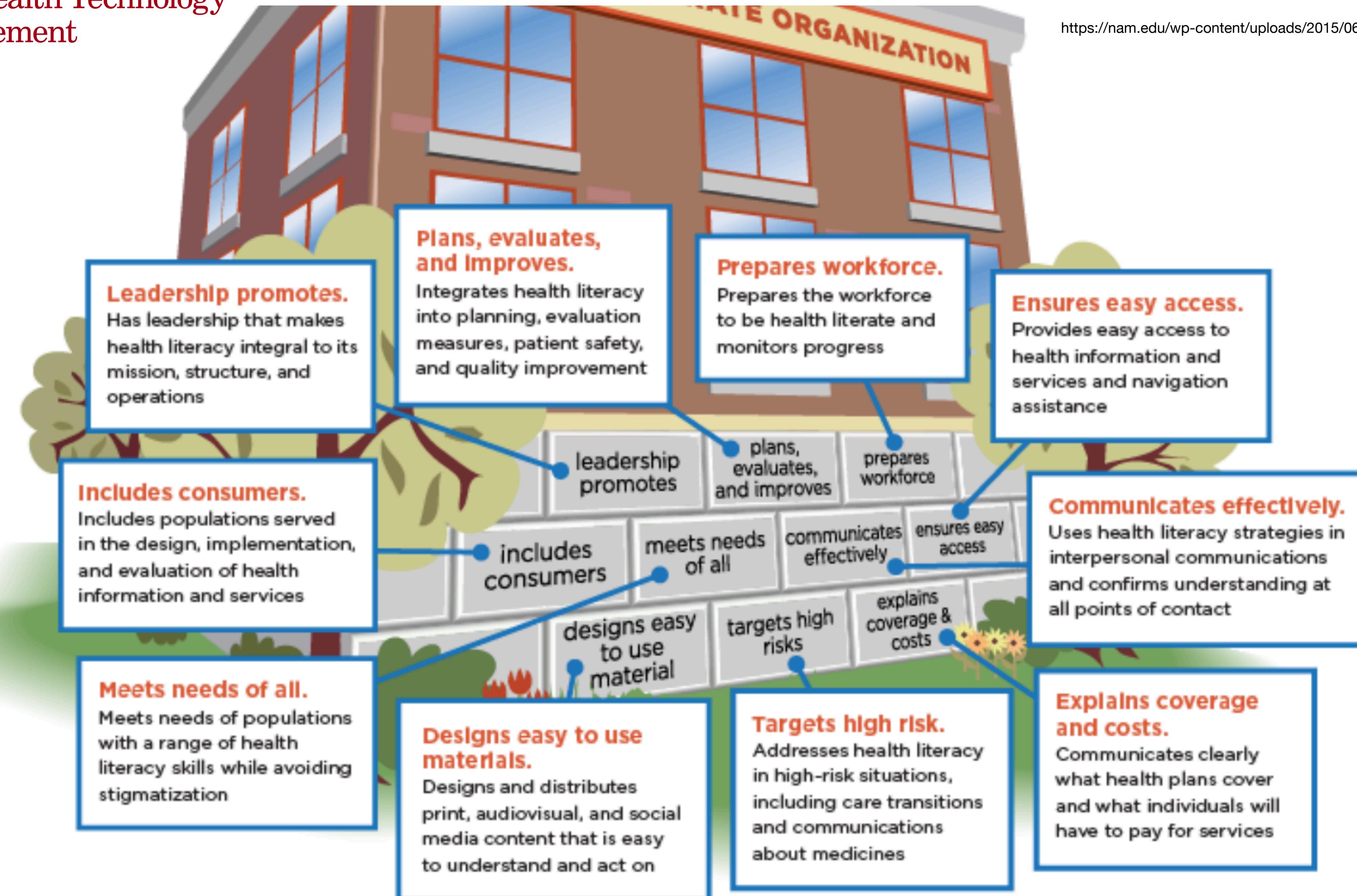
1. Has leadership that makes health literacy integral to its mission, structure, and operations.
2. Integrates health literacy into planning, evaluation measures, patient safety, and quality improvement.
3. Prepares the workforce to be health literate and monitors progress.
4. Includes populations served in the design, implementation, and evaluation of health information and services.
5. Meets the needs of populations with a range of health literacy skills while avoiding stigmatization.

The 10

10 traits of a health literate organization:

https://nam.edu/wp-content/uploads/2015/06/BPH_Ten_HLit_Attributes.pdf

5. Meets the needs of populations with a range of health literacy skills while avoiding stigmatization.
6. Uses health literacy strategies in interpersonal communications and confirms understanding at all points of contact.
7. Provides easy access to health information and services and navigation assistance.
8. Designs and distributes print, audiovisual, and social media content that is easy to understand and act on.
9. Addresses health literacy in high-risk situations, including care transitions and communications about medicines.
10. Communicates clearly what health plans cover and what individuals will have to pay for services.



Healthy People 2030

Literacy:

<https://health.gov/healthypeople/about/workgroups/health-communication-and-health-information-technology-workgroup>

Health Communication and Health Information Technology Workgroup Objectives (19)

Increase the proportion of adults whose health care provider checked their understanding – HC/HIT-01

Increase the proportion of adults whose health care providers involved them in decisions as much as they wanted – HC/HIT-03

Increase the proportion of adults with broadband internet – HC/HIT-05

Increase the proportion of hospitals that exchange and use outside electronic health information – HC/HIT-D05

Increase the proportion of doctors who exchange and use outside electronic health information – HC/HIT-D08

Problems related to my perspective

Applied Health Informatics

AI and ML - black box problem

Deployment (web, iOS, android) - equality / equity to access

General Adoption (care providers, patients) - engagement problem / NPS of user systems like EMRs, ERPs, etc...

100
1010
01

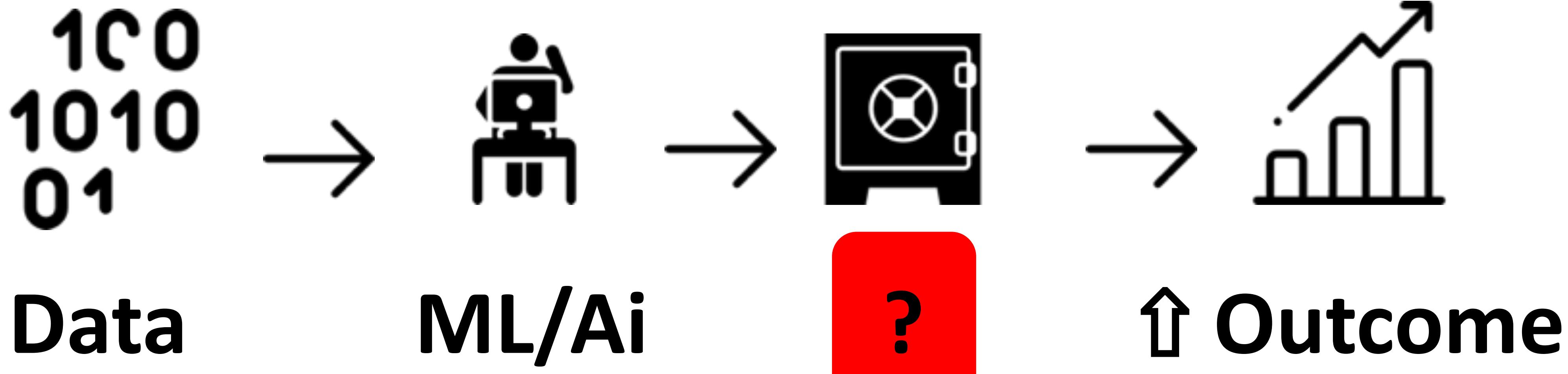


Data → ? → Outcome

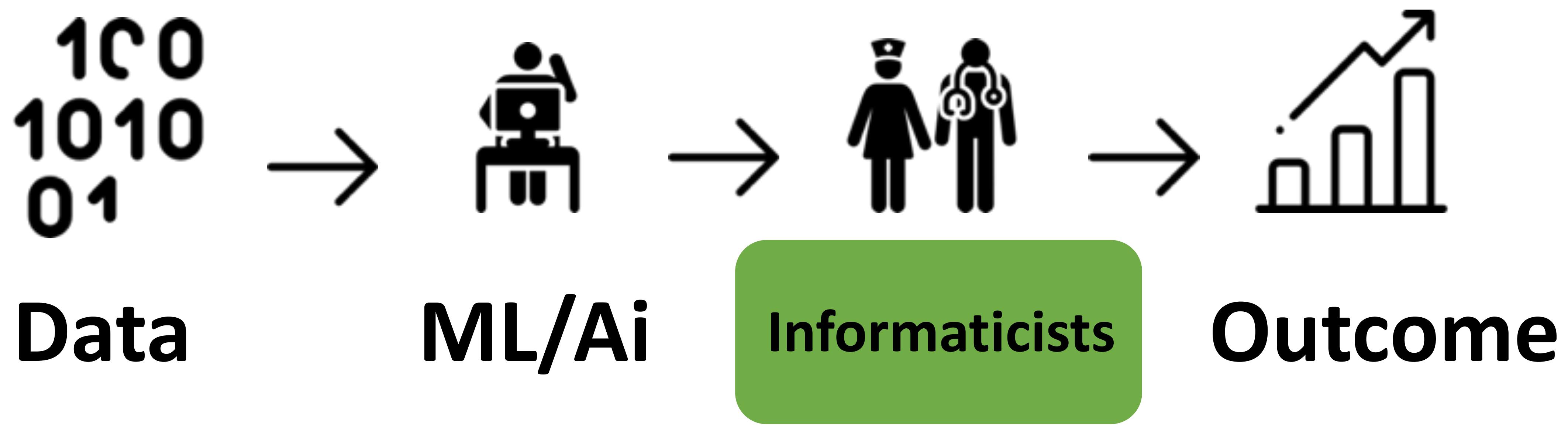
1C0
1010
01



Data → ML/Ai → Outcome
“Data Scientist Stuff”



Translate into
action





Intervention with
Metric



1C0
1010
01

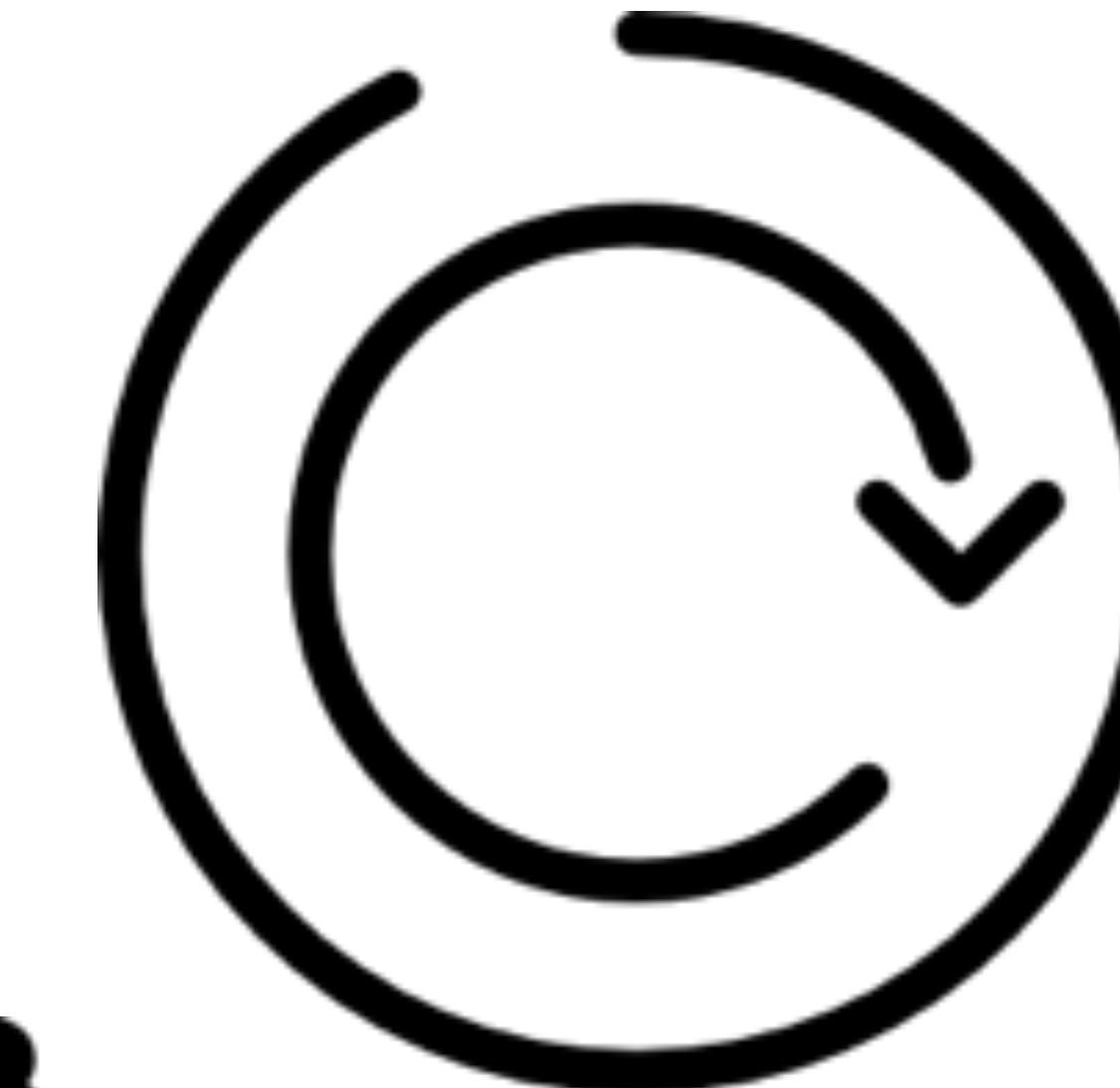
Data



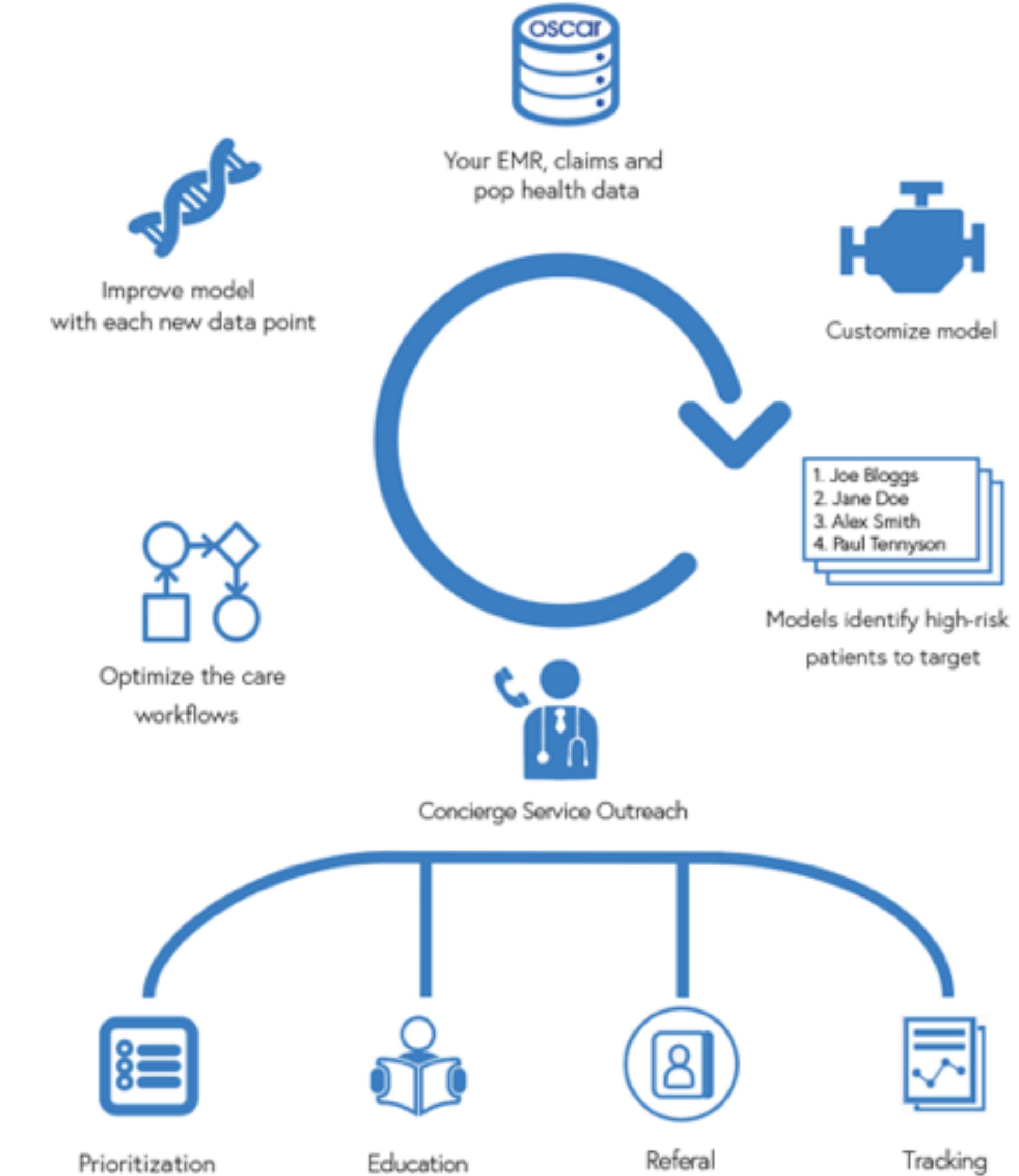
Problem



Model Translation



ML/Ai Model



End-Stage Renal Disease (ESRD) Risk Score

About

End stage renal disease (ESRD) is the final stage of chronic kidney disease (CKD), and occurs when the kidneys are no longer able to perform the primary functions of filtering out waste products and maintaining homeostasis.

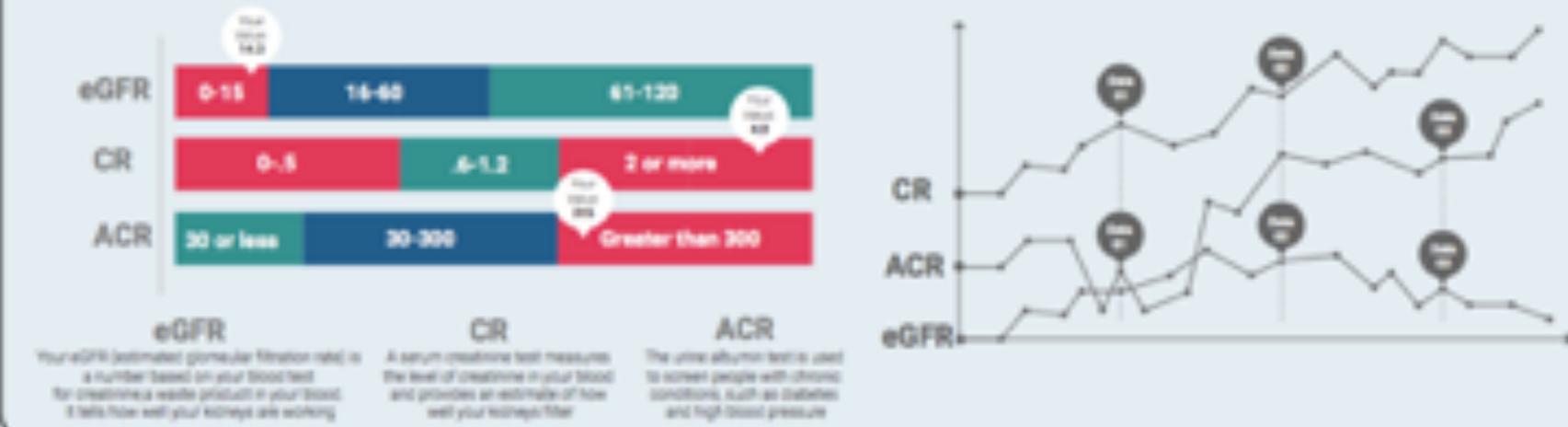
Often, the signs and symptoms of ESRD occur rapidly, and with very little notice. It is common for persons with chronic kidney disease to be completely unaware that they have the disease.

This report provides a risk score for the likelihood of converting from CKD to ESRD in the next 12 months.

Patient

First: John
Last: Doe
MRN: #343532325
Gender: Male
Birthdate: 04/13/1980
Address: 121 S. Alexa Drive.
City: New York
State: New York
Telephone:

Results



Risk Scores

12 Month Risk Score
ESRD **43.5**

Your risk score for converting to ESRD disease in the next 12 months is 43.5 (out of 100). A lower score is interpreted as decreased risk for converting to ESRD in the next 12 months, while a higher score is interpreted as increased risk for converting to ESRD. This prediction is based on your lab results and other electronic medical encounter data over the past five years.



In addition to ESRD risk, your risk for converting to Stage III and IV are:
42.0 - moderate risk - stage II to III
14.0 - low risk - stage III to IV
43.5 - high risk - stage IV to V

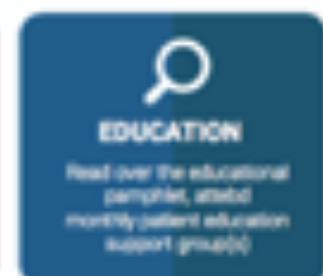
Recommendations

In order to decrease your risk of converting to ESRD in the next 12 months, these are some recommendations (based on your current ESRD risk score), that we suggest you implement and take immediate action on:



SPECIALIST

Schedule an appointment with a nephrologist assigned to a nurse care coordinator



EDUCATION

Read over the educational pamphlet, attend monthly patient education support group(s)



LIFESTYLE

A dietitian will be assigned to work with you to modify daily eating and lifestyle habits

Do speech
pathologists need
to become
experts in ML/Ai?

No

Do speech
pathologists need
to understand
basics of ML/Ai?

Yes

Data scientists are not trained in:

- Anatomy
- Disease/pathology
- Pharmacogenetics
- Acute Health
- Hospital Operations/Management





Data scientists' are mathematicians/visualization experts that should be **agnostic** to the context or scenario

Can create ML/Ai models, but not healthcare professionals, and are **not trained to translate** their findings into improved patient outcomes



Speech pathologists are focused on improving **patient reported outcomes**/metrics through delivery of evidenced-based care

SP are trained and knowledgeable of healthcare **interventions** that could be delivered, and what may be most effective

Resources

Health Literacy

[https://health.gov/sites/default/files/2019-09/Health Literacy Action Plan.pdf](https://health.gov/sites/default/files/2019-09/Health%20Literacy%20Action%20Plan.pdf)

<https://nnlm.gov/initiatives/topics/health-literacy>

<https://www.ncbi.nlm.nih.gov/books/NBK379016/>

<https://health.gov/healthliteracyonline/>