



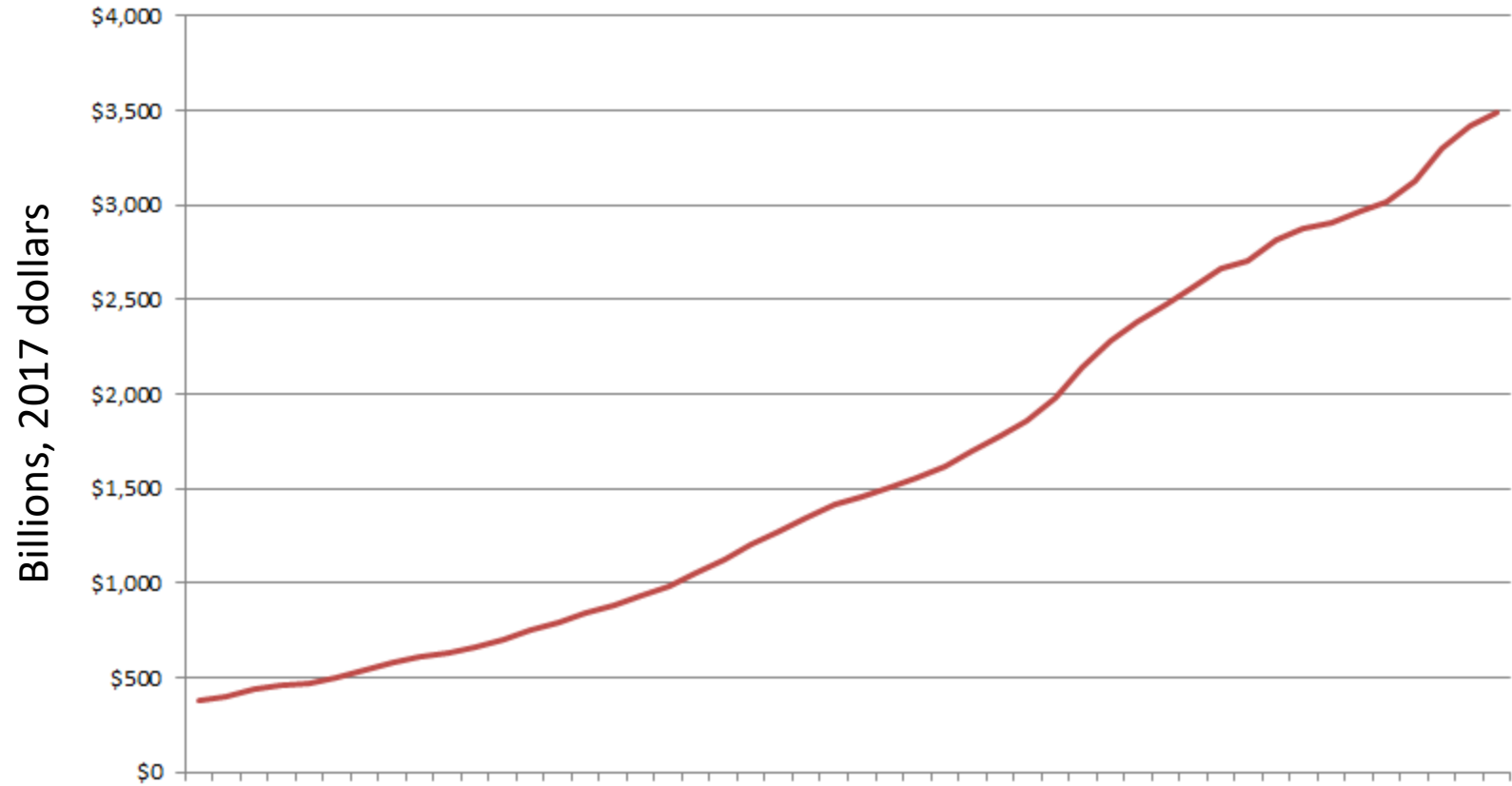
Bending the Healthcare Cost Curve

Anupam Goel

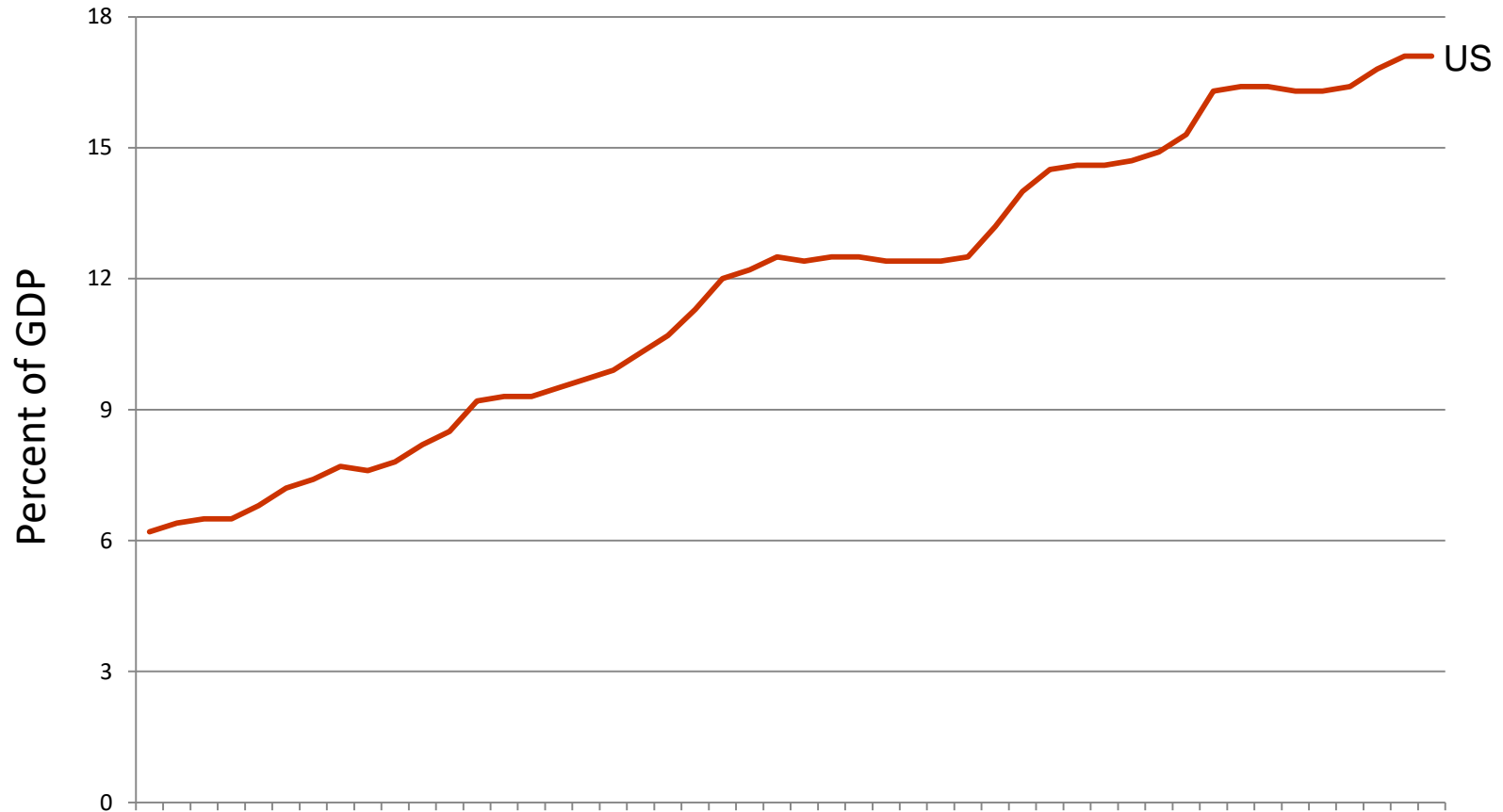
Chief Health Information Officer, UnitedHealthcare Clinical Services

October 2, 2019

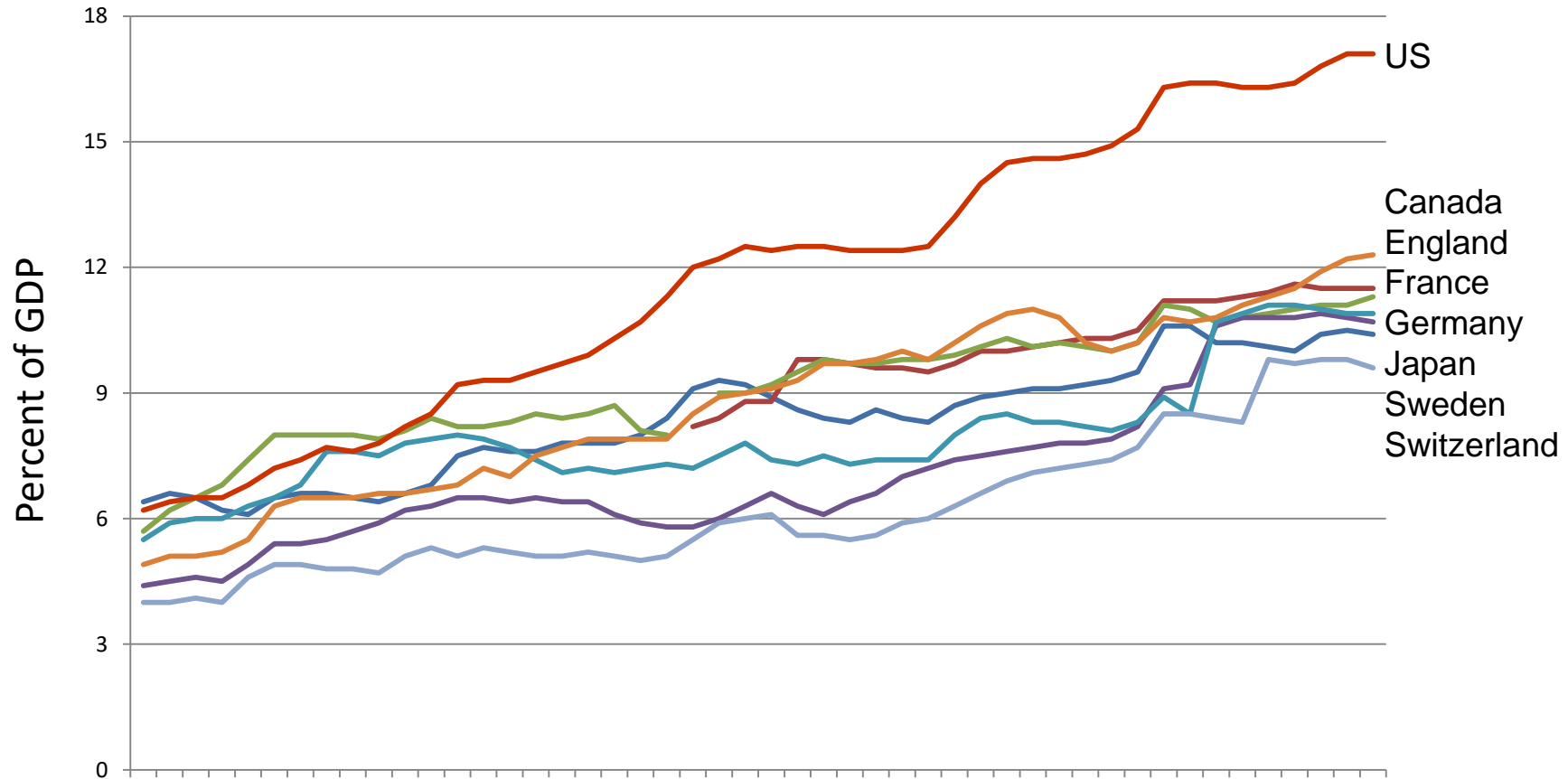
Total National Health Expenditures, 1970-2017



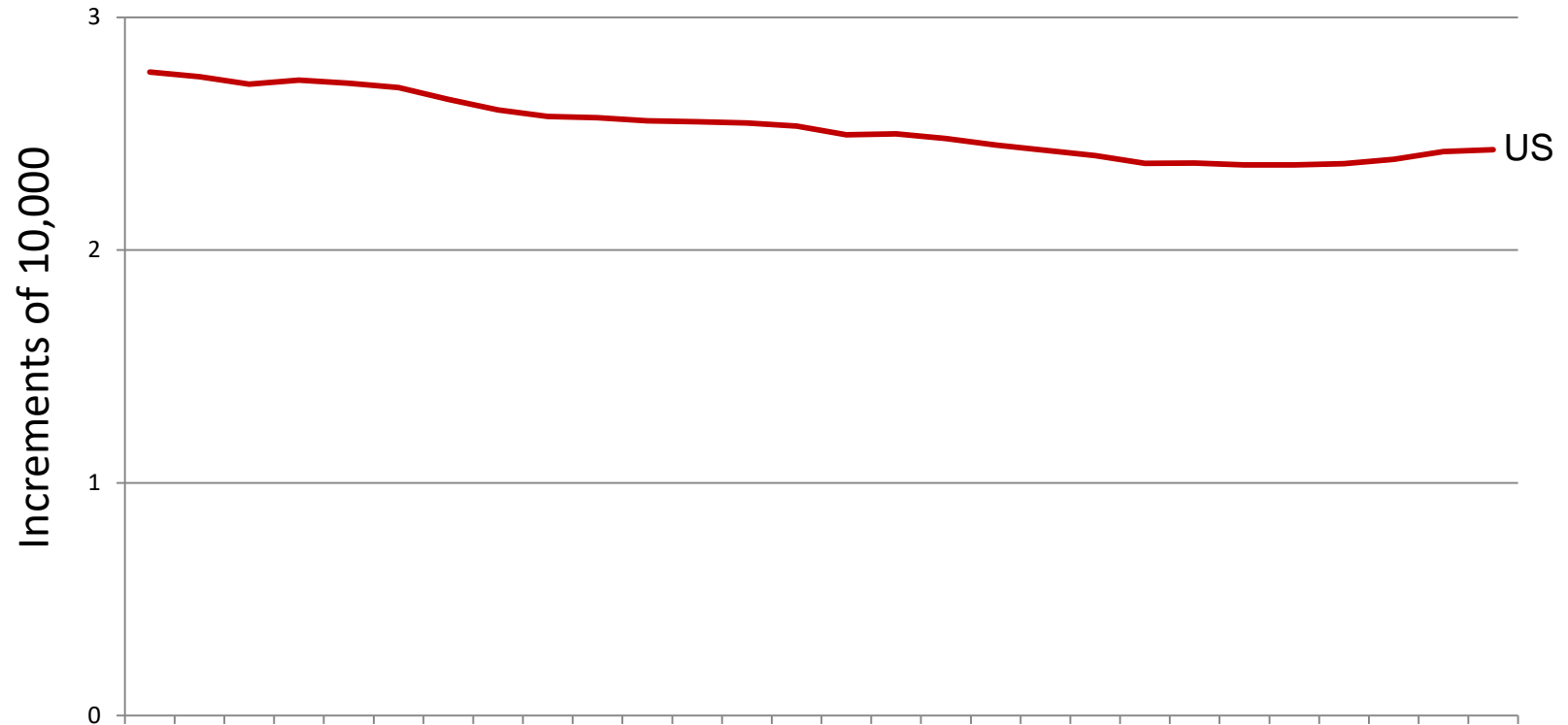
Health Consumption Expenditures as a Percent of GDP, 1970-2017



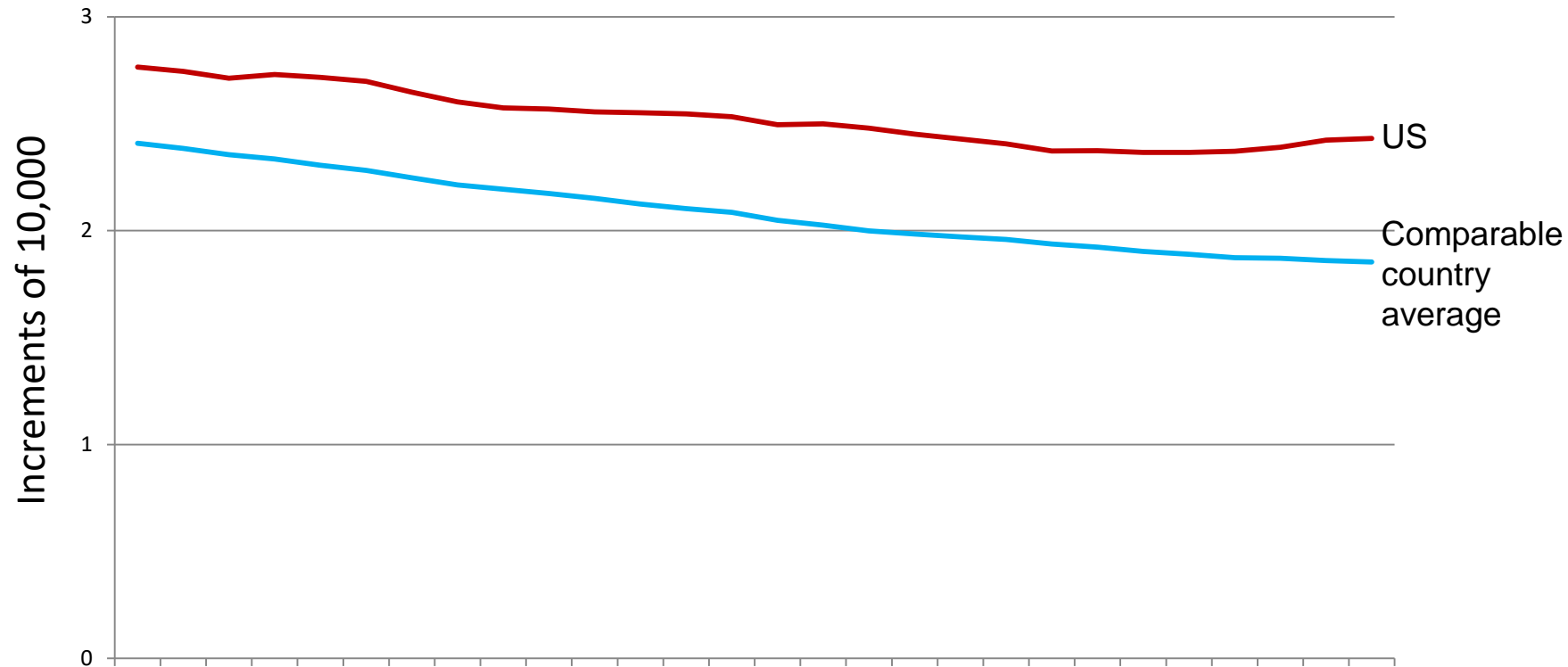
Health Consumption Expenditures as a Percent of GDP, 1970-2017



Age standardized disability adjusted life year rate per 100,000 people, 1990-2017



Age standardized disability adjusted life year rate per 100,000 people, 1990-2017



Age standardized years of life lost rate per 100,000 people, 2017

| | Drug use disorders | Ischemic heart disease | Low back pain | COPD | Neonatal disorders | Headache disorders | Diabetes | Road injuries | Depressive disorders | Lung cancer |
|----------------------------------|--------------------|------------------------|---------------|-------|--------------------|--------------------|----------|---------------|----------------------|-------------|
| United States | 1,695.5 | 1,519.1 | 1,064.0 | 883.0 | 842.2 | 801.3 | 787.8 | 763.1 | 736.9 | 709.1 |
| Comparison group mean (High SDI) | 699.9 | 1,065.0 | 1,199.1 | 548.0 | 707.4 | 766.8 | 580.5 | 509.4 | 596.5 | 593.1 |
| France | 254.9 | 598.0 | 1,280.6 | 232.4 | 544.0 | 785.2 | 375.9 | 420.3 | 663.7 | 706.8 |
| Germany | 241.9 | 1,242.4 | 1,550.6 | 562.6 | 653.2 | 778.5 | 469.6 | 351.0 | 569.4 | 637.8 |
| Japan | 176.9 | 554.6 | 1,440.1 | 235.0 | 504.8 | 540.7 | 306.6 | 288.0 | 518.7 | 372.7 |
| South Korea | 175.7 | 452.3 | 1,244.0 | 389.1 | 681.0 | 619.3 | 724.1 | 437.5 | 498.0 | 421.7 |
| Taiwan | 298.3 | 778.4 | 692.8 | 918.4 | 540.5 | 581.8 | 935.5 | 693.5 | 408.4 | 549.6 |

Significantly lower than mean

Statistically indistinguishable from mean

Significantly higher than mean

Age standardized years of life lost rate per 100,000 people, 2017

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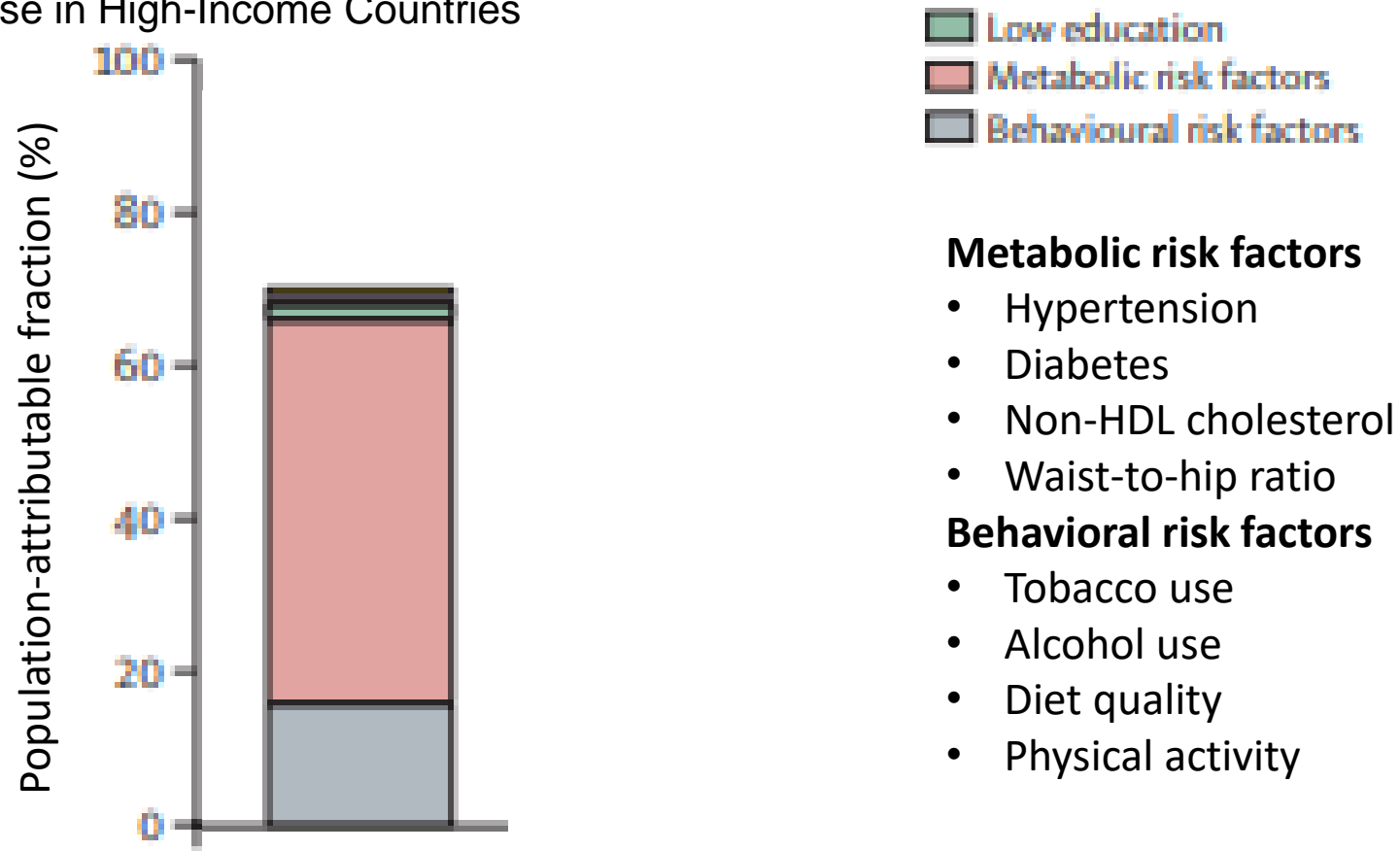
■ Significantly lower than mean
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Never Enough
Never Enough
Never Enough
Never Enough
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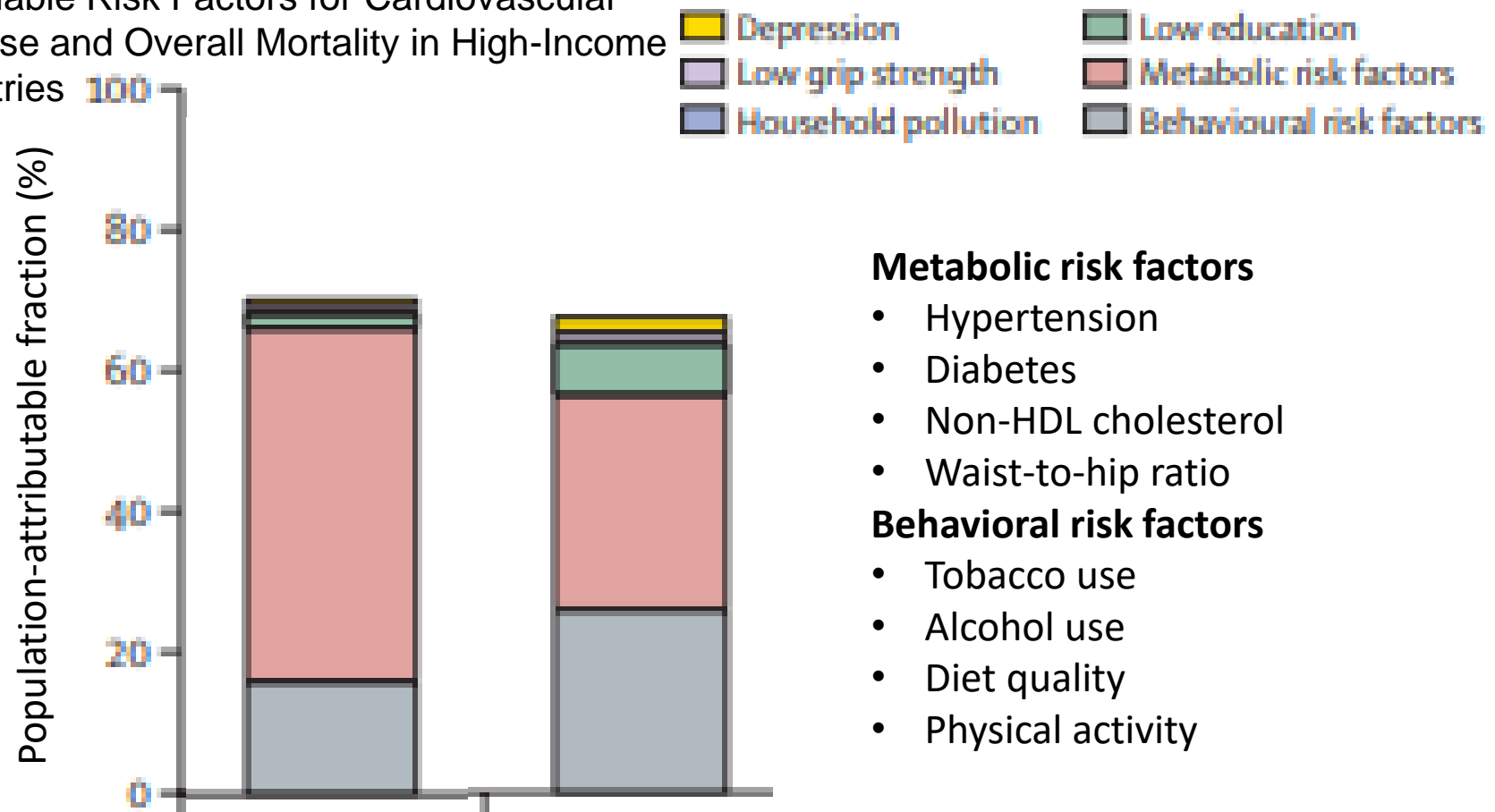
The Neuroscience and
Experience of Addiction

Judith Grisel

Modifiable Risk Factors for Cardiovascular Disease in High-Income Countries



Modifiable Risk Factors for Cardiovascular Disease and Overall Mortality in High-Income Countries

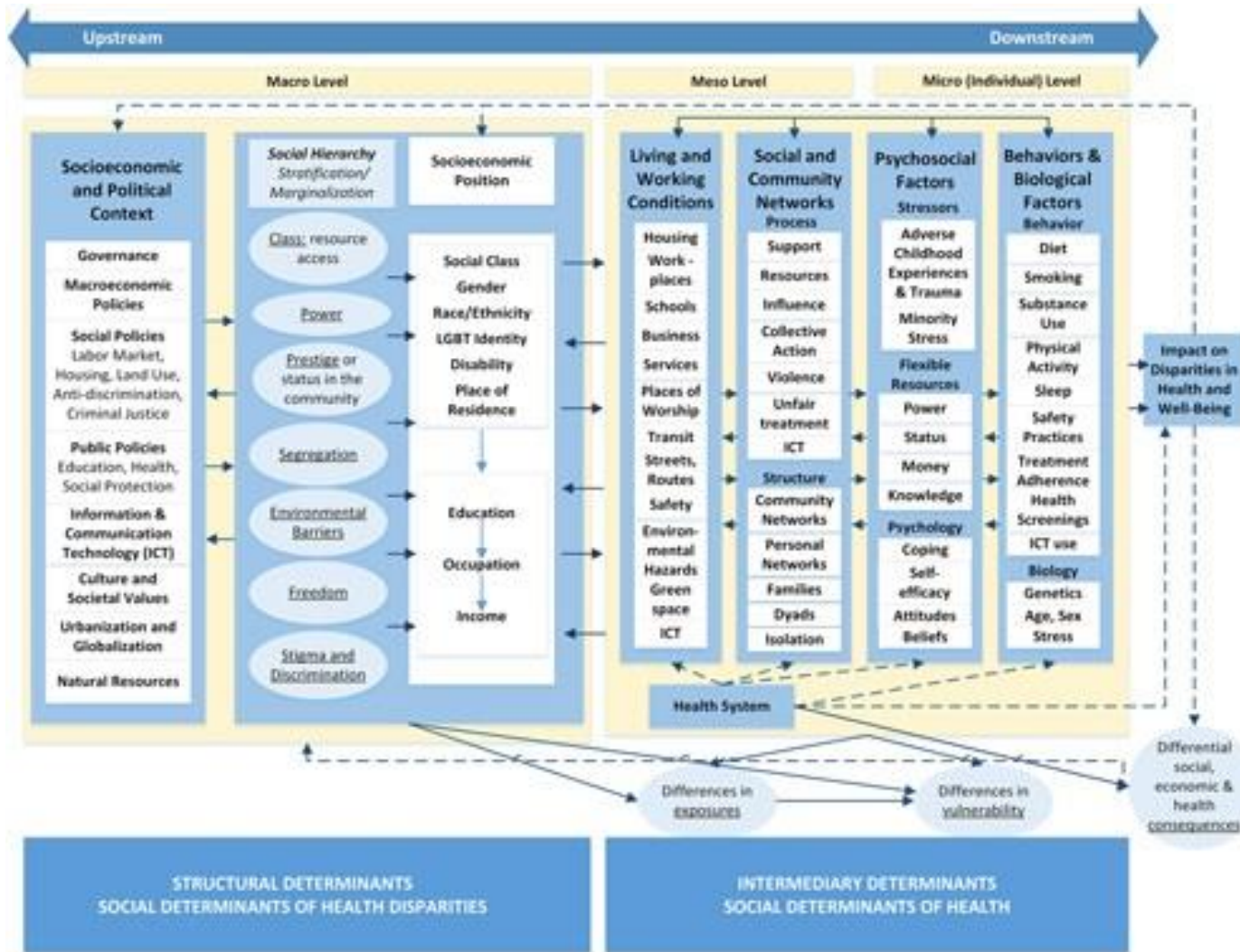


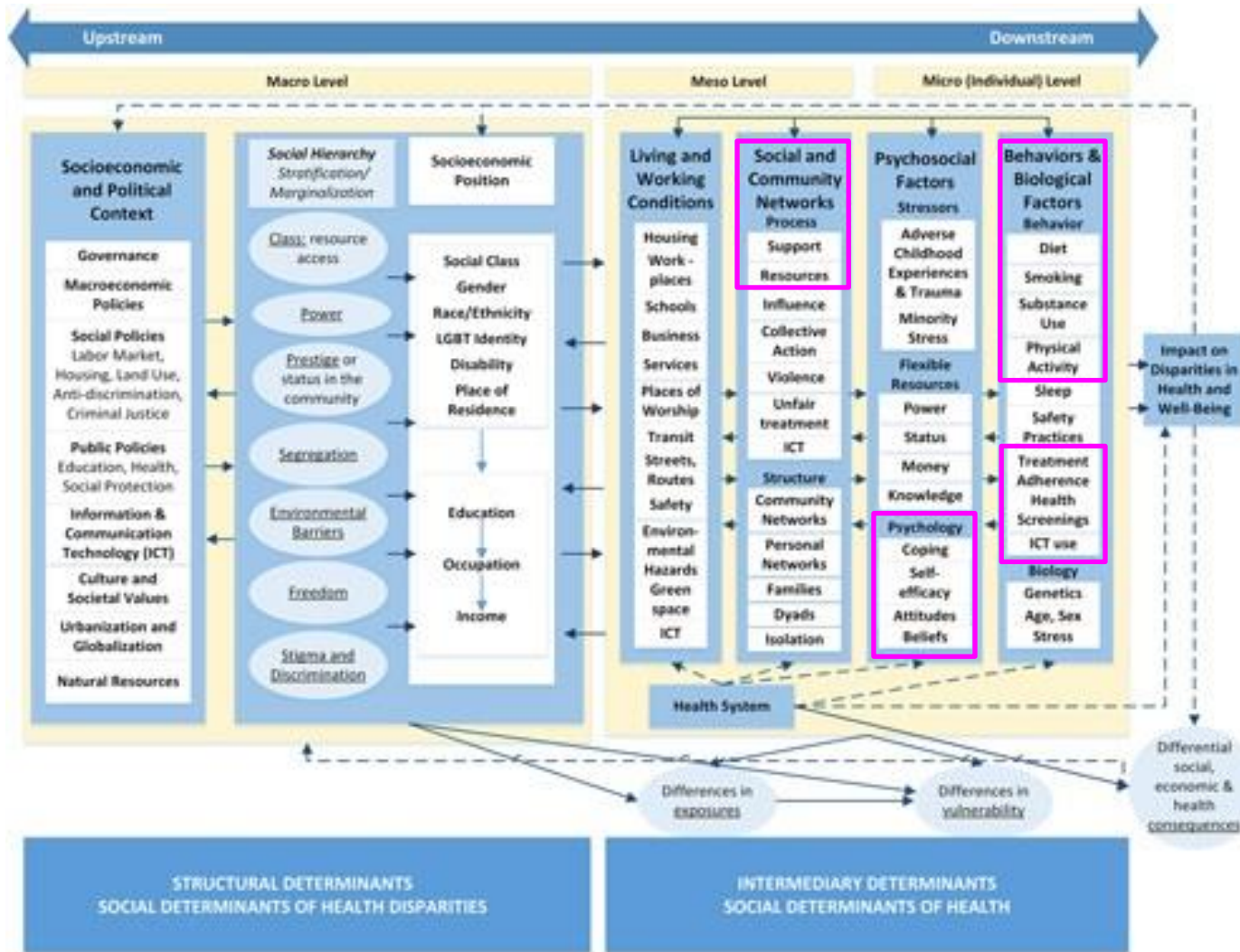
Metabolic risk factors

- Hypertension
- Diabetes
- Non-HDL cholesterol
- Waist-to-hip ratio

Behavioral risk factors

- Tobacco use
- Alcohol use
- Diet quality
- Physical activity



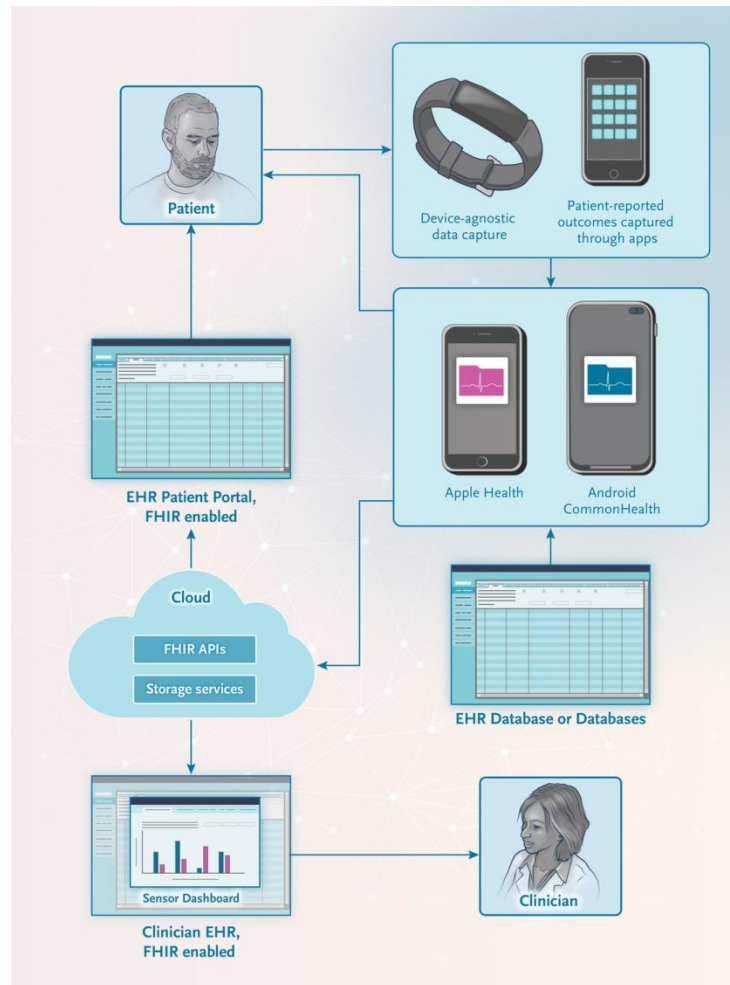


Key Information and Communication Technology Capabilities

- Collection and Display of Information
- Customization of Information
- Education
- Mediation of Communication
- Support of Workflows and Activities
- Framing and Support of Decisions
- Social Coordination
- Optimization of Resource Allocation
- Identification of Patterns and Anomalies
- Prediction of Outcomes

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Device-agnostic
data capture



Patient-reported
outcomes captured
through apps



Apple Health



Android
CommonHealth



Device-agnostic
data capture



Patient-reported
outcomes captured
through apps



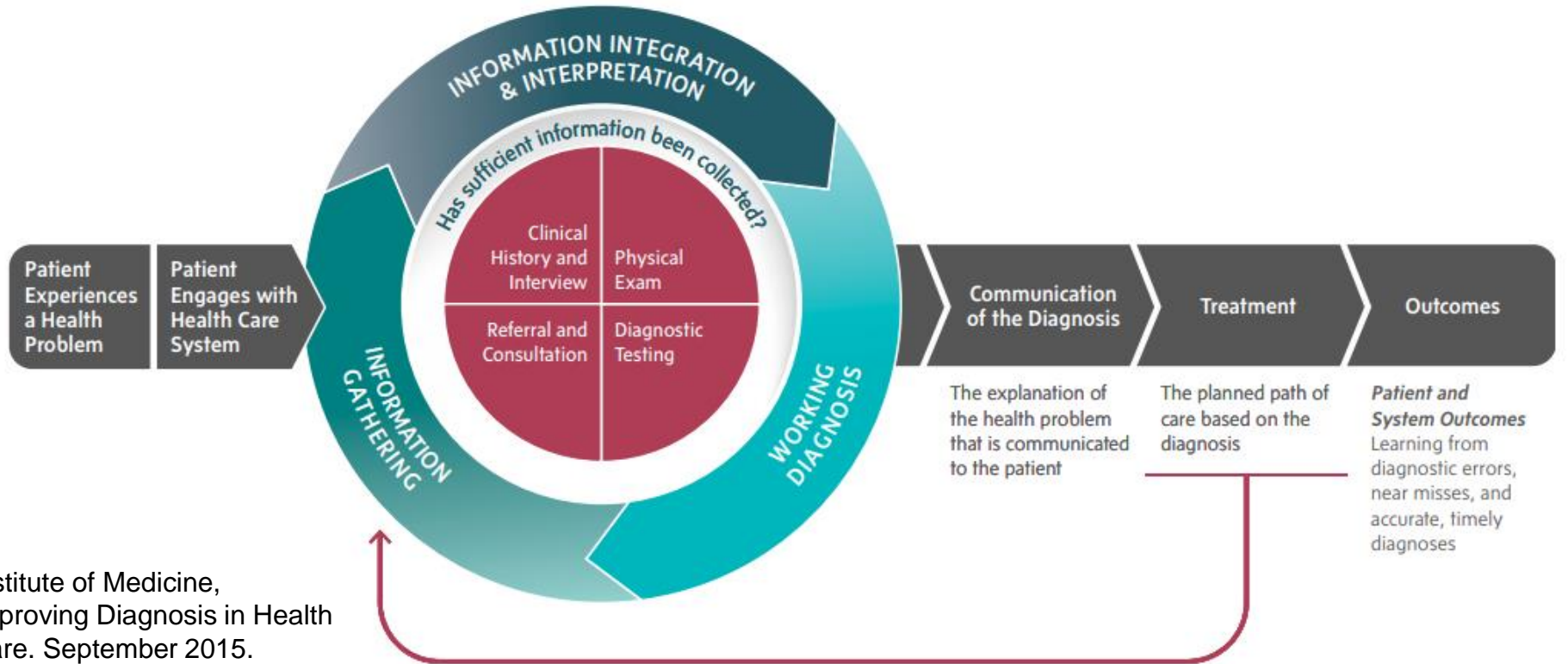
Apple Health



Android
CommonHealth



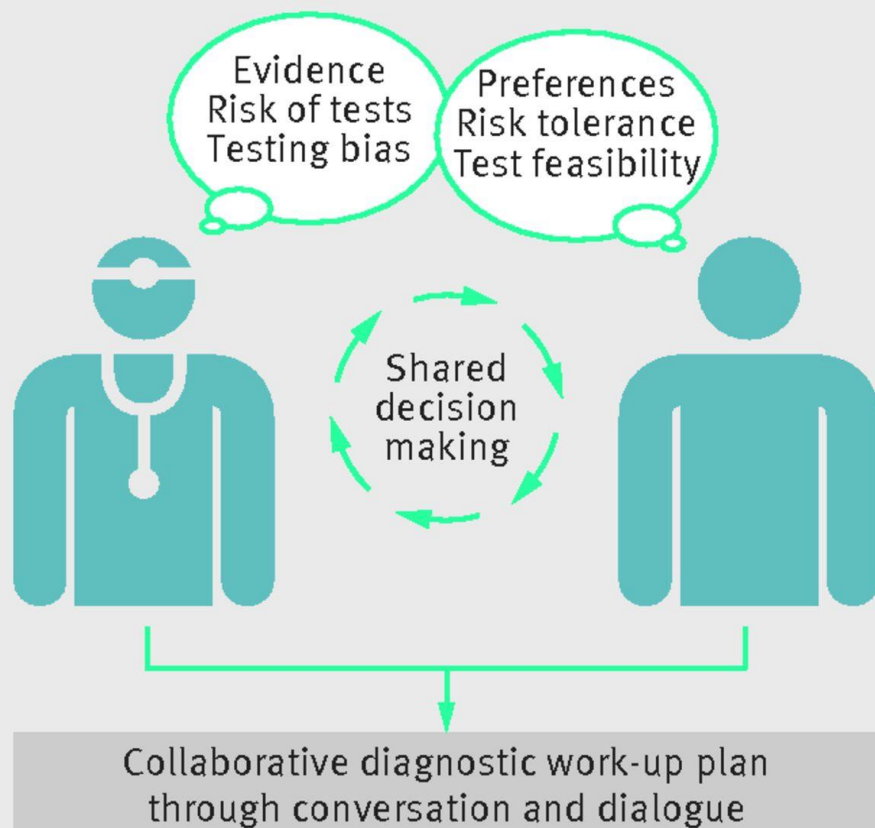
The Diagnostic Process



Institute of Medicine,
Improving Diagnosis in Health
Care. September 2015.

Clinical context

Patient goals



Localised prostate cancer

Key:

✓ preferred treatment

◆ treatment option

✗ not recommended

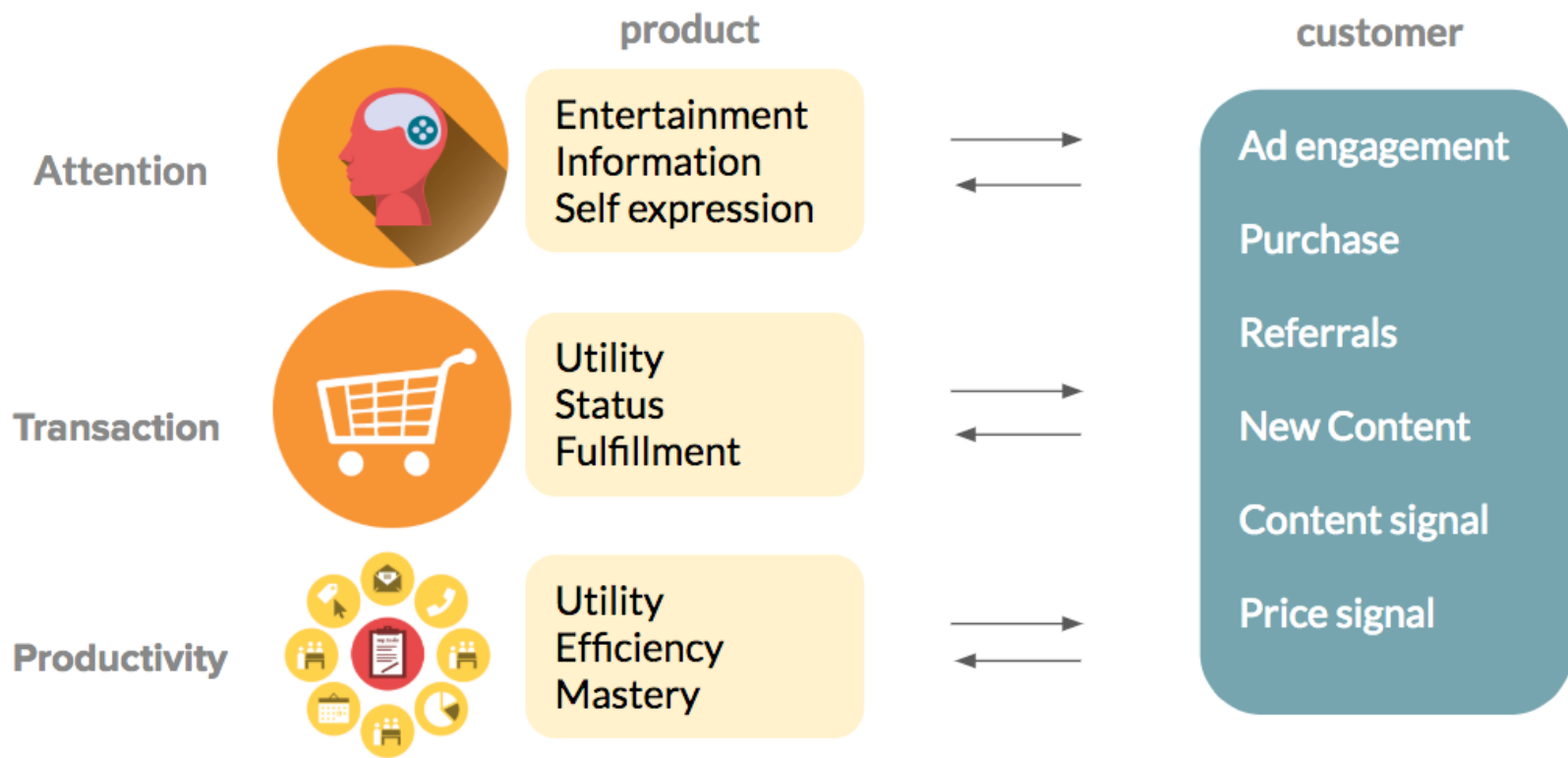
Table 2 Treatment and management options for men with localised prostate cancer.

| | | Low risk | Intermediate risk | High risk |
|---|-----------------------------------|----------|-------------------|-----------|
| Watchful waiting | | ◆ | ◆ | ◆ |
| Active surveillance | | ✓ | ◆ | ✗ |
| Radical treatments | Prostatectomy | ◆ | ✓ | ✓* |
| | Brachytherapy | ◆ | ◆ | ✗ |
| | Conformal radiotherapy† | ◆ | ✓ | ✓* |
| | Cryotherapy | ✗‡ | ✗‡ | ✗‡ |
| | High-intensity focused ultrasound | ✗‡ | ✗‡ | ✗‡ |
| * Offer if there is a realistic prospect of long-term disease control | | | | |
| † Conformal radiotherapy should be given at a minimum dose of 74 Gy (at a maximum of 2 Gy per fraction) | | | | |
| ‡ Unless as part of a clinical trial comparing use with established interventions | | | | |

A non-marketer's view of consumer engagement

- Create useful content
- Develop a tremendous user experience
- Humanize your brand
- Listen and respond to feedback

The Customer Value Exchange Model

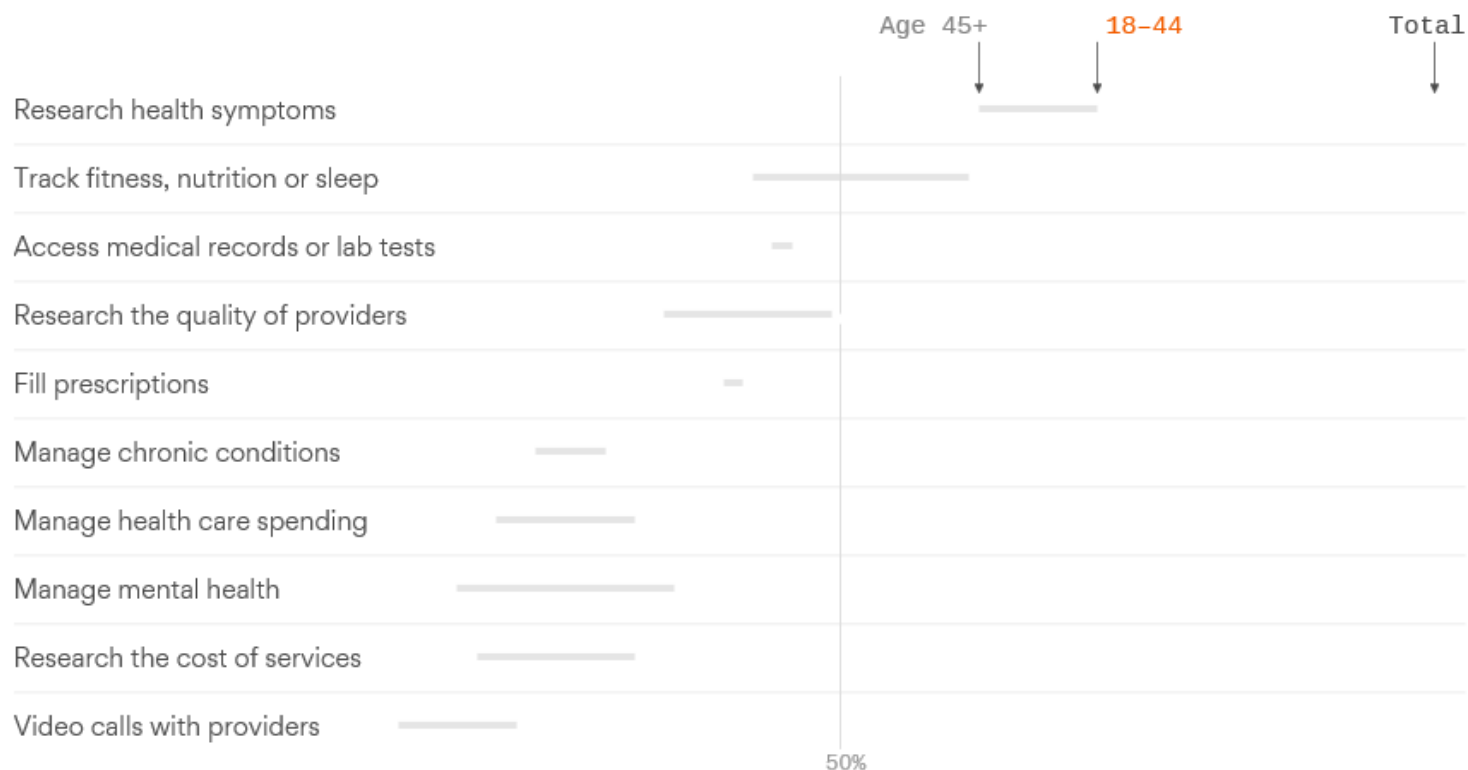


Stood up

I haz been

Percent who say they use the internet or smartphone to do these tasks at least a few times a year

Survey of U.S. adults, Aug. 16-19, 2019



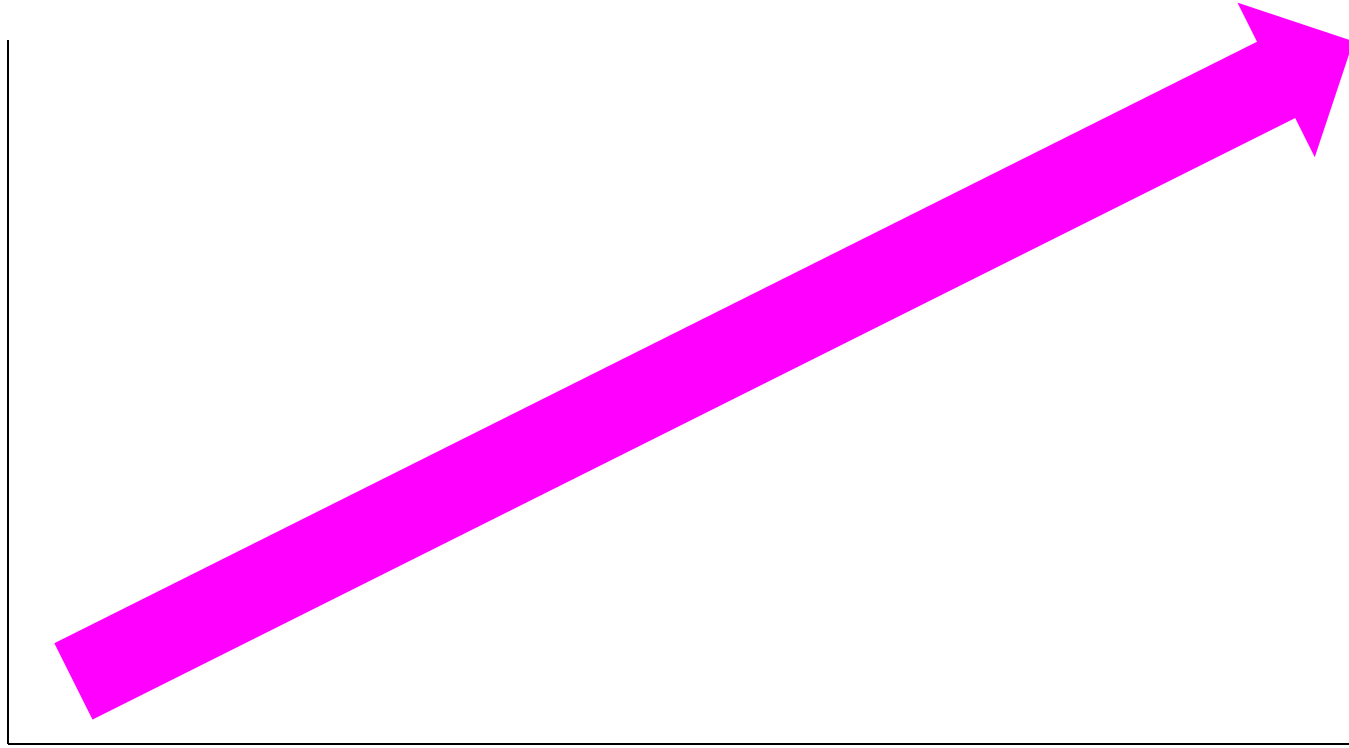
Data: Kaiser Family Foundation Health Apps and Information Survey; Chart: Andrew Witherspoon/Axios

Table. Sample of Direct-to-Consumer Telemedicine Companies

| Company | Examples of Issues Addressed | Capital Raised (in Millions), \$ ^a | Quotes From Website |
|-----------------|---|---|--|
| Curology | Acne | 20.7 | "It's easy as uploading a no-makeup selfie, and in just a few days you have a customized cream delivered right to your door." |
| Hims | Erectile dysfunction, premature ejaculation, hair loss, cold sores, genital herpes, performance anxiety, sleep | 197.0 | "Thanks to Hims, men now have easier, more affordable access to the prescriptions, products and medical advice they need. Especially about the things they find hard to talk about." |
| Keeps | Hair loss | 23.0 | "Doctor-supported, FDA-approved." "Delivered to your door." "Half the cost." |
| Lemonaid Health | Erectile dysfunction, urinary tract infection, sinus infection, cold sores, smoking cessation, acid reflux, acne, influenza | 21.7 | "We're an online doctor's office. After a consultation, get medicines delivered by our partner pharmacy or pick them up at a local drug store." |
| Nurx | Birth control, HIV screening, pre-exposure prophylaxis | 41.4 | "Get your prescriptions and home testing kits delivered right to your door. No hassle, no big spend. With automatic refills and renewals so you're always covered." |
| Roman | Erectile dysfunction, premature ejaculation, hair loss, genital herpes, cold sores | 91.1 | "E.D. meds prescribed online, delivered to your door." |
| The Pill Club | Birth control | 68.1 | "We're on a mission to be a trusted healthcare partner for women, empowering them through access, choice, and education." |

^a Data collected by Pitchbook (<https://pitchbook.com/media>).

Willingness to receive
care virtually



Diagnostic/treatment plan confidence/commitment

Playing to our strengths

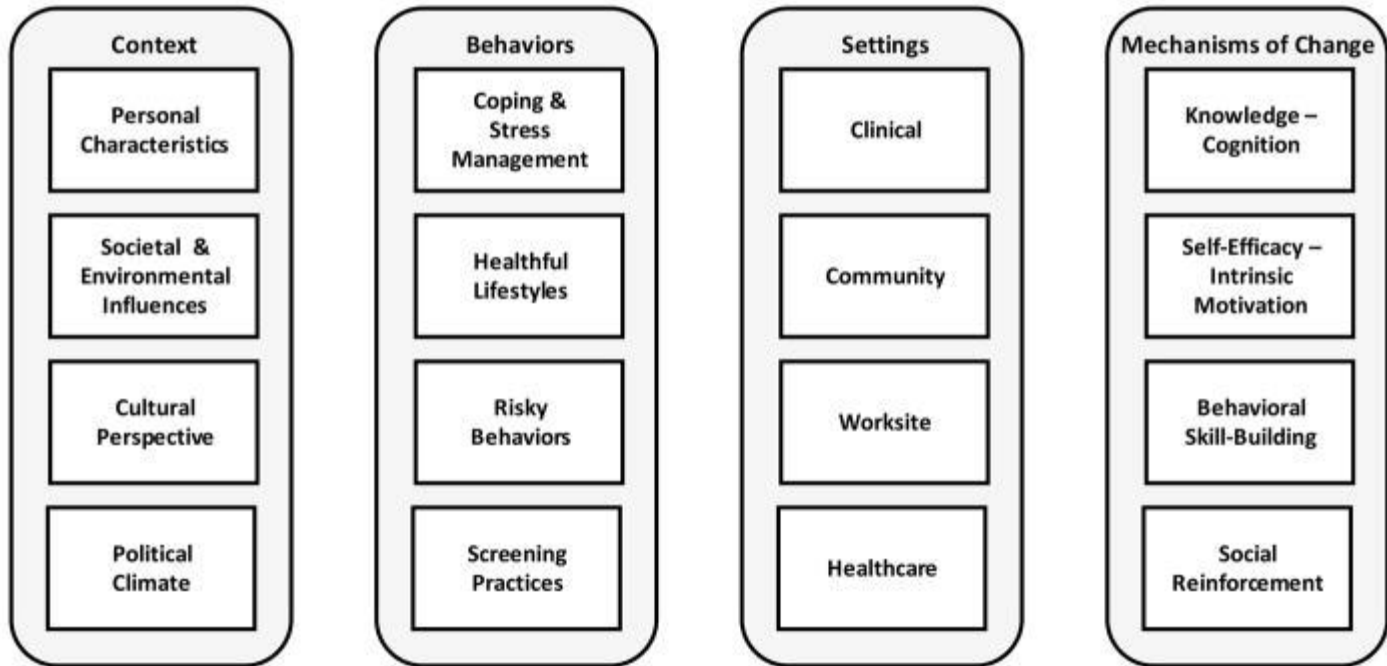
- Interactions with experts to increase trust in diagnostic/treatment plan
- Interactions with other members of the team to implement the diagnostic/treatment plan

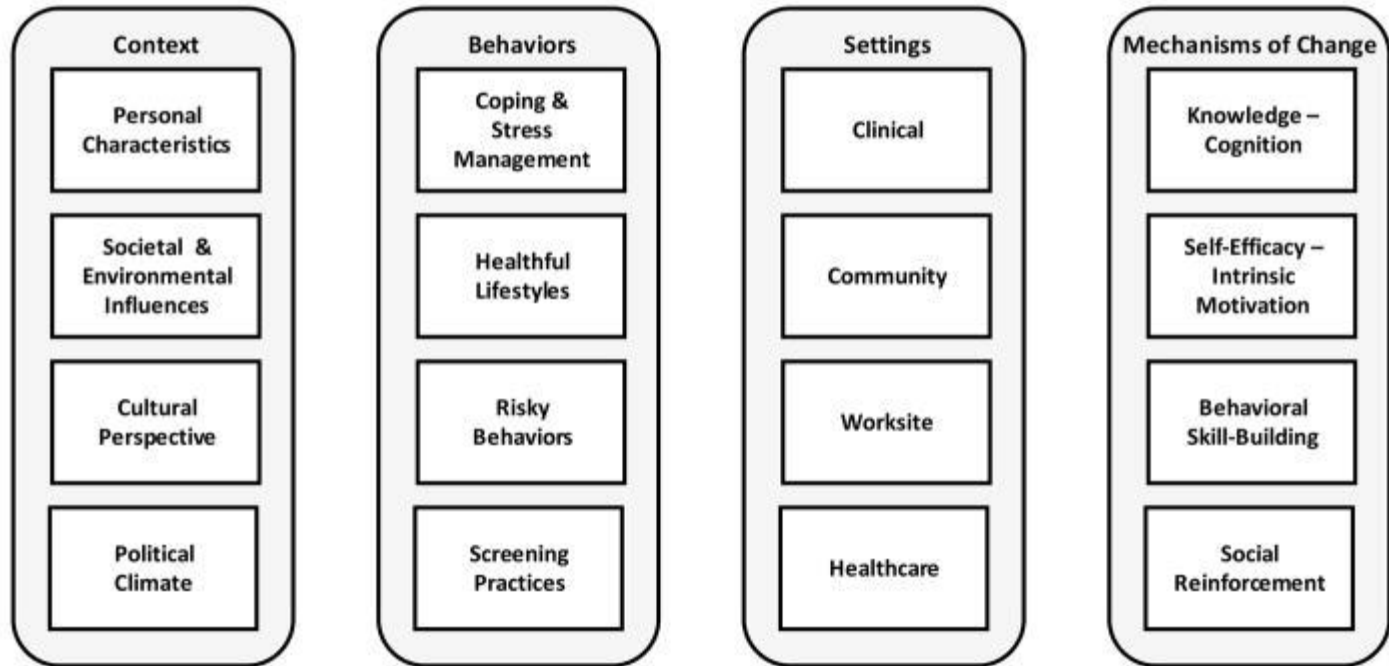
Playing to our strengths

- Interactions with experts virtually (after initial face-to-face evaluation) to increase trust in diagnostic/treatment plan
- Interactions with other members of the team (or a bot or an algorithm) to implement the diagnostic/treatment plan









Trans-theoretical Model of Change



Adapted from Prochaska and Di Clemente's cycle of change model.

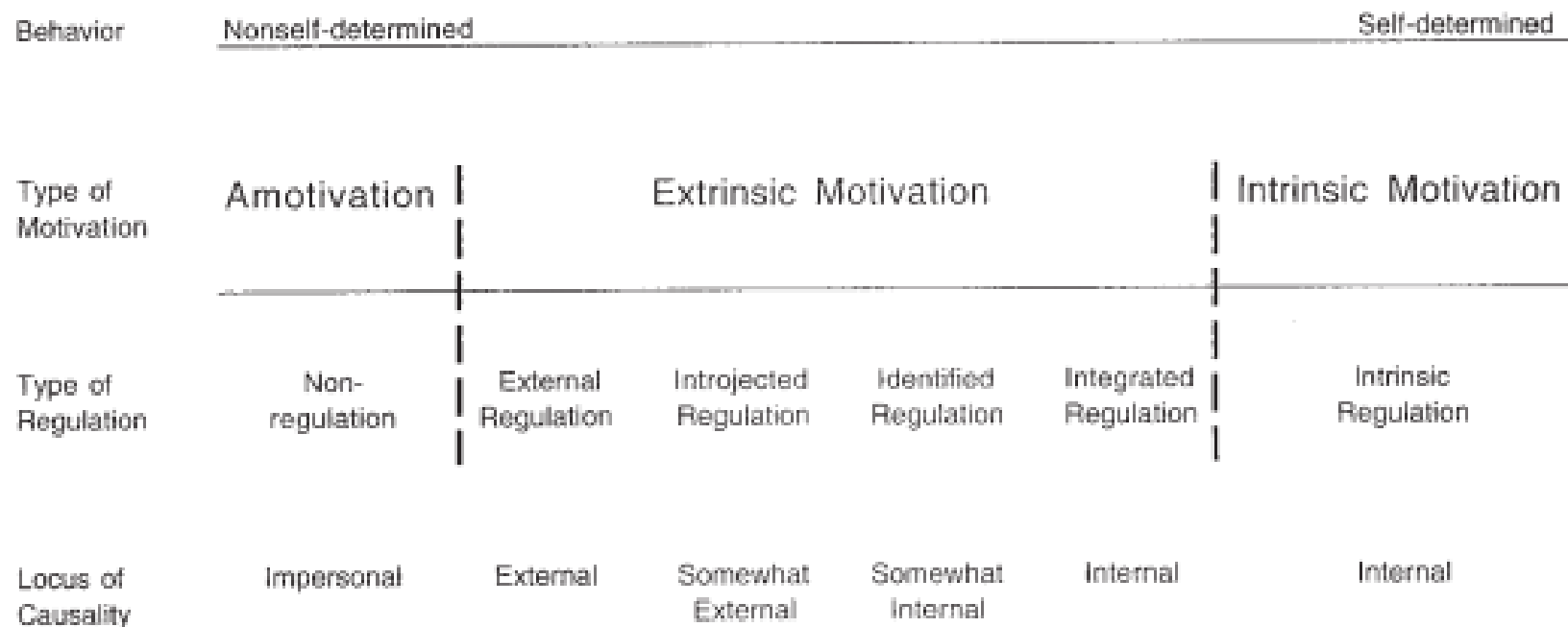


Figure 1. *The self-determination continuum, showing the motivational, self-regulatory, and perceived locus of causality bases of behaviors that vary in the degree to which they are self-determined.*

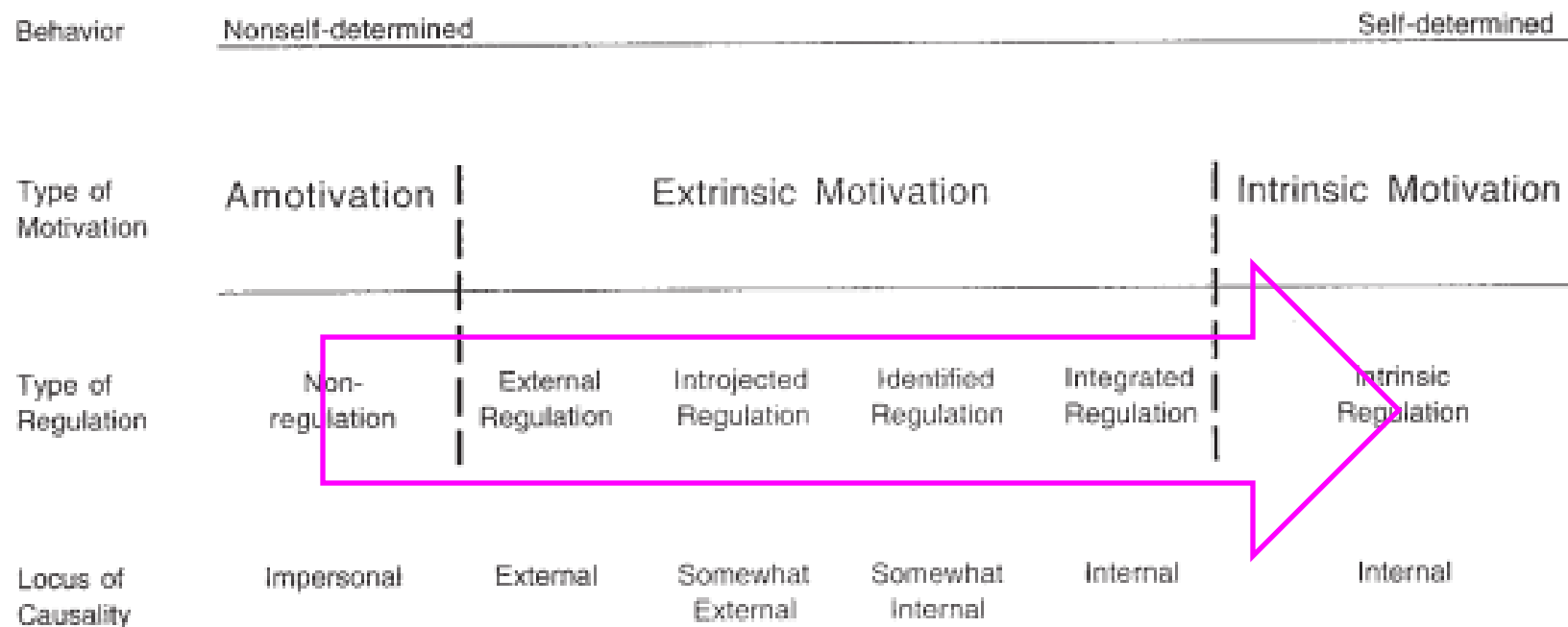
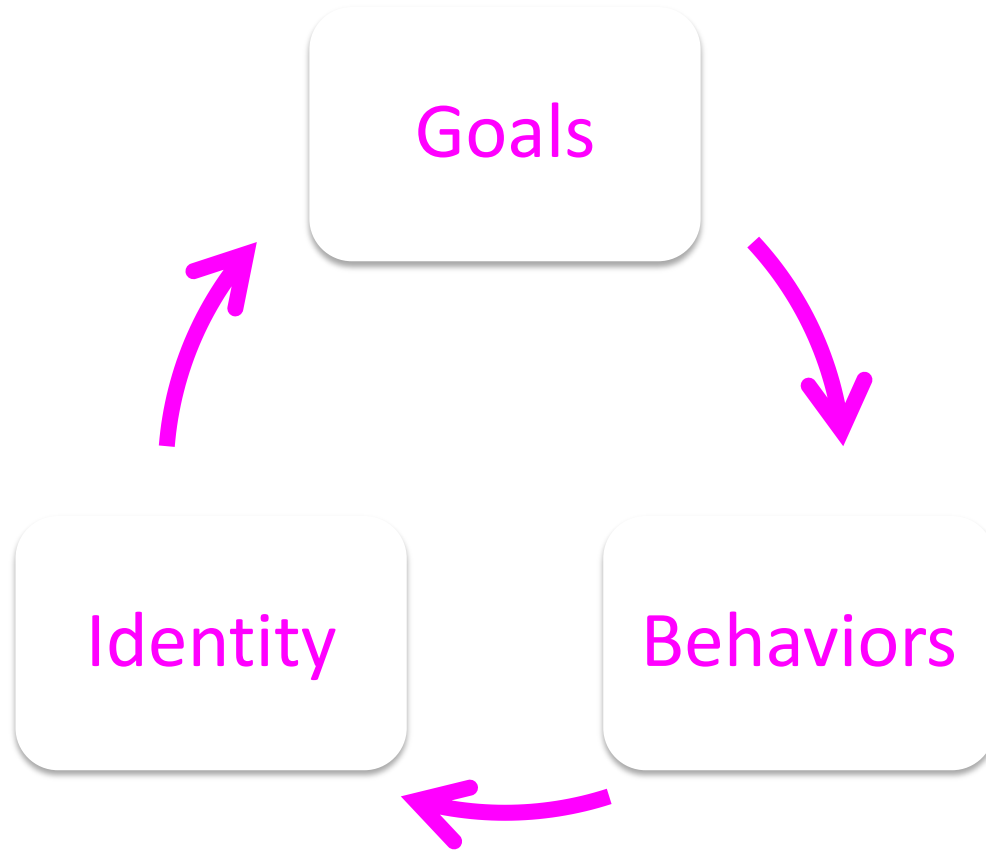
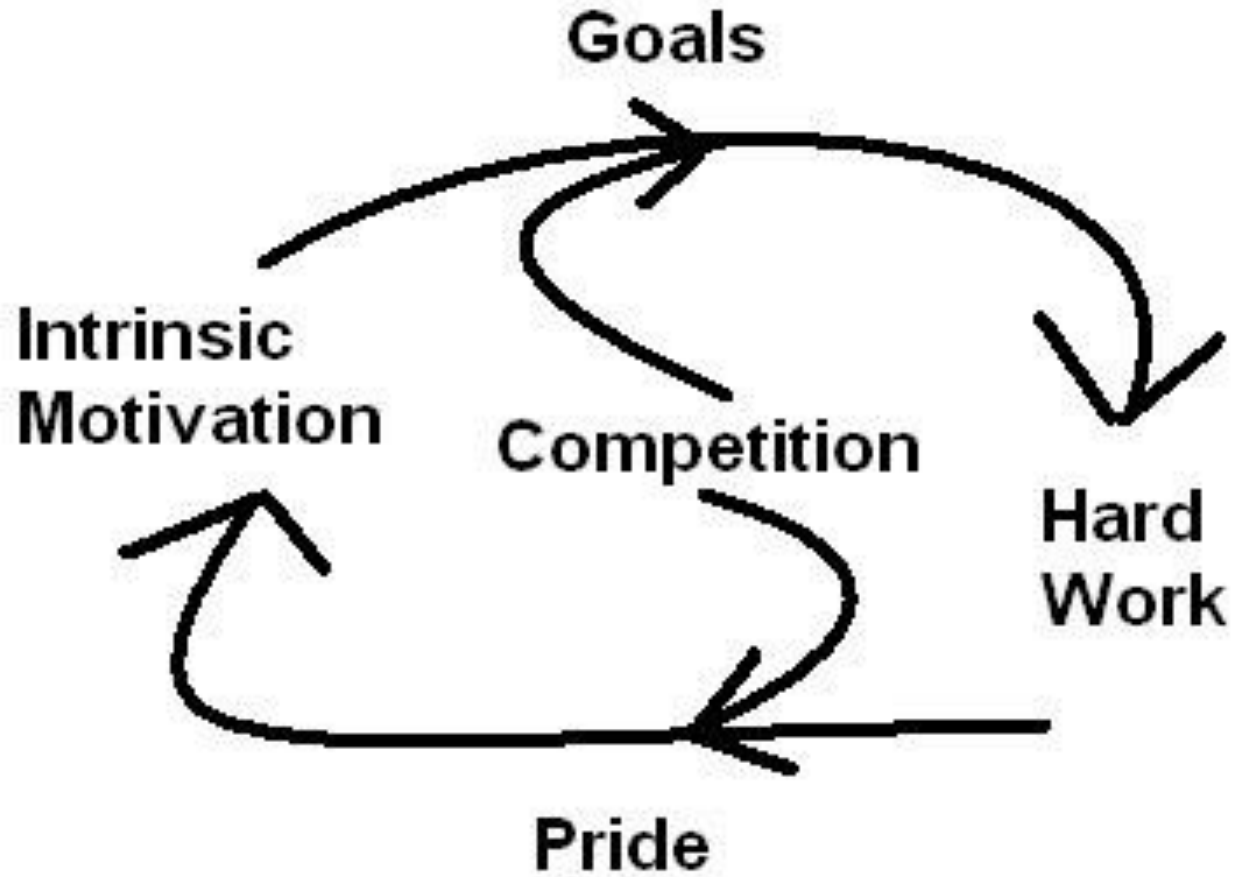


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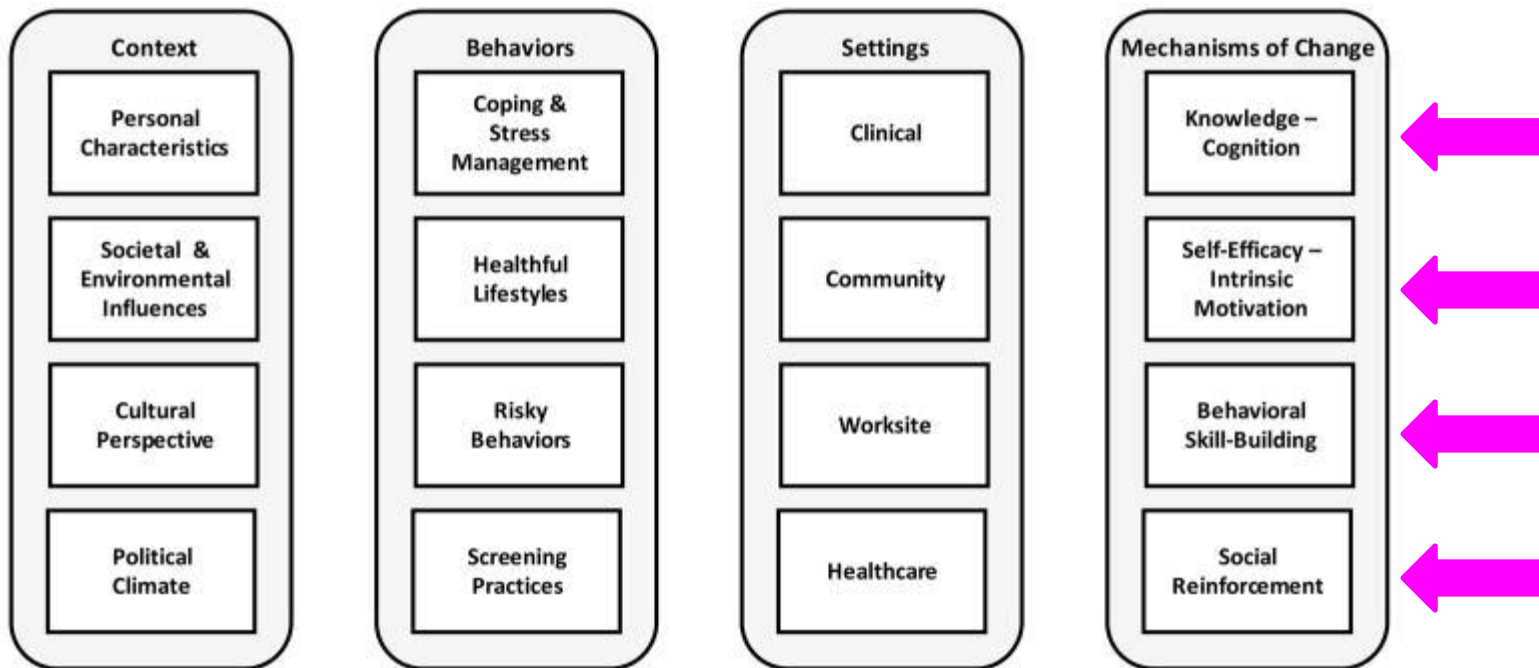
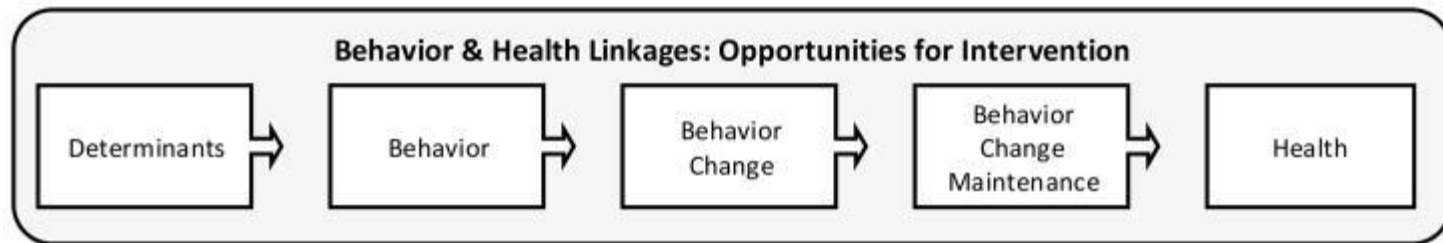


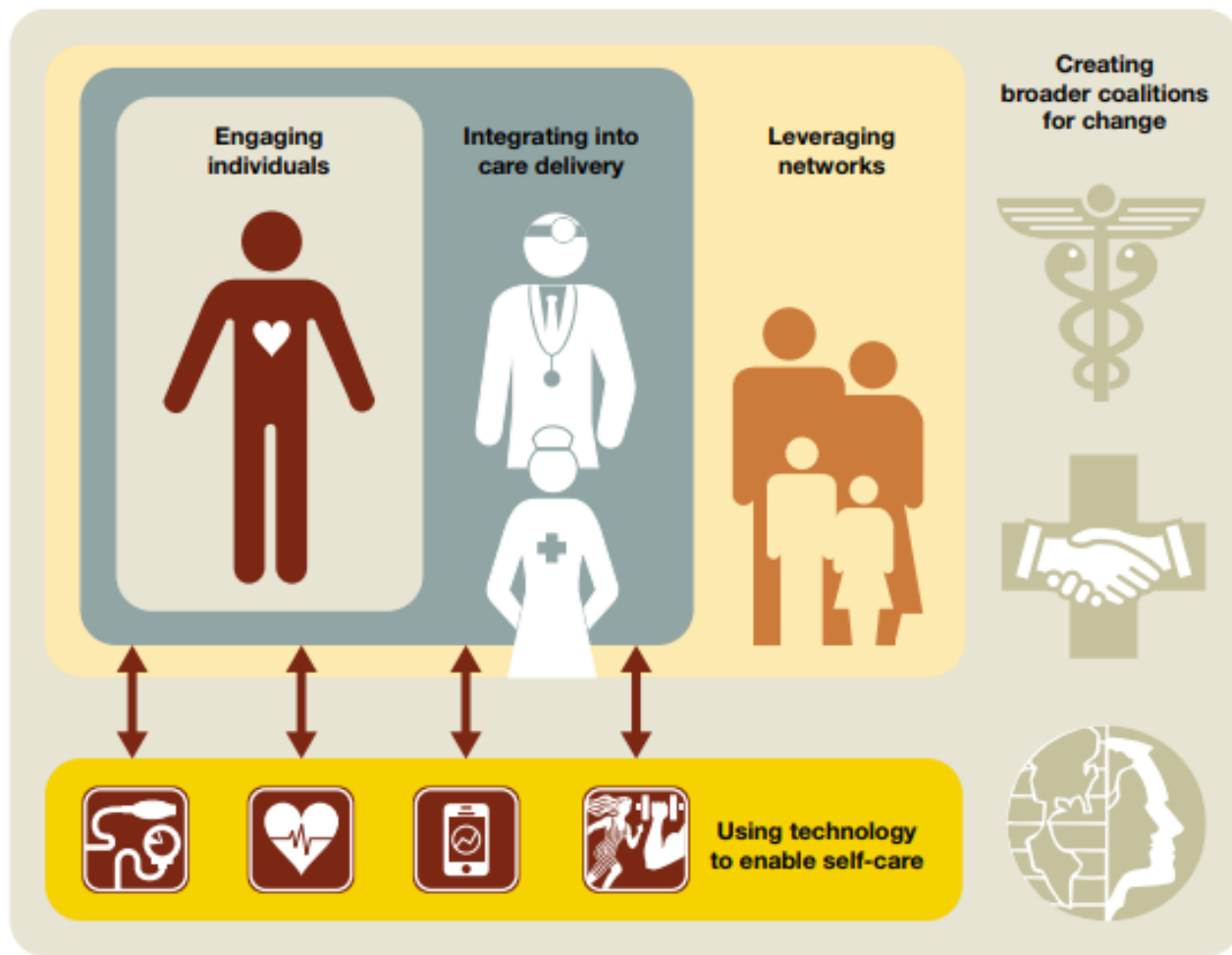


Excerpt from the "How to
Talk to Kids about
Anything" podcast with
Dr. Robyn Silverman
DrRobynSilverman.com

"We need to help kids gain a healthy sense of self-motivation in between the extremes of 'excessively driven' and 'what's the point in trying?'"

William Stixrud, PhD





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What were we talking about again?

- We are not getting the best value for our healthcare dollar (life expectancy, quality-of-life)
- Health behaviors are a big part of chronic disease
- Current health IT offerings aren't strongly engaging consumers
- Patient confidence/trust in medical plan may support virtual care

What were we talking about again? (2)

- Doing more to increase patient adoption
 - Direct-to-consumer is not enough
 - Self-determination theory >> Transtheoretical model
 - Expand our current deployments of information and communication technology capabilities

Thank you

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