

Health Systems Science:  
What is it and Why is it  
Important in Medical  
Education?

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# HSSIP Leadership



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Associate Professor, FBRI  
Sr. Director, CSRPS



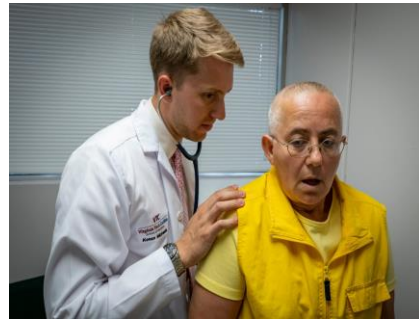
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Alleghany  
Health Districts



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OBGYN Clerkship Director

We have no disclosures

# Goals & Objectives

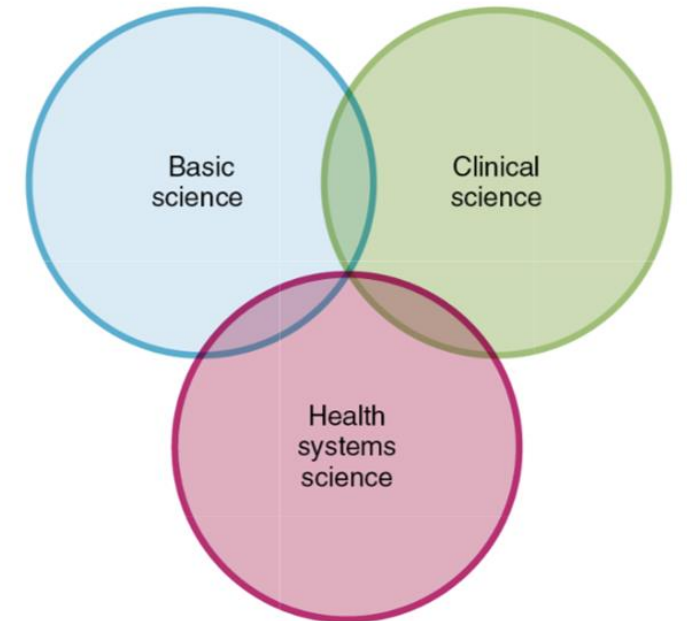


- Explain Health Systems Science
- ID core functional, foundational, & linking domains & illustrate their application in Med Ed and healthcare
- Recognize the new 4-year HSSIP curriculum
- Describe Systems Thinking and understand its importance in healthcare

## Health Systems Science\*:

“The study of how health care is delivered, how health care professionals work together to deliver that care, and how the health system can improve patient care and health care delivery.”

“ How healthcare is delivered to, and received by, patients and populations.”  
- Dr. Mitchell Gitkind, Dean of HSS at UMass SOM



\* Health Systems Science, 2<sup>nd</sup> Ed. Skochelak et al. Elsevier 2020.

# There Should Be a Nobel Prize for Vaccine Logistics

Immunization against Covid-19 is not going perfectly, but at least it's going. Let's give credit where it's due.



CORONAVIRUS

## Coronavirus exposes major flaws in health care system, experts say

Doctors and health care experts said the coronavirus pandemic shows the need to shift how we think about health care.



COVER STORY

CHRIS WARE'S  
"BEDTIME"

Navajo Nation: The people battling America's worst coronavirus outbreak\*  
By Joshua Cheetham. BBC News. 16 June 2020



SIGN IN NPR SHOP



HEALTH

## Examining Racial Disparities Observed During Coronavirus Pandemic

June 9, 2020 - 5:00 AM ET  
Heard on Morning Edition

PHYSICIAN HEALTH

Burnout isn't due to resiliency deficit. It's still a system issue.

Perspective: **Physician Advocacy: What Is It and How Do We Do It?**

Mark A. Earnest, MD, PhD, Shale L. Wong, MD, MSPH, and Steven G. Federico, MD

## The New York Times *Why People Are Still Avoiding the Doctor (It's Not the Virus)*

At first, people delayed medical care for fear of catching Covid. But as the pandemic caused staggering unemployment, medical care has become unaffordable for many.

Health

## Mortality rate for Black babies is cut dramatically when Black doctors care for them after birth, researchers say

Tell me about your experiences as a resident/fellow/attending – what unexpected barriers to patient care did you face? What makes it harder to take care of patients?

“There’s limited connection of care between specialties/imaging all under the same roof [which creates] barriers to care. The lack of equal access to care [stands] out to me.”

“Transportation is a real barrier for patients, [especially when] they have multiple appointments at different locations throughout the day”

“Systems don’t value support staff who can do non-MD level tasks to support & improve patient care”

“The EMR – when I started fellowship I could not figure out how to order a blood transfusion on a patient. I knew clinically what they needed, but could not make it happen because I could not ‘find’ the right order in the EMR”

“Insurance”

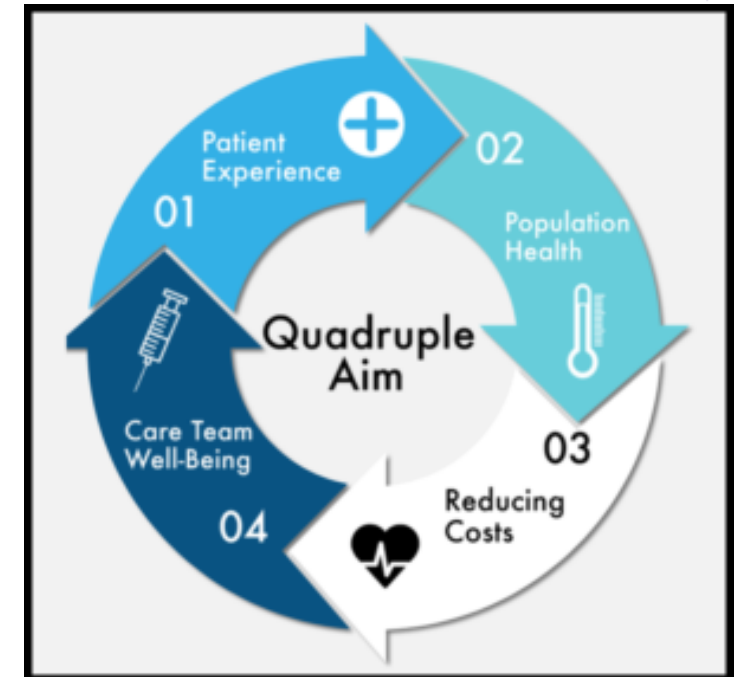
“Consultations not always easy to obtain – no clear consult pathway for each specialty”

“Medical literacy of patients. [I was surprised that] some don’t understand how pharmacies or prescriptions work”

“Communicating medical knowledge/science to patients and making treatment plans with them with everything else they see/read on the internet, Facebook”

## Why is change needed?

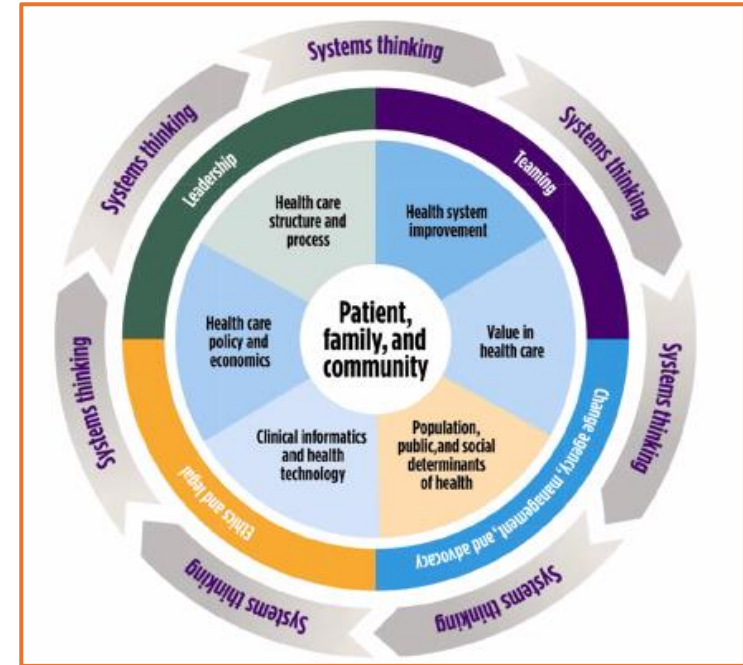
- To optimally serve their patients and their community, future physicians need to be prepared to work in increasingly complex healthcare systems.
- HSSIP provides a framework in which basic science, clinical science, and research can reach their potential to ensure that the patients and populations they serve receive high quality care.
- Ultimately, incorporating HSSIP into medical education can contribute to achieving “Quadruple Aim”.





# Health Systems Science Domains

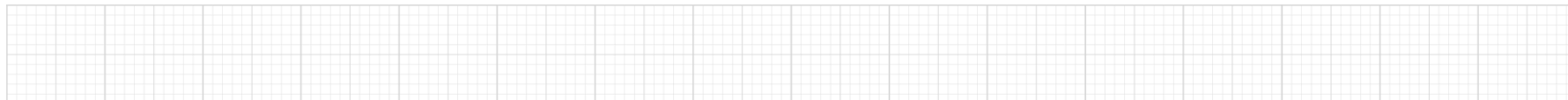
Skochelek et al, 2020



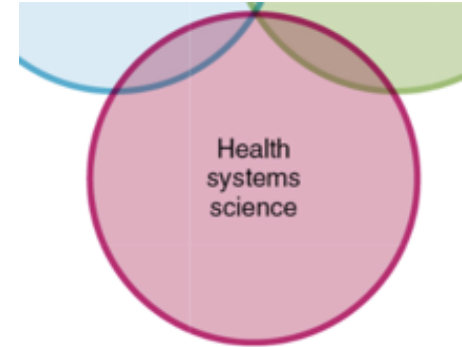
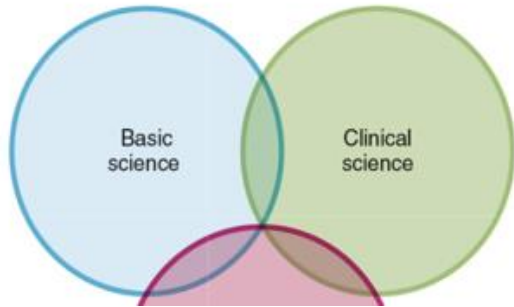


# Health Systems Science

Skochelak et al, 2020



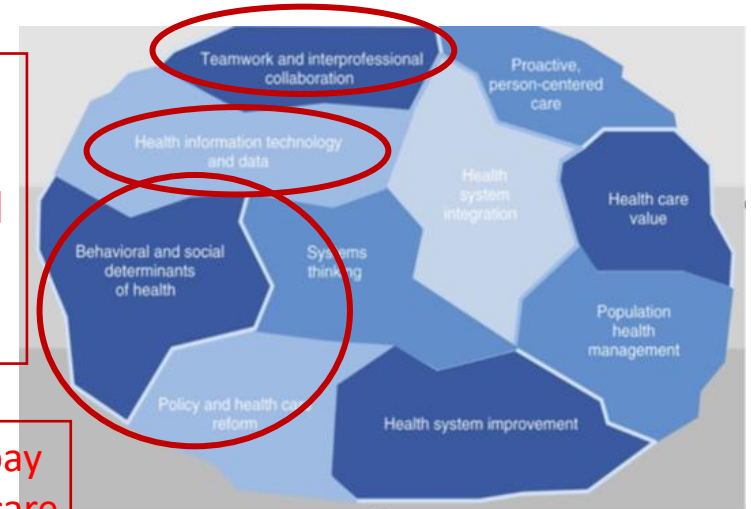
35 y.o. male w/RLQ pain



- History (fevers, chills, N/V)
- Differential Dx
- Labs (elevated WBC)
- Imaging (CT c/w acute appendicitis)
- Treatment plan (abx, OR for lap appy)

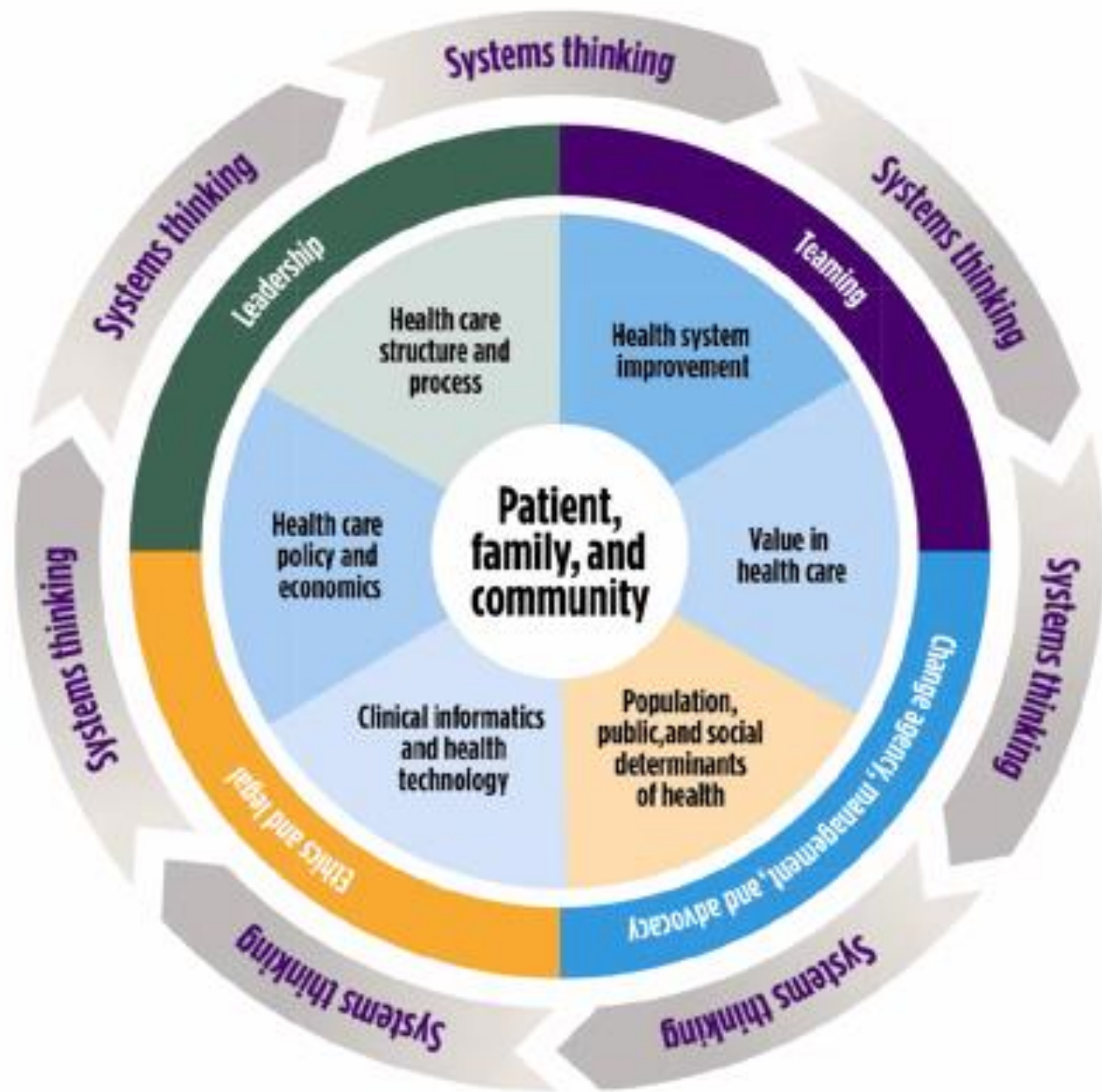
Night on-call OR team  
Unfamiliar with laparoscopic cases  
Delay in setup, delays during difficult case

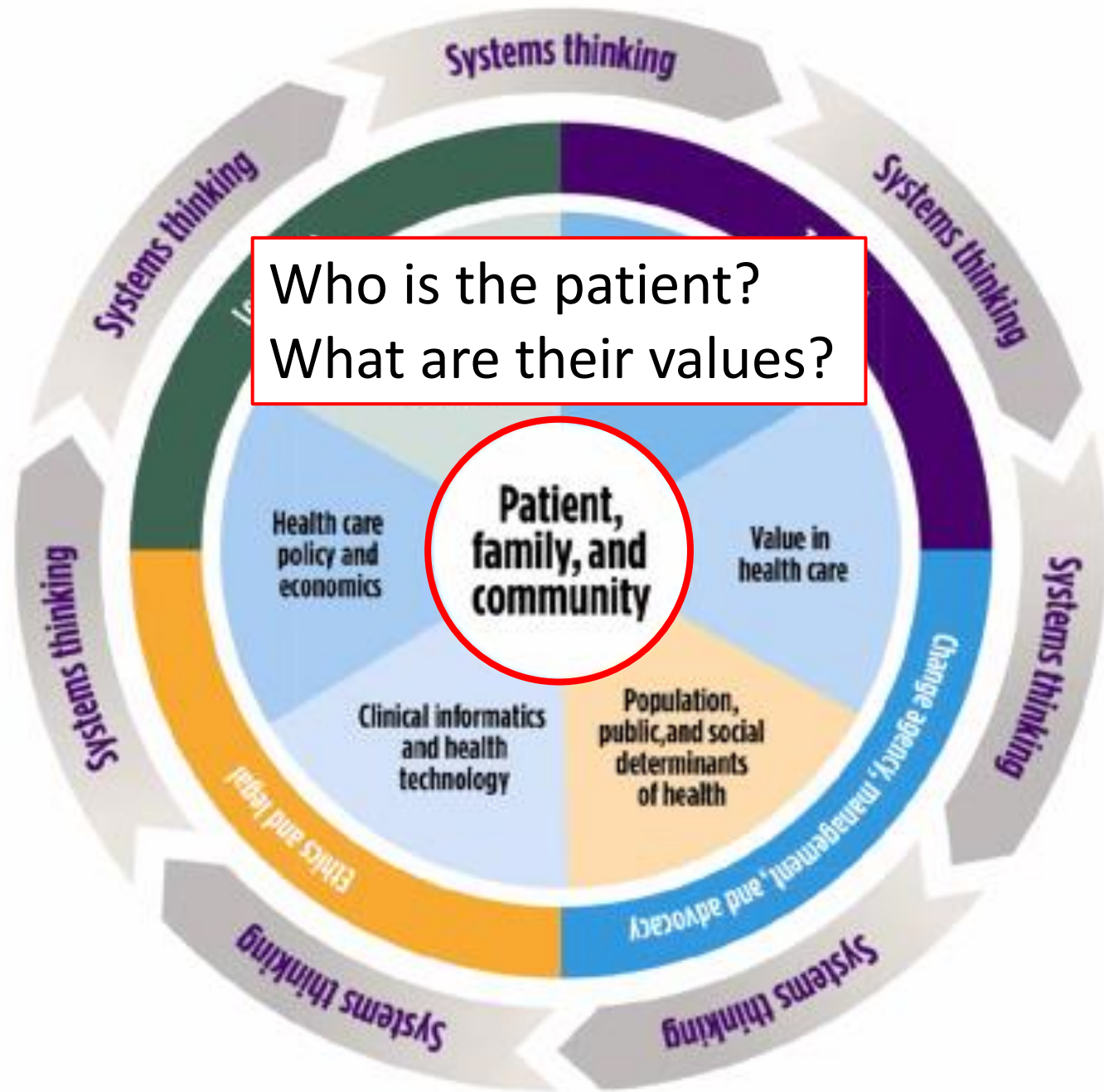
Abx ordered in ED  
"fell off" when  
pt was transported  
to preop, did not  
receive



Uninsured/self-pay  
Delayed seeking care  
2/2 fears of cost  
Ruptured appy,  
↑ case difficulty,  
↑ LOS

Care provided  
to an individual patient





Who is the patient?  
What are their values?

**Patient,  
family, and  
community**

Health care  
policy and  
economics

Value in  
health care

Population,  
public, and social  
determinants  
of health

Change agency, management, and advocacy

Clinical informatics  
and health  
technology

Ethics and legal

Systems thinking

Systems thinking

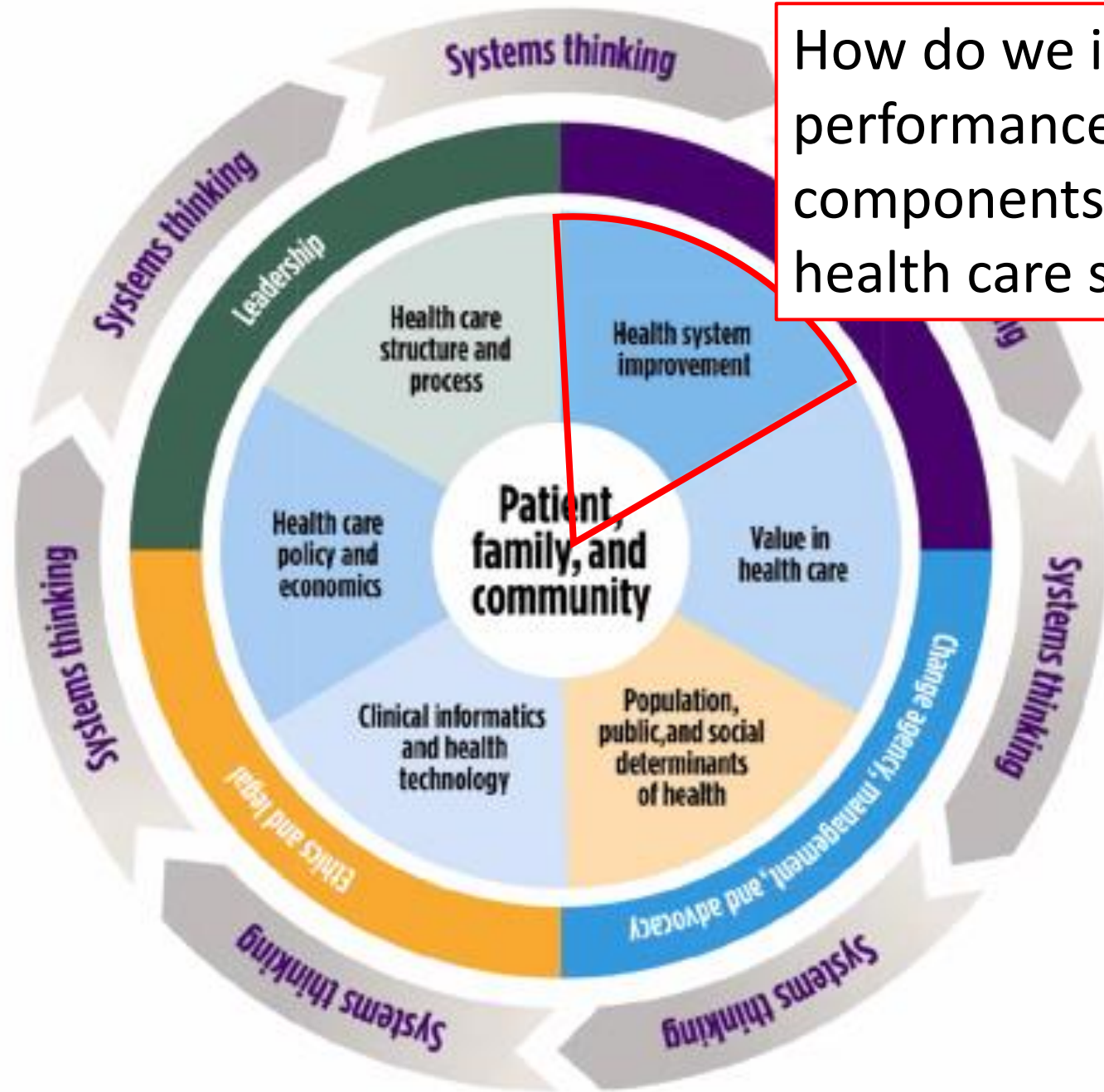
Systems thinking

Systems thinking

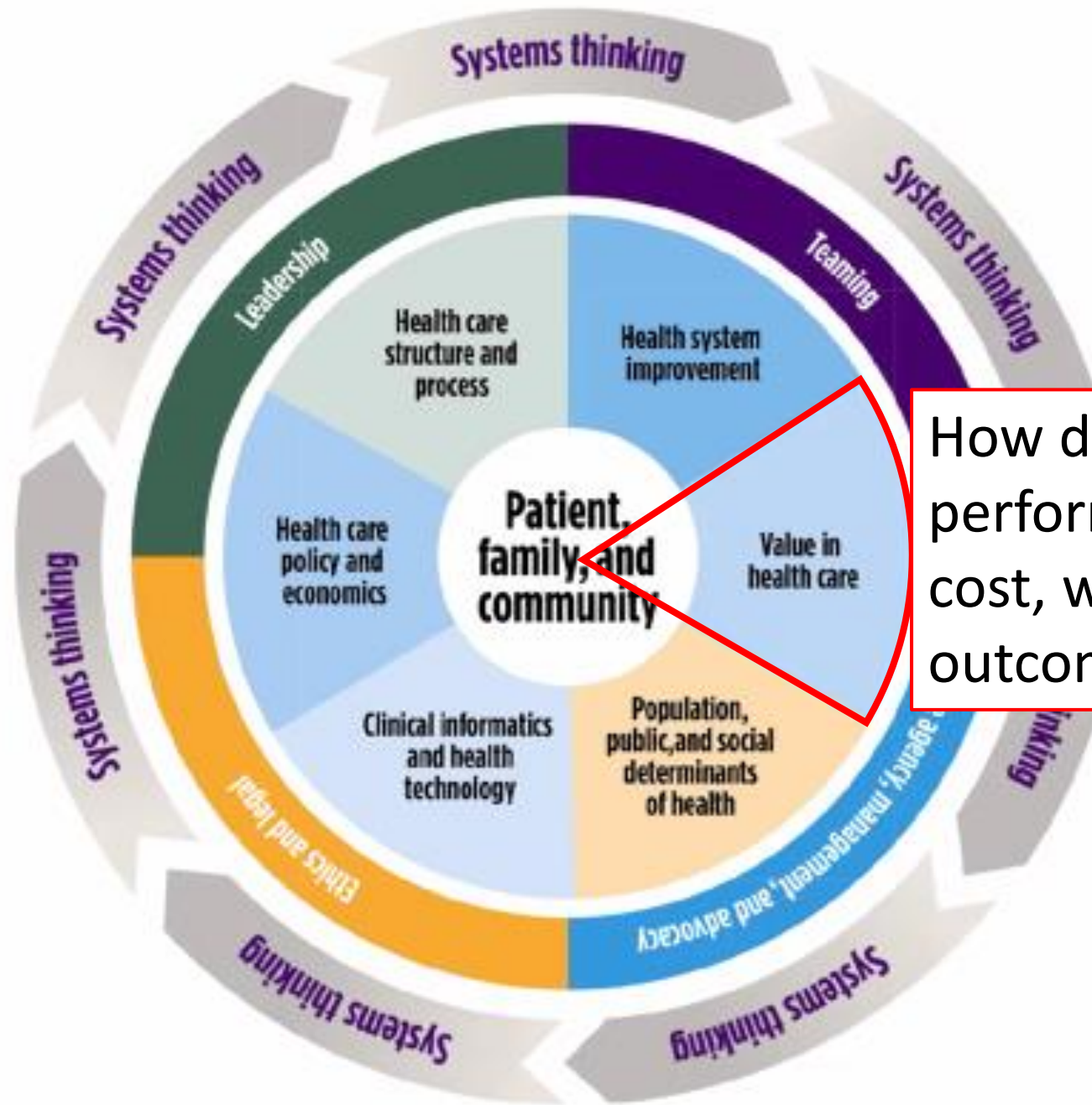
Systems thinking

Systems thinking

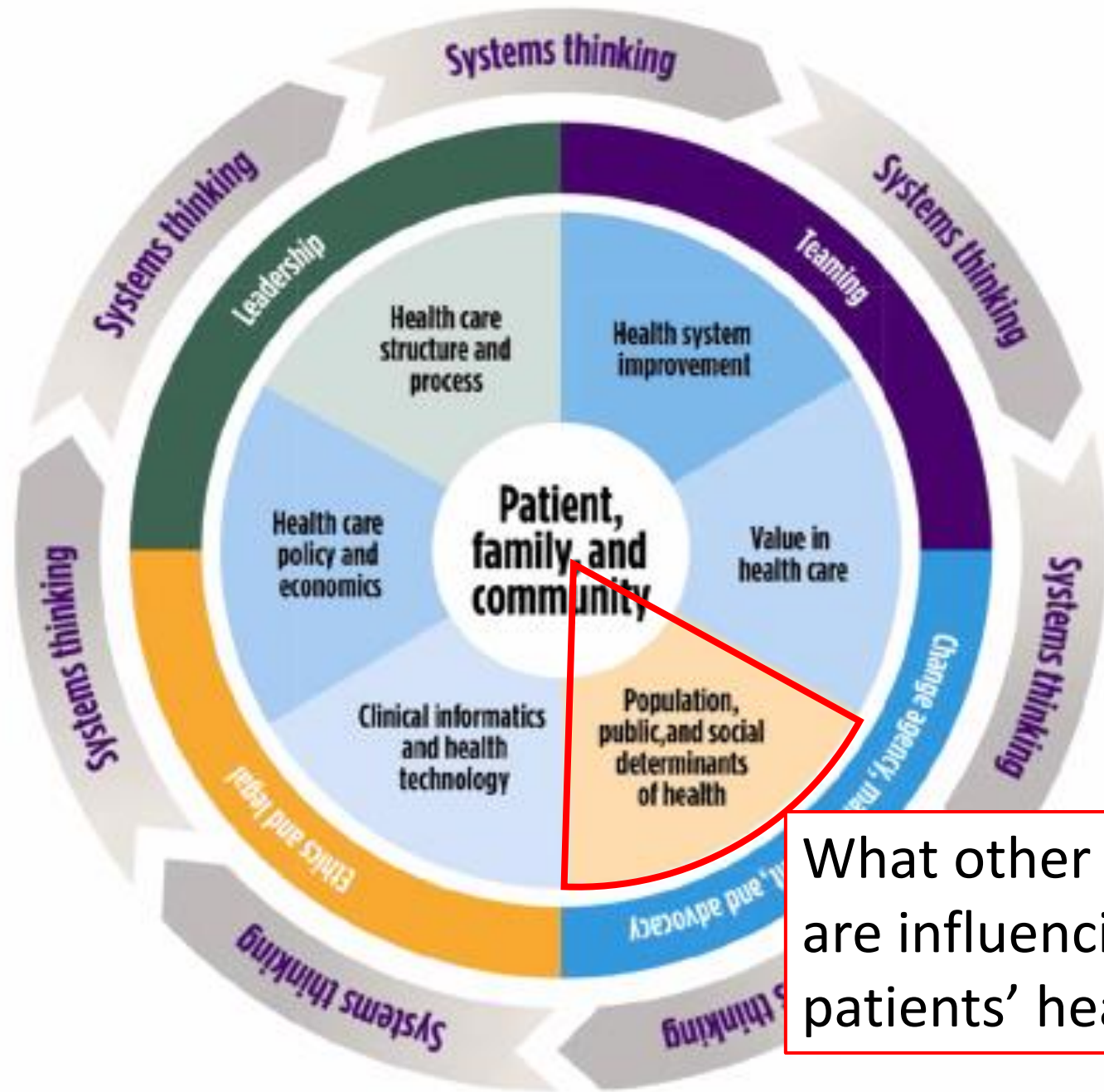
Systems thinking



How do we improve performance in any / all components of our health care system?

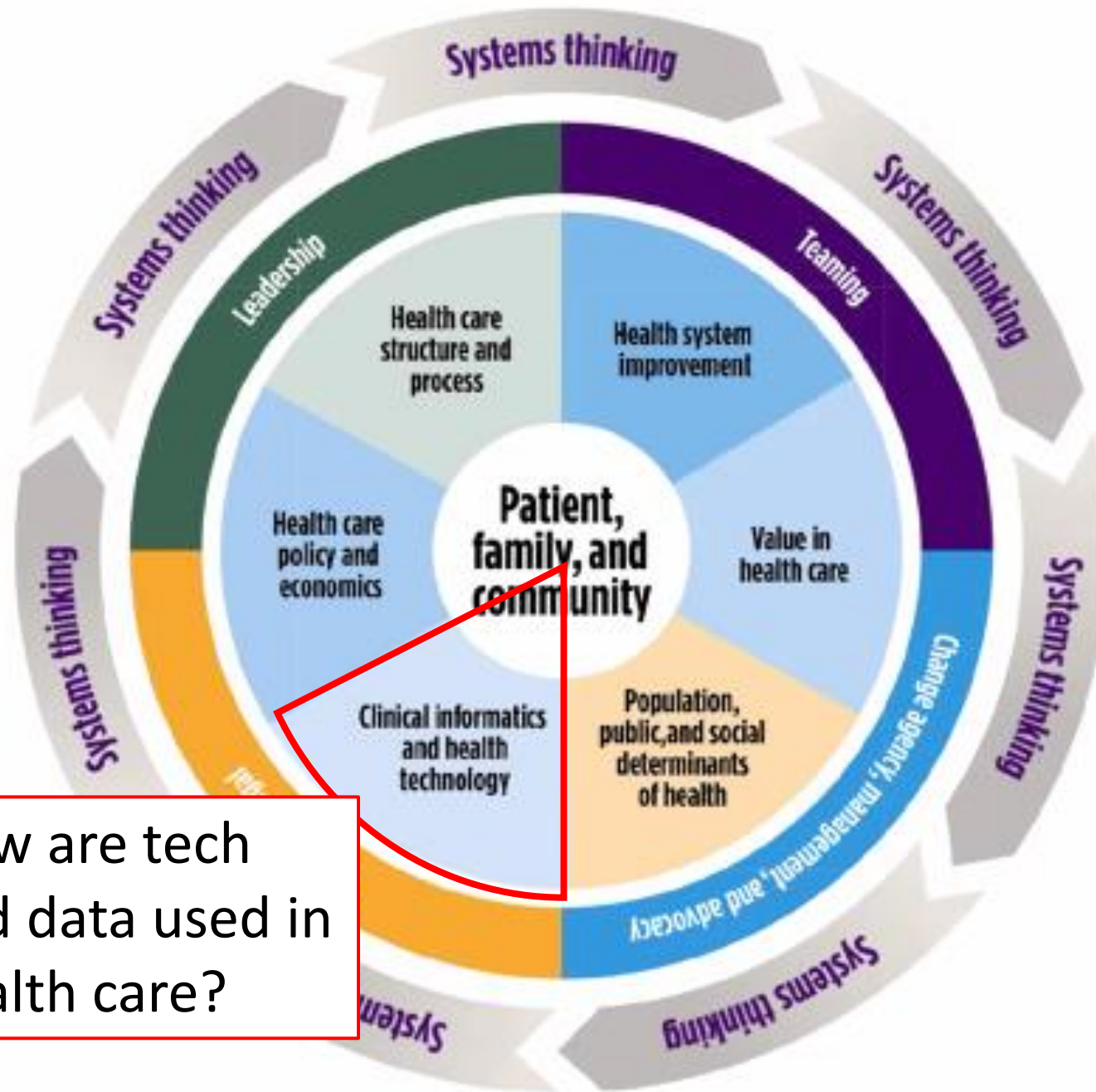


How does our system perform in terms of cost, waste, and outcomes?



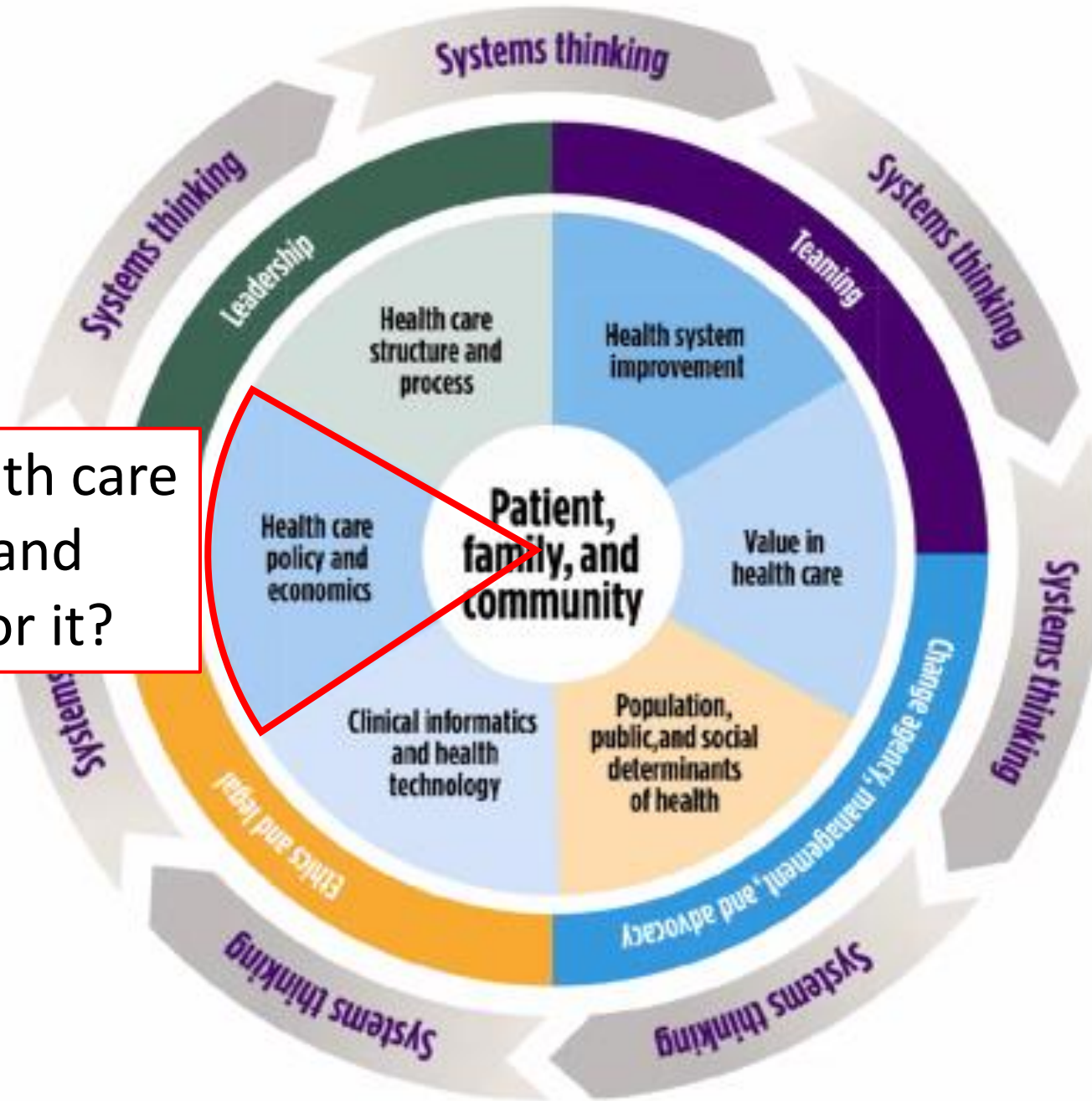
What other factors are influencing patients' health?





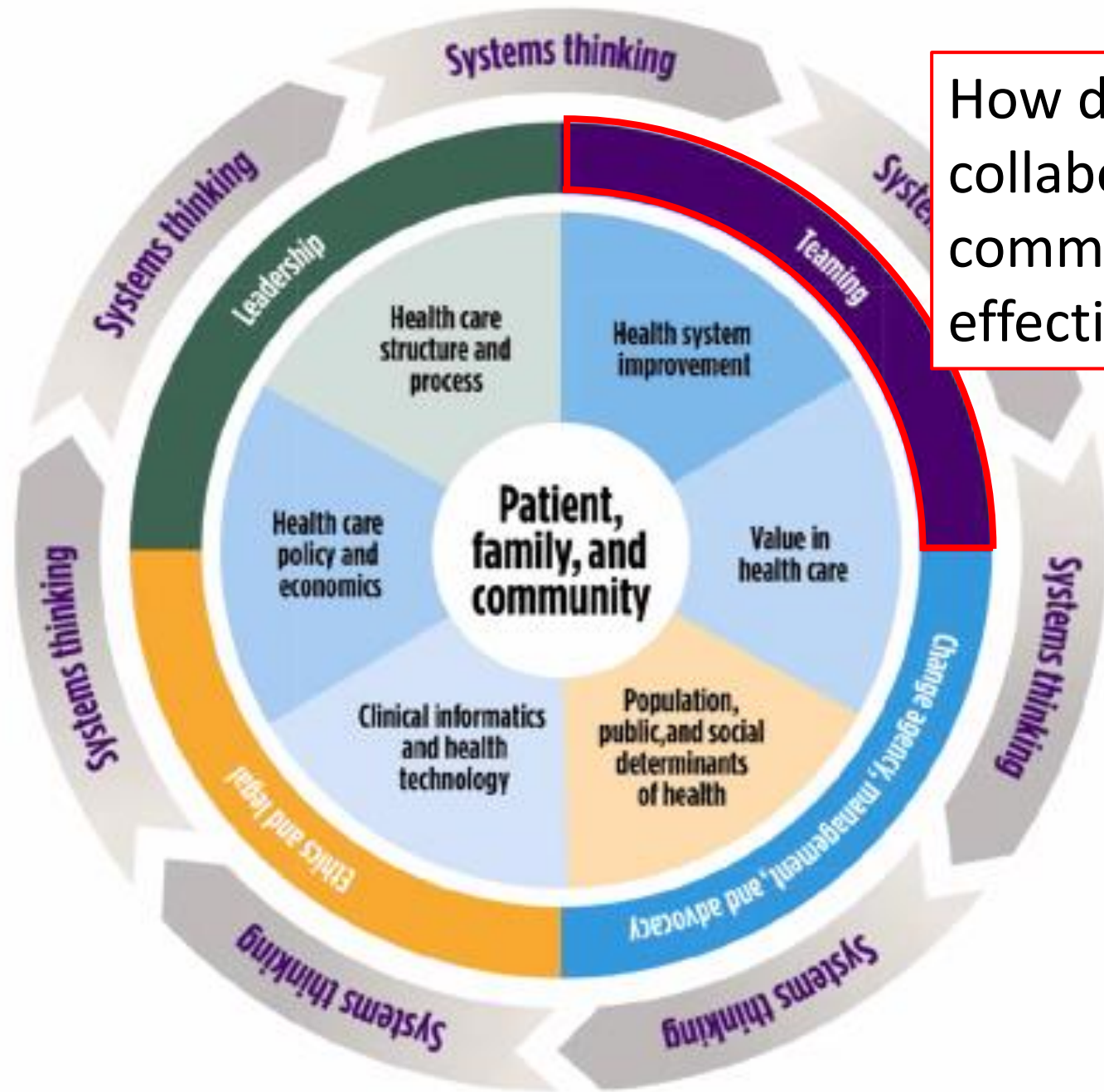
How are tech and data used in health care?

How is health care consumed and who pays for it?

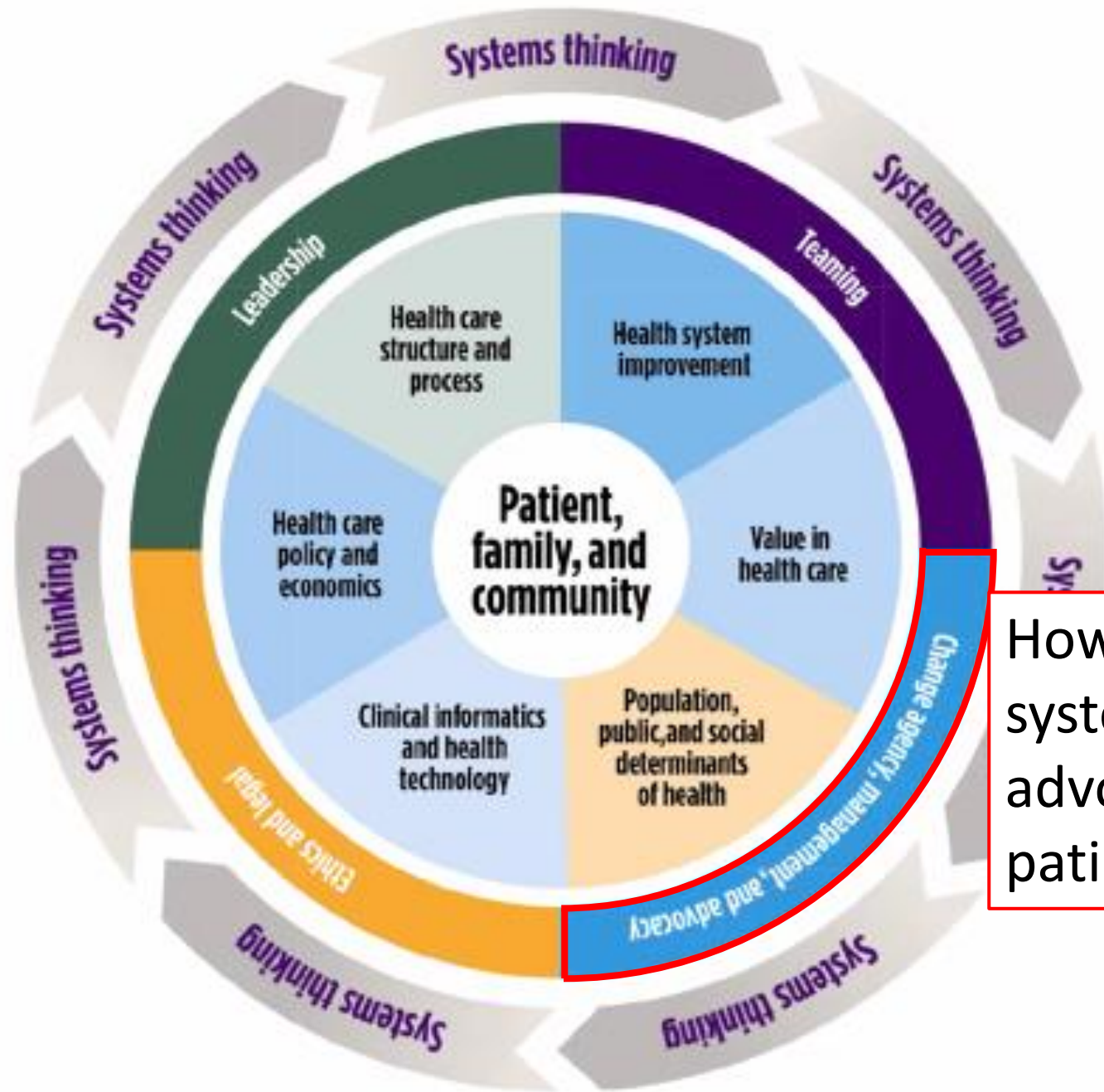


How / where  
is health care  
delivered?



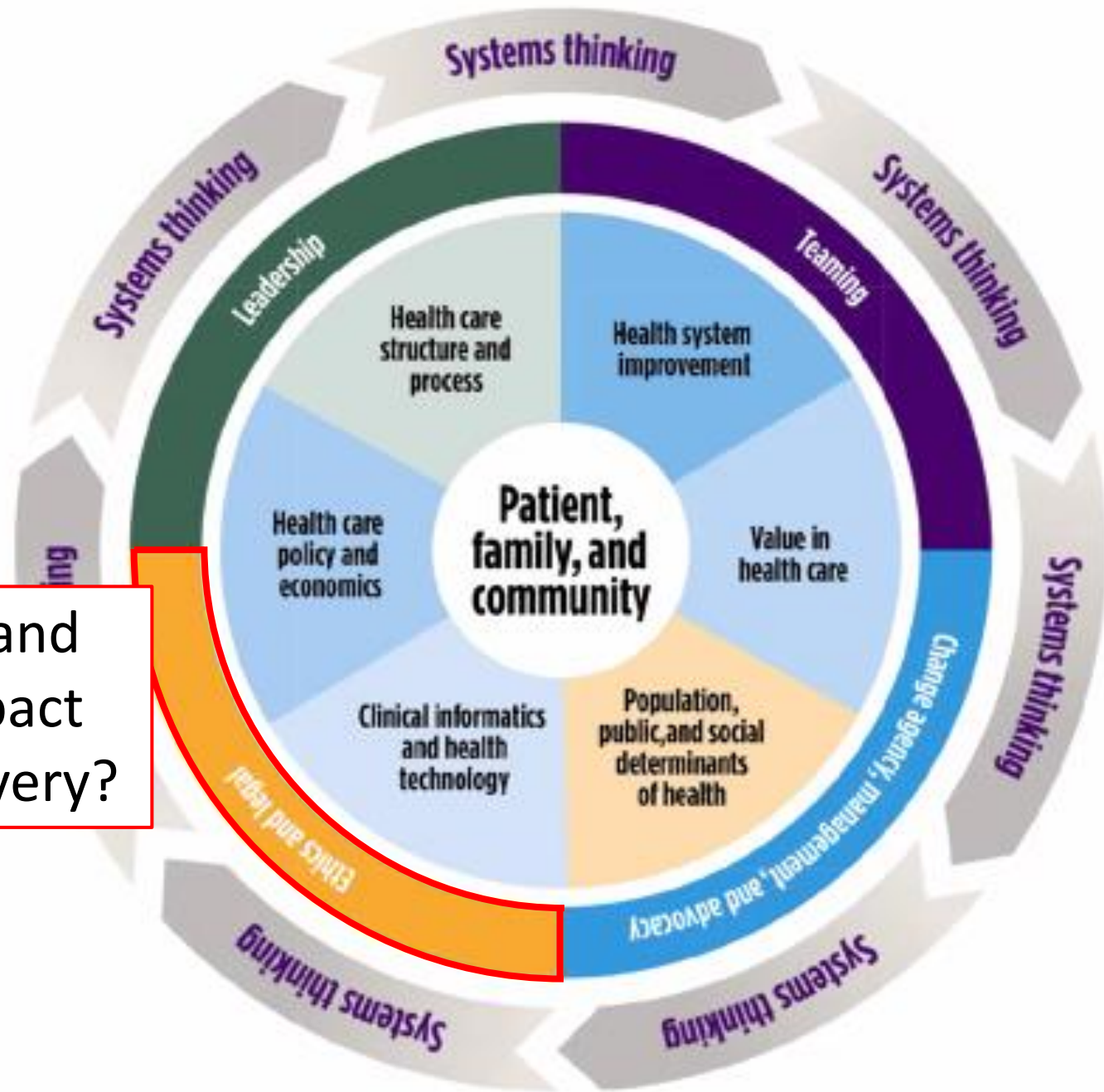


How do we collaborate and communicate effectively?

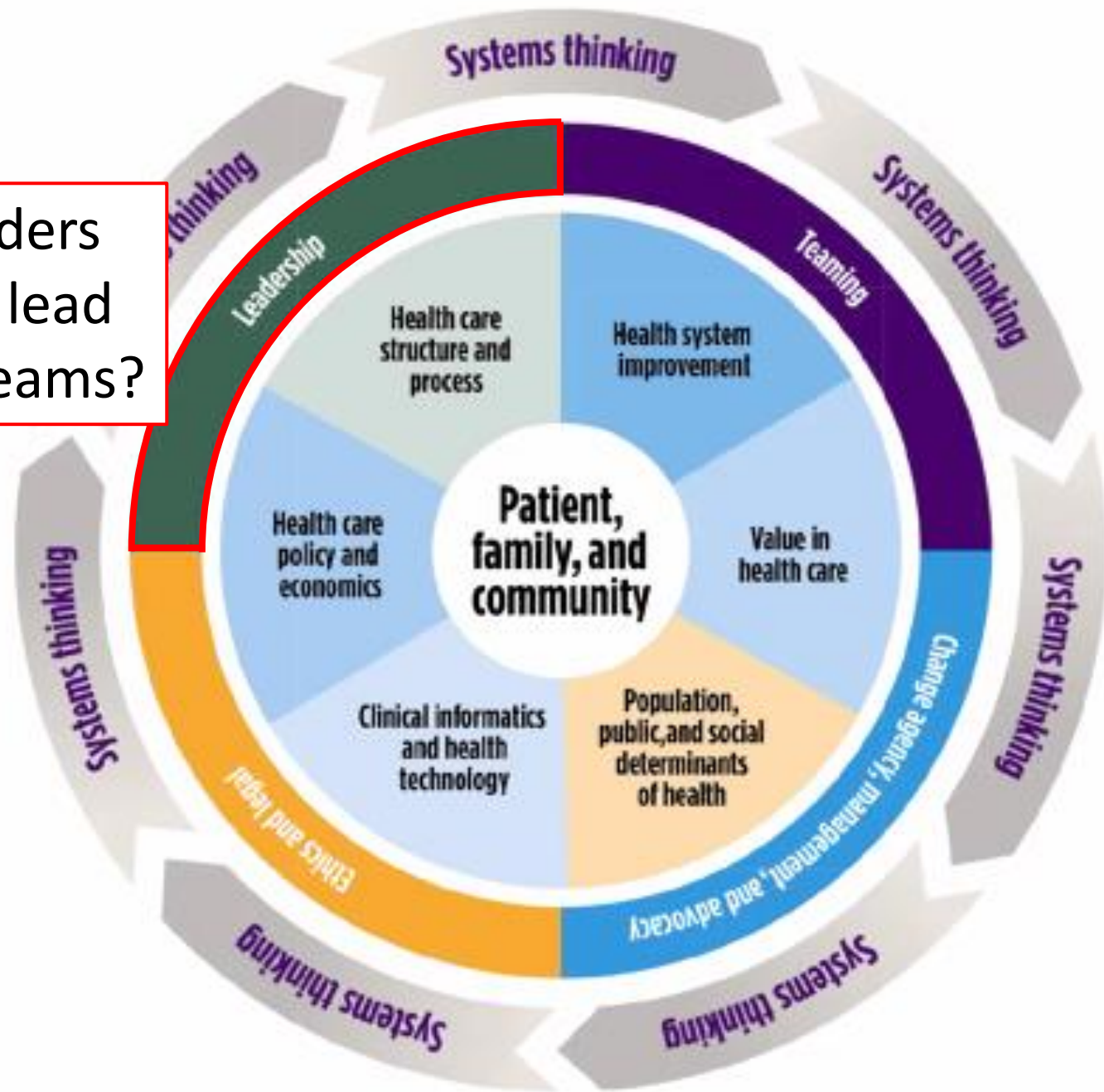


How do we impact systemic change and advocate for our patients at all levels?

How do ethical and legal factors impact health care delivery?



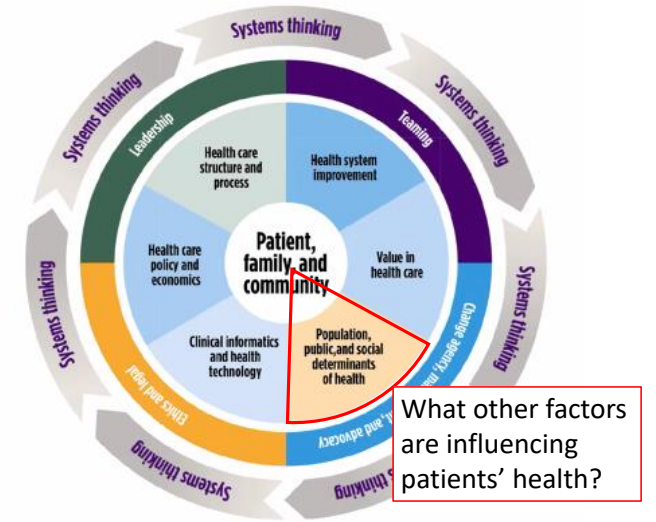
What types of leaders exist? How do we lead clinical / system teams?



# COVID-19 Vaccine Delivery



- 87 yo female seeking COVID-19 vaccine in February 2021
  - Lives by herself in public housing
  - Is not comfortable with technology
  
- How do we use a systems approach to achieve equity and ensure she has access?





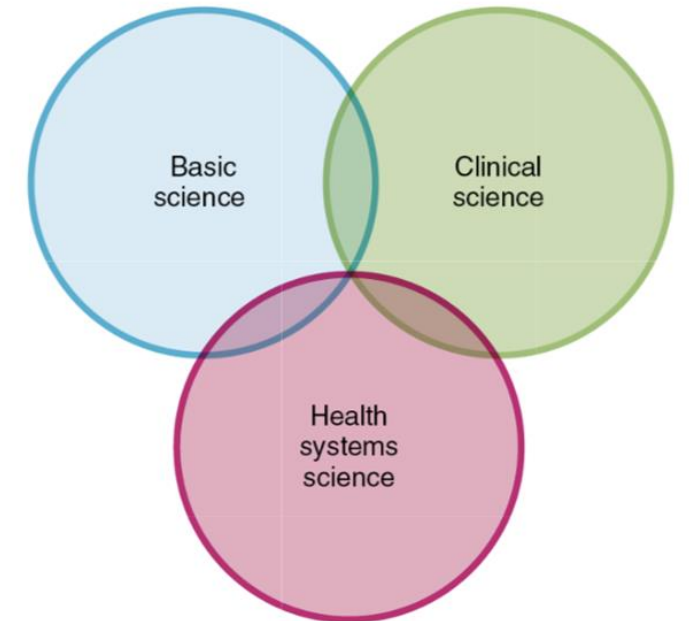
# HSSIP: The Curriculum

## **Health Systems Science\*:**

“The study of how health care is delivered, how health care professionals work together to deliver that care, and how the health system can improve patient care and health care delivery.”

## **Interprofessional Practice:**

“When multiple health workers from different professional backgrounds work together with patients, families, caregivers, and communities to deliver the highest quality of care.”



\* Health Systems Science, 2<sup>nd</sup> Ed. Skochelak et al. Elsevier 2020.

# HSSIP Curriculum MS1

- Block I: Overview of Key Topics in HSSIP
- Block II: Focus on Teaming and IP, with ASBN and PA students
- Block III: Focus on Population Health, Social Determinants of Health, and Healthcare Delivery
- Block IV: Focus on Patient Safety and Quality Improvement

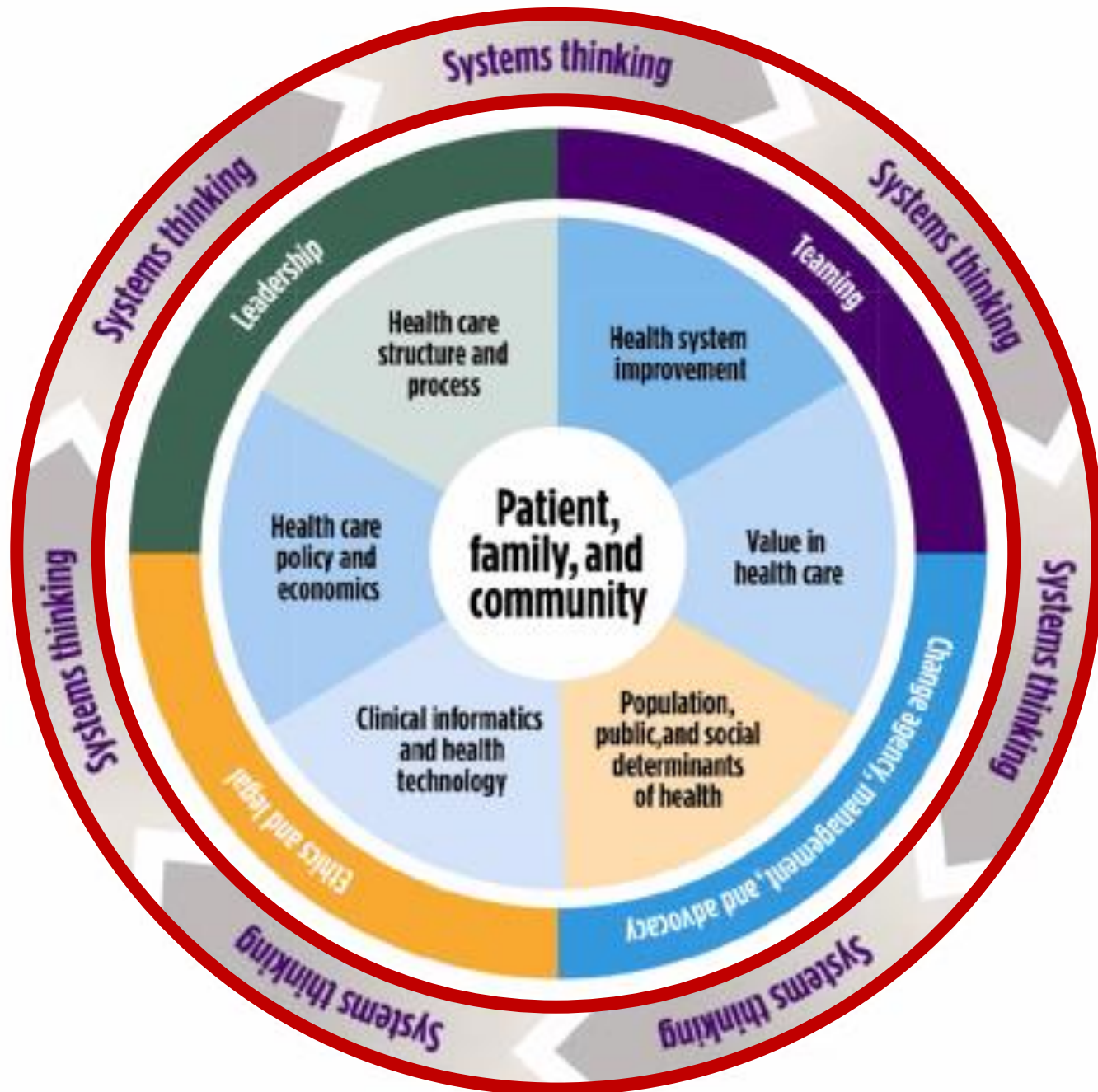
## HSSIP Curriculum MS2

- Block V: Focus on IP in the clinical setting
- Block VI: Focus on ethics and law
- Block VII: Focus on public health
- Block VIII: Focus on healthcare policy

## HSSIP Curriculum MS3&4

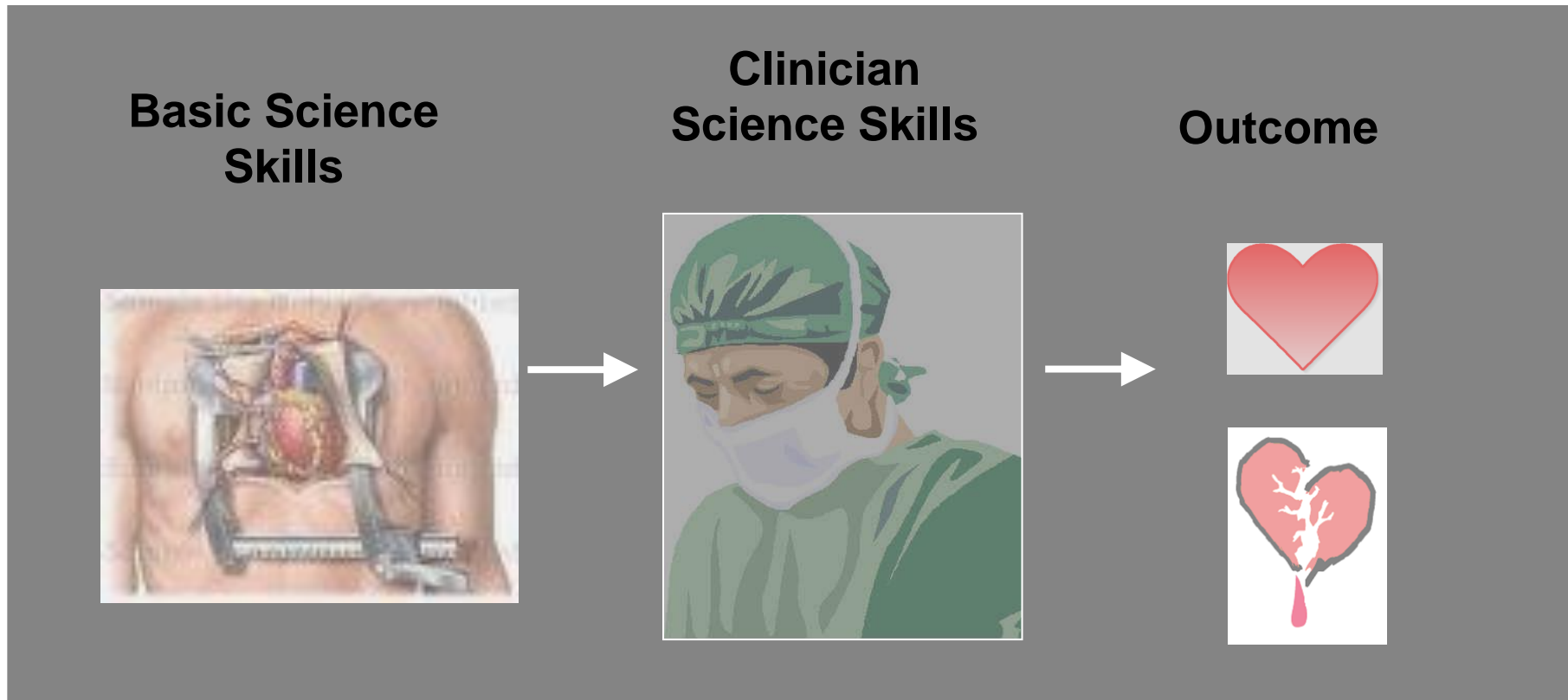


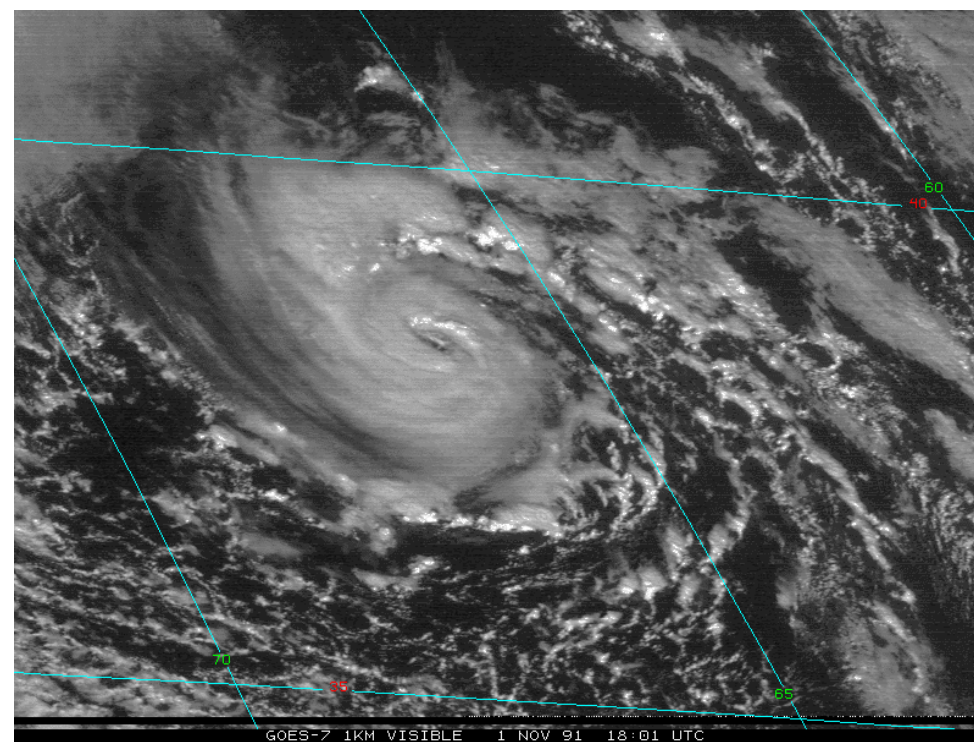
- New M3 HSSIP Longitudinal Curriculum replacing “Domain Days” – Content to be centered on HSSIP Topics
- HSSIP Clinical Champions – Now recruiting!
- Incorporation into clerkship curriculum, didactics, assessment
- MS4 Electives & Capstone Course
- Focus on professional identity development, leadership, and change agency: creating future healthcare leaders



## Traditional (Person-Centered) Perspective

*“Once outcomes (usually mortality) have been correctly adjusted for patient risk factors, the remaining variance is assumed to be explained by individual... skill.”* Vincent et al. (2004). Annals of Surgery 239(4): 475-82.





# What's a complex (Perfect Storm) system?

- How do discreet parts become a whole?
- How does that whole interact with its environment?



# Systems Perspective

*“Optimizing the ... environment, attention to ergonomics and equipment design, understanding the subtleties of decision making in a dynamic environment, enhancing communication and team performance may be more important than skill when reaching for truly high performance.”*

Vincent et al. (2004). Annals of Surgery 239(4): 475-82.



# shift<sup>o</sup> Obesity System Influence Diagram

Full Map

Clusters

Click-drag to scroll

Double-click to zoom in/out

Core Loop

Individual Psychology

Social Psychology

Individual Activity

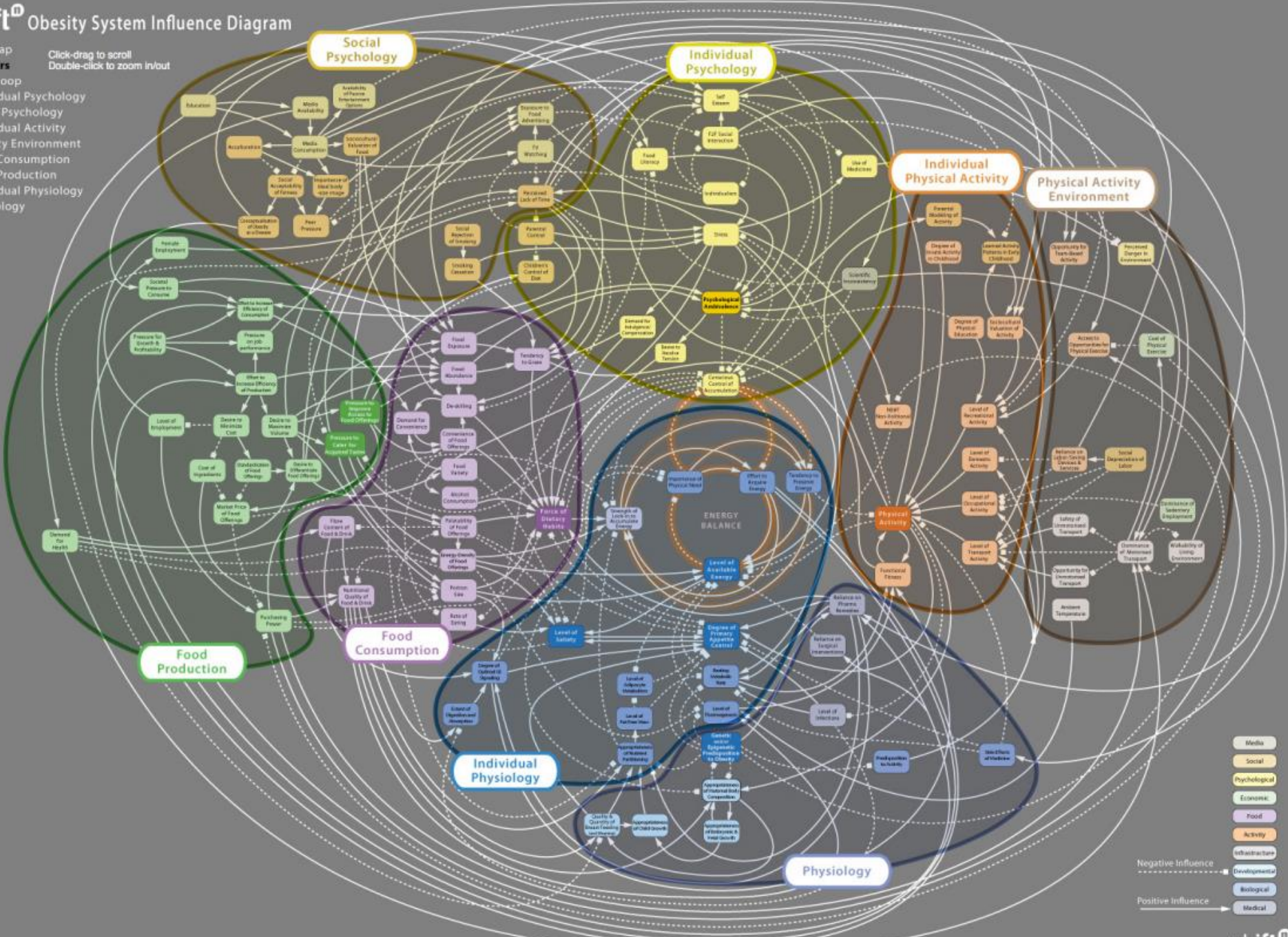
Activity Environment

Food Consumption

Food Production

Individual Physiology

Physiology



- Media
- Social
- Psychological
- Economic
- Food
- Activity
- Infrastructure
- Developmental
- Biological
- Medical

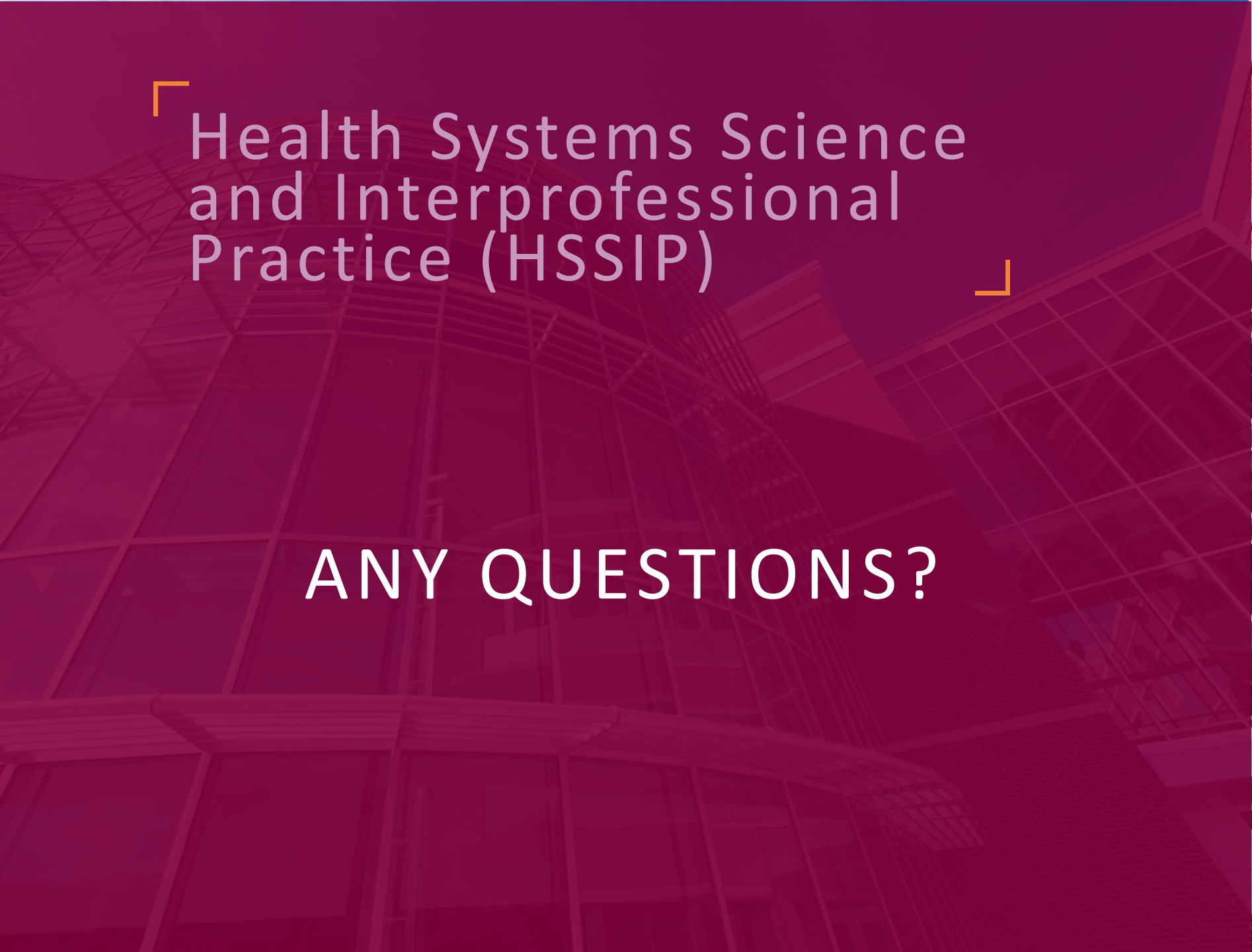
Negative Influence (dashed arrow)

Positive Influence (solid arrow)



“The additional focus on health systems science will grow the impact of the interprofessional education domain for which our school has become a national leader. Our students will emerge with a better understanding of the way health care is delivered and how to make a positive impact on the health of patients and populations.”

- Dean Learman



Health Systems Science  
and Interprofessional  
Practice (HSSIP)

ANY QUESTIONS?

**VTC**

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Virginia Tech Carilion  
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