Using the lens of health systems science to achieve health equity

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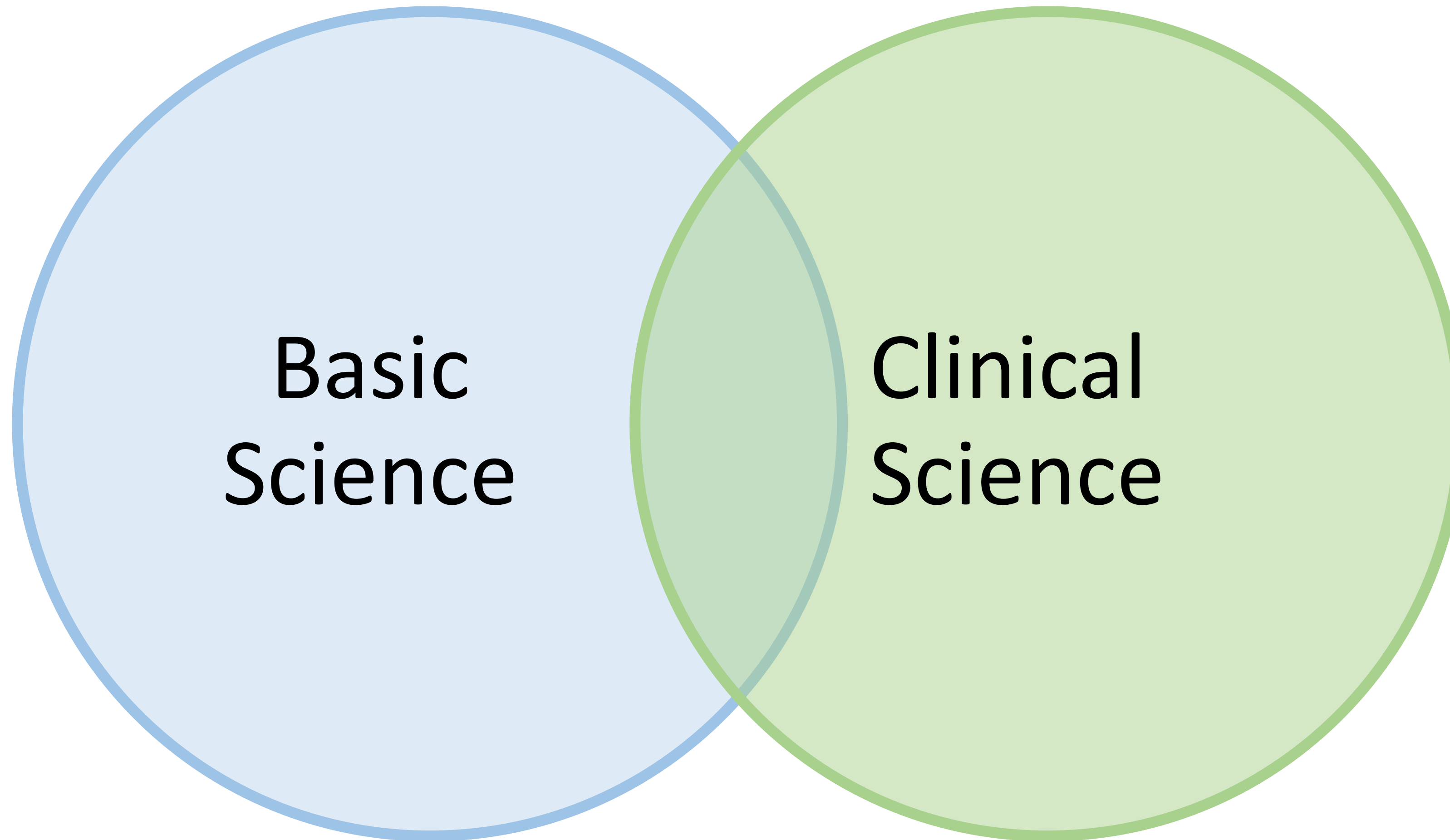
Disclosures

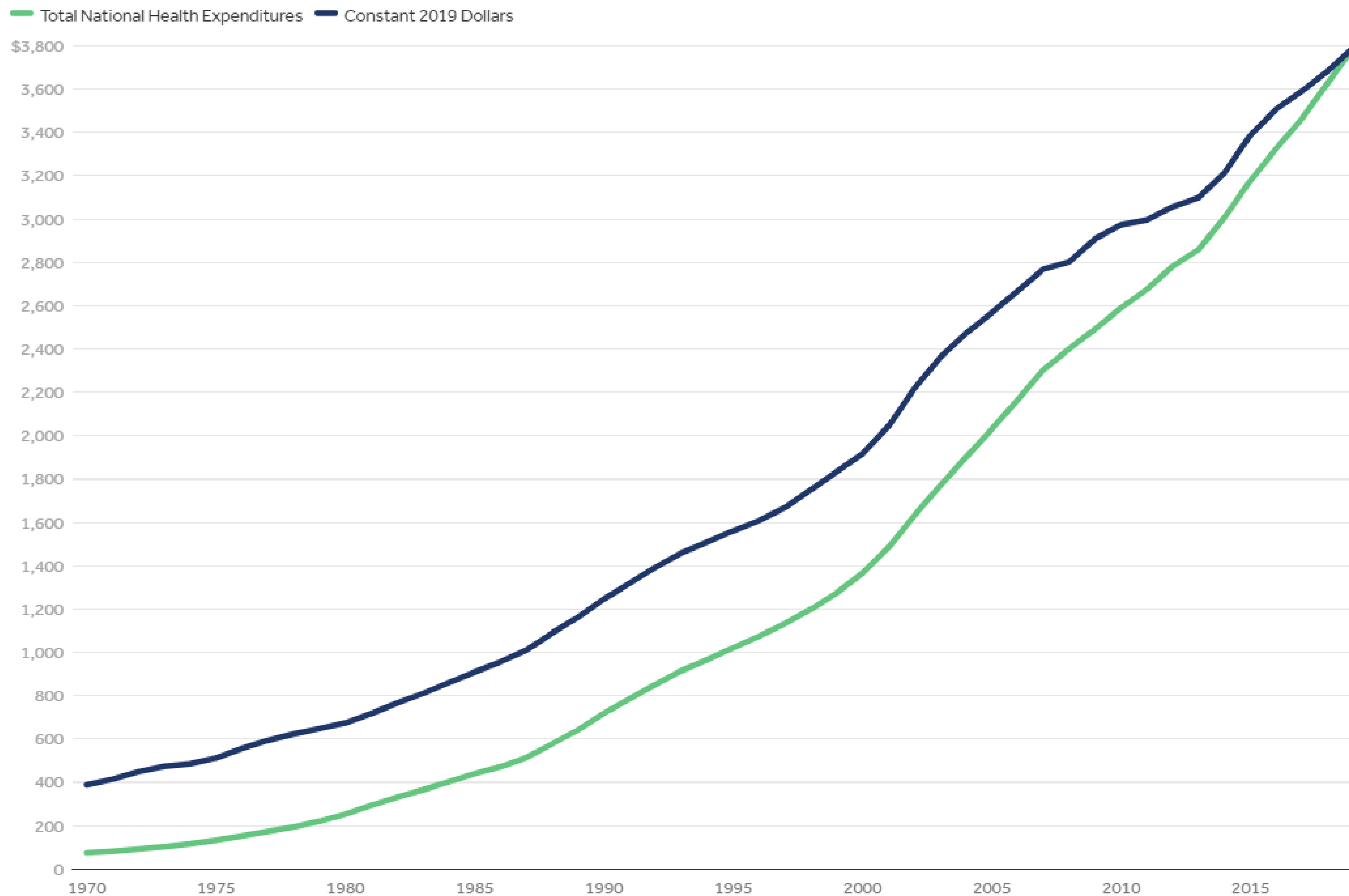
- Co-I, AMA Accelerating Change in Medical Education Consortium Grant
- Faculty, AMA Health Systems Science Scholars Academy
- Chapter author, AMA Health Systems Science Value-Added Roles Book

Objectives

1. Define health equity and make the case for addressing health inequities in the context of improving the overall health system
2. Explain how societal and systems level trends impact the evolution of the field of health systems science
3. Review the definition of health systems science and its domains
4. Describe how competency in health systems science equips health care professionals to address societal or systems level concerns such as health inequity
5. Compare different frameworks that have been described to achieve health equity

Medical Education – Post-Flexner



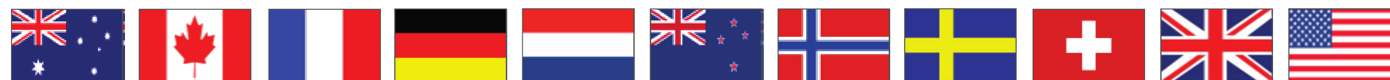


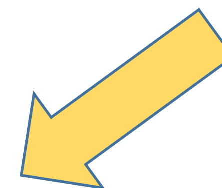
Kamal R, McDermott D, Ramirez G, Cox C. How has U.S. spending on healthcare changed over time? Petersen Center on Healthcare and Kaiser Family Foundation. December 20, 2020. Accessed on November 1, 2021. https://www.healthsystemtracker.org/chart-collection/u-s-spending-healthcare-changed-time/#item-usspendingovertime_2

EXHIBIT ES-1. OVERALL RANKING

COUNTRY RANKINGS

- Top 2*
- Middle
- Bottom 2*





	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
OVERALL RANKING (2013)	4	10	9	5	5	7	7	3	2	1	11
Quality Care	2	9	8	7	5	4	11	10	3	1	5
Effective Care	4	7	9	6	5	2	11	10	8	1	3
Safe Care	3	10	2	6	7	9	11	5	4	1	7
Coordinated Care	4	8	9	10	5	2	7	11	3	1	6
Patient-Centered Care	5	8	10	7	3	6	11	9	2	1	4
Access	8	9	11	2	4	7	6	4	2	1	9
Cost-Related Problem	9	5	10	4	8	6	3	1	7	1	11
Timeliness of Care	6	11	10	4	2	7	8	9	1	3	5
Efficiency	4	10	8	9	7	3	4	2	6	1	11
Equity	5	9	7	4	8	10	6	1	2	2	11
Healthy Lives	4	8	1	7	5	9	6	2	3	10	11
Health Expenditures/Capita, 2011**	$3,800	$4,522	$4,118	$4,495	$5,099	$3,182	$5,669	$3,925	$5,643	$3,405	$8,508

Notes: * Includes ties. ** Expenditures shown in $US PPP (purchasing power parity); Australian $ data are from 2010.

Source: Calculated by The Commonwealth Fund based on 2011 International Health Policy Survey of Sicker Adults; 2012 International Health Policy Survey of Primary Care Physicians; 2013 International Health Policy Survey; Commonwealth Fund *National Scorecard 2011;* World Health Organization; and Organization for Economic Cooperation and Development, *OECD Health Data, 2013* (Paris: OECD, Nov. 2013).

Buying Health

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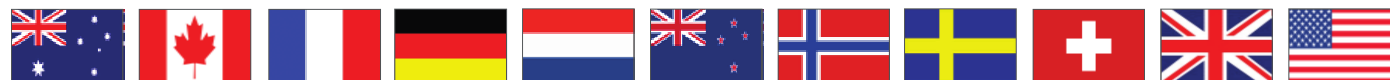

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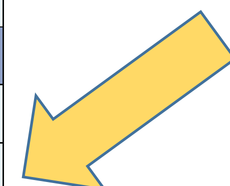

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Life Expectancy by Zip Code

Roanoke City, VA 24016

Ann Arbor, MI 48109

Robert Wood Johnson Foundation. Life Expectancy: Could where you live influence how long you live? Accessed on October 19, 2021. https://www.rwjf.org/en/library/interactives/whereyouliveaffectshowlongyoulive.html

SOURCE Authors' analysis of data for 2007–15 from the National Inpatient Sample. **NOTES** The sample size ($N = 6{,}793{,}342$) is unweighted; all other data are weighted to represent the US population. Error bars represent 95% confidence intervals. Predicted marginal probabilities used specified covariate values based on mean values or proportions in the overall sample per delivery year, including maternal age at delivery, insurance payer, race/ethnicity, bottom quartile of income (explained in the notes to exhibit 1), hospital region, cesarean delivery, substance use disorder, depression, HIV/AIDS, pulmonary hypertension, lupus, chronic kidney disease, chronic heart disease, diabetes, chronic hypertension, and chronic respiratory disease. Predicted marginal probabilities were calculated from estimates derived from available data (through the third quarter of 2015) and predicted out (from the third quarter of 2015 on) following trends estimated from available data. The vertical line distinguishes estimated from predicted probabilities. Predicted marginal probabilities among rural and urban residents were significantly different at p values less than 0.05 for years 2009–15.

Whitehall Studies and the Social Gradient of Health

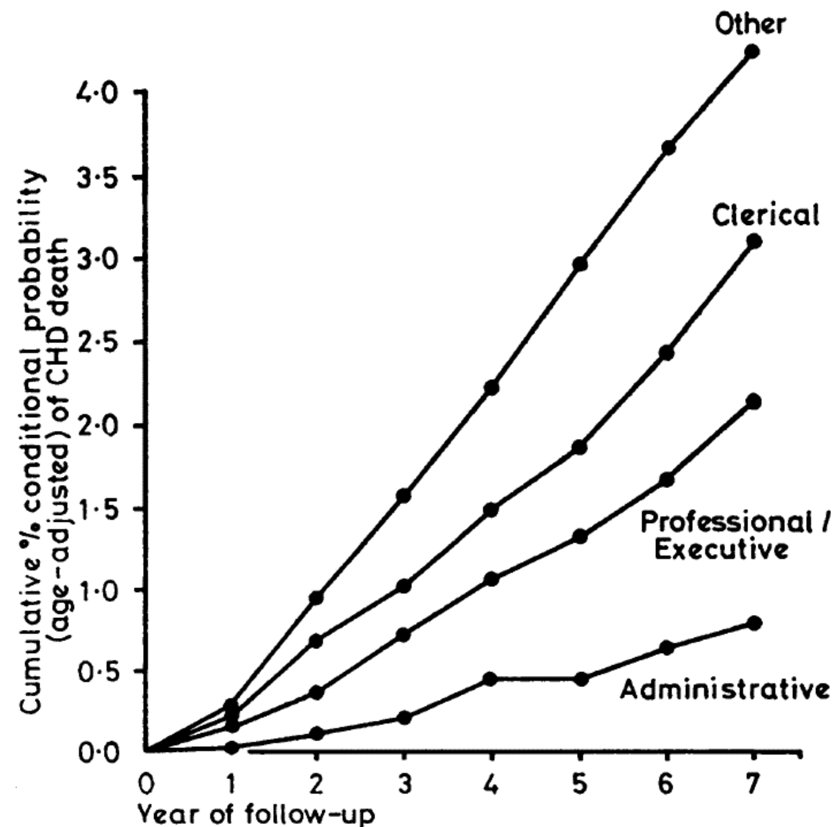
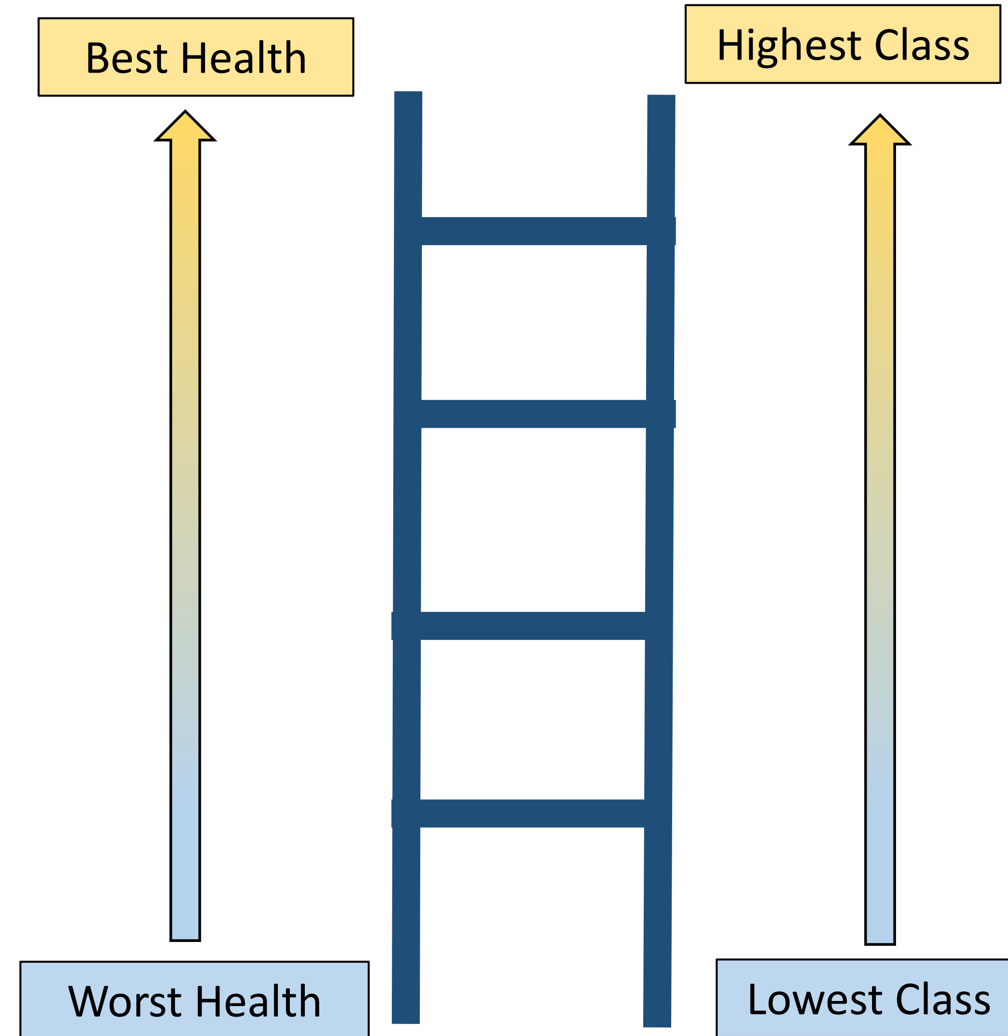


Fig. 5 ***CHD mortality among total population by year of follow-up.***



Marmot MG, Rose G, Shipley M, Hamilton PJS (1978). Employment grade and coronary heart disease in British Civil servants. *Journal of Epidemiology and Community Health* 32, 244-9.
Skochelak S, Hawkins R, Lawson L, Starr S, Borkan J, Gonzalo J. *Health Systems Science*. Philadelphia: Elsevier; 2017

Remaining Years of Life for U.S. Adults at Age 25 by Educational Attainment, 2005

70
60
50
40
30
20
10
0

	Less than High School Graduate	High School Graduate	Some College	College Graduate	Graduate Degree
Women	50	56	58	62	62
Men	44	51	52	57	60
% of Total Population with Given Educational Attainment Level	12	27	29	20	12

Women Men % of Total Population with Given Educational Attainment Level

Brian L. Rostron et al. (2010). Education Reporting and Classification on Death Certificates in the United States. *Vital and Health Statistics* Series 2, no. 151:pp 1-16.
Hummer RA, Hernandez EM. (July 18, 2013). The Effect of Educational Attainment on Adult Mortality in the U.S. Retrieved from: https://www.prb.org/us-educational-attainment-mortality/.
U.S. Census Bureau (2017) American Community Survey 1-Year Estimates. Retrieved from: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk.

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL
MICHIGAN MEDICINE

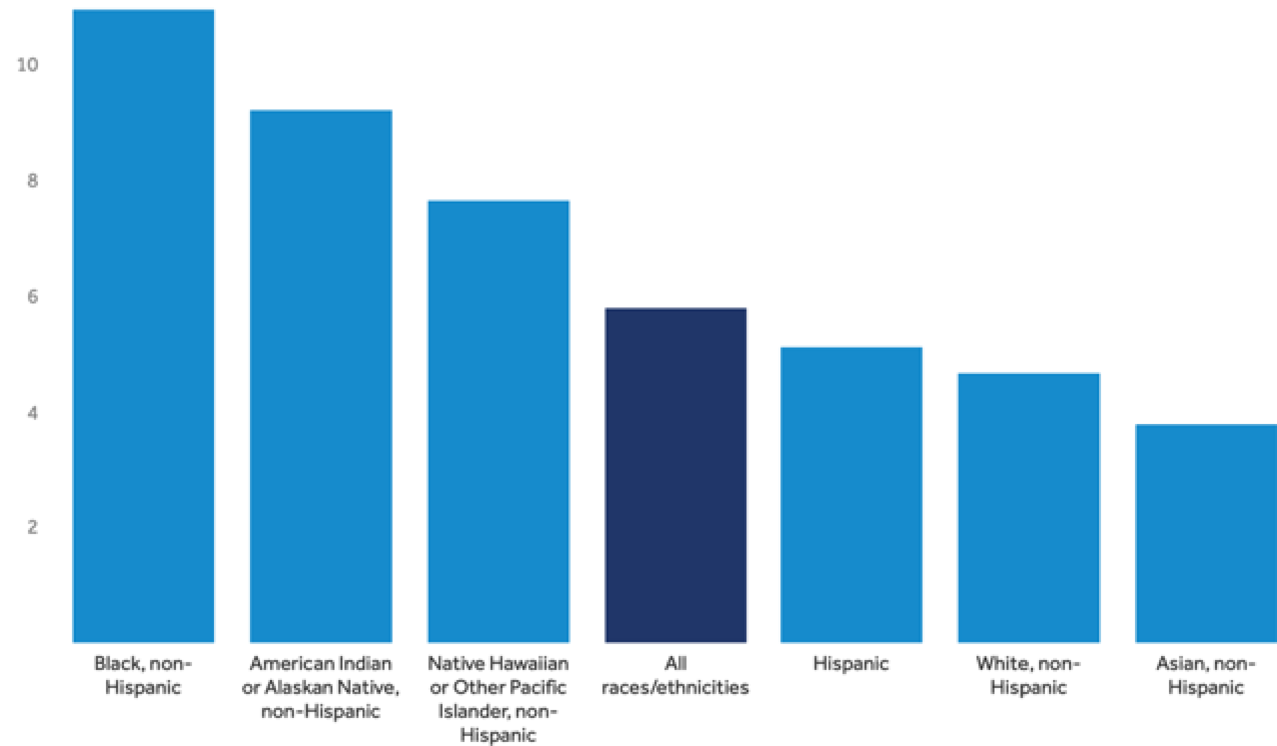

Mortality rates are higher than average among infants born to mothers who are Black, American Indian and Alaska Natives, and Pacific Islanders
Infant mortality per 1,000 live births, by maternal race/ethnicity, 2017
10
8
6
4
2
Black, non-Hispanic
American Indian or Alaskan Native, non-Hispanic
Native Hawaiian or Other Pacific Islander, non-Hispanic
All races/ethnicities
Hispanic
White, non-Hispanic
Asian, non-Hispanic
Source: CDC NCHS Period Linked Birth-Infant Death Data Files • Get the data • PNG
Peterson-KFF
Health System Tracker

Figure 2

Risk of Infection, Hospitalization, and Death compared to White People in the United States, Adjusted for Age

American Indian or Alaska Native | Black | Hispanic | Asian | White

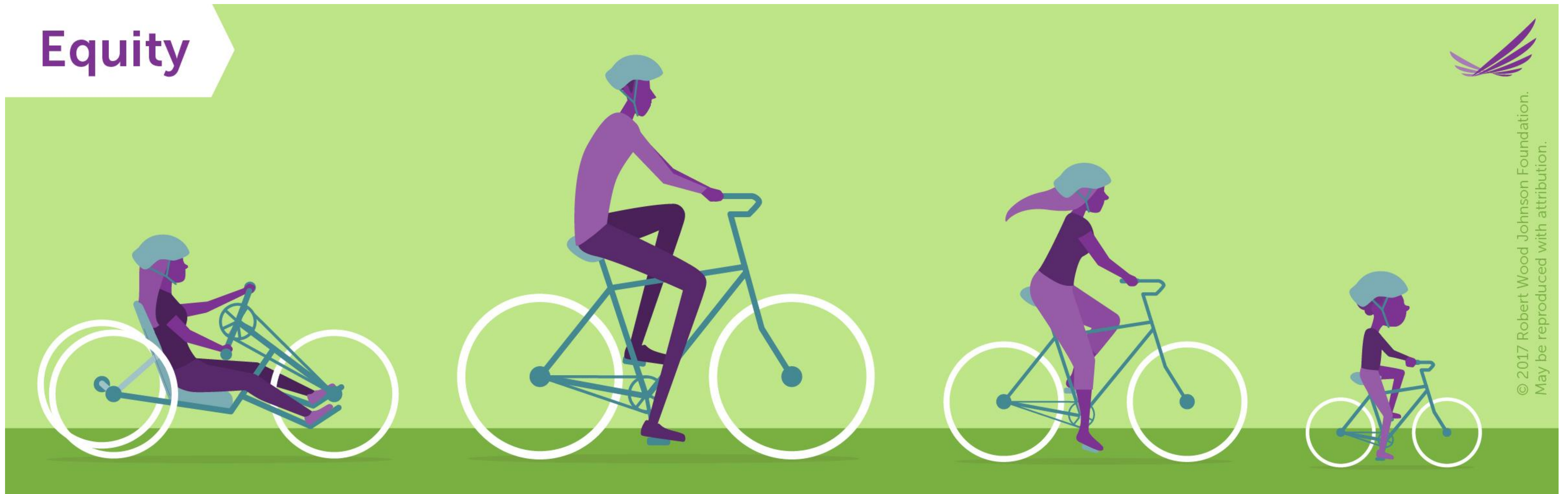
	American Indian or Alaska Native	Black	Hispanic	Asian	White
Cases	1.7	1.1	1.9	0.7	1.0
Hospitalizations	3.5	2.8	2.8	1.0	1.0
Deaths	2.4	2.0	2.3	1.0	1.0

NOTE: Persons of Hispanic origin may be of any race but are categorized as Hispanic; other groups are non-Hispanic.
SOURCE: CDC, Risk for COIVD-19 Infection, Hospitalization, and Death by Race/Ethnicity, https://cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html, accessed October 6, 2021.

Artiga S, Hill L, Saldar S. COVID-19 Cases and Deaths by Race/Ethnicity: Current Data and Changes Over Time. Kaiser Family Foundation. Published October 8, 2021. Accessed on November 14, 2021. https://www.kff.org/racial-equity-and-health-policy/issue-brief/covid-19-cases-and-deaths-by-race-ethnicity-current-data-and-changes-over-time/

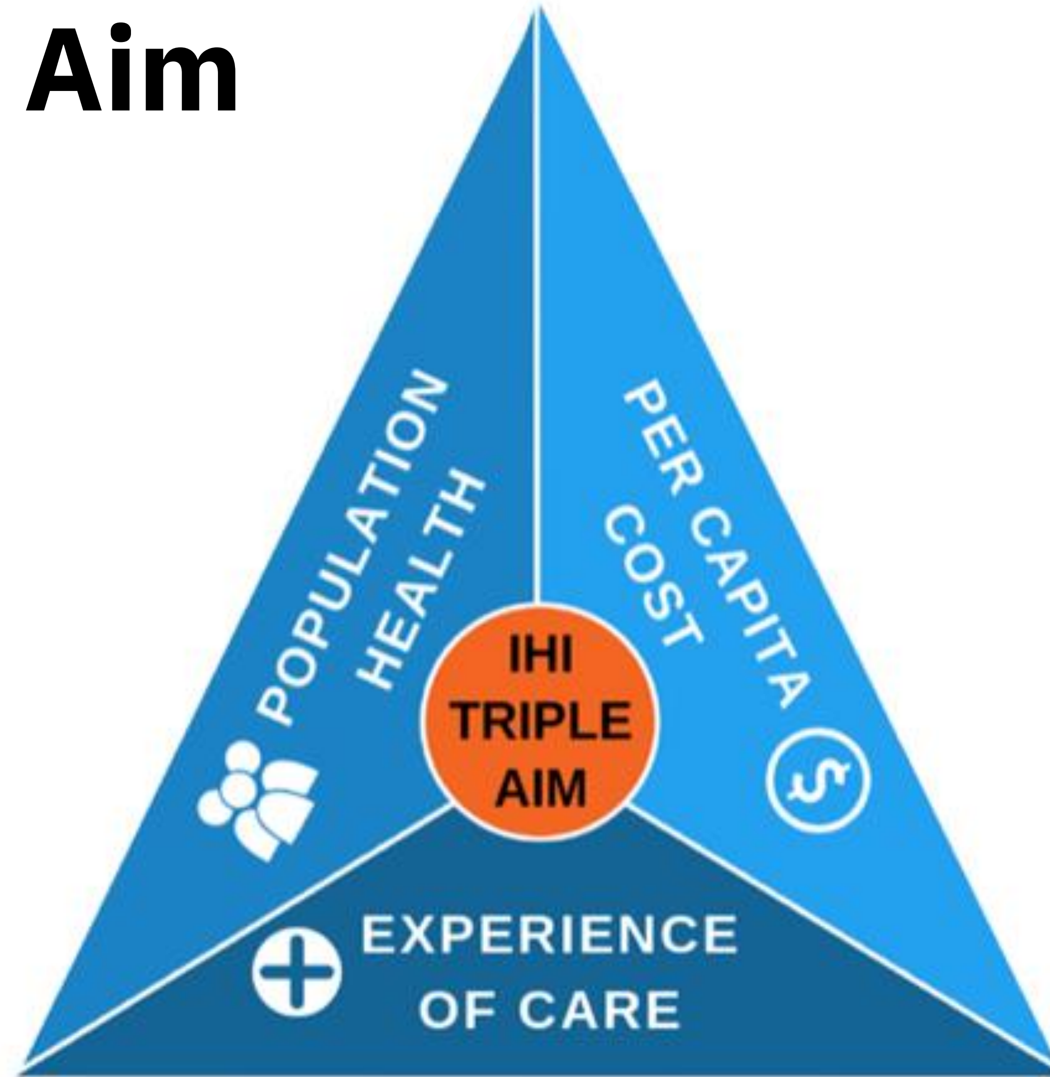
Health Equity

"attainment of the highest level of health for ALL people"



Office of Disease Prevention and Health Promotion. Disparities. https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities
Smalley KB, Warren JC, Fernandez MI. Health Equity A Solutions Focused Approach. Springer Publishing Company; 2021.
https://www.rwjf.org/en/library/infographics/visualizing-health-equity.html#/download

IHI Triple Aim



"Healers are called to heal. When the fabric of communities upon which health depends is torn, then healers are called to mend it. The moral law within insists so. Improving the social determinants of health will be brought at last to boil only by the heat of the moral determinants of health"

Health disparities lead to financial waste in the US health care system

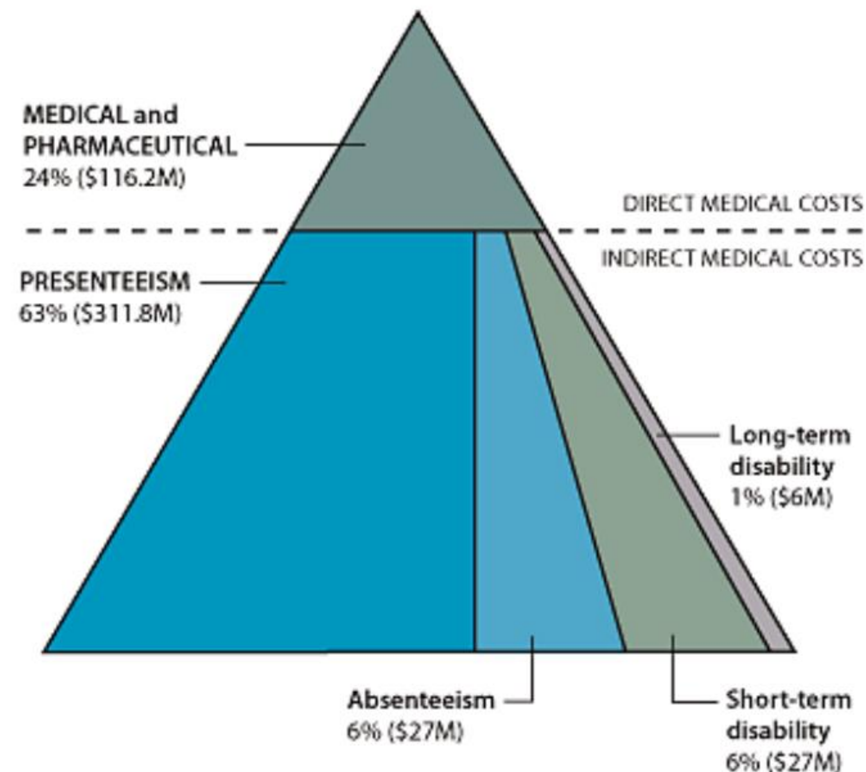
Table 1

Estimated excess direct medical care expenditures due to health inequalities, 2003–2006, constant 2008 dollars (billions)

	African Americans	Asians	Hispanics	Total
2003	35.2	3.6	17.6	56.3
2004	32.0	2.7	18.2	53.8
2005	32.8	2.9	22.4	58.2
2006	34.9	2.2	23.9	61.1
Total	135.9	11.4	82.0	229.4

Source: Based on calculations using the Medical Expenditure Panel Survey 2003–2006.
Note: All expenditures are standardized to 2008 dollars.

Health disparities also result in reduced worker productivity



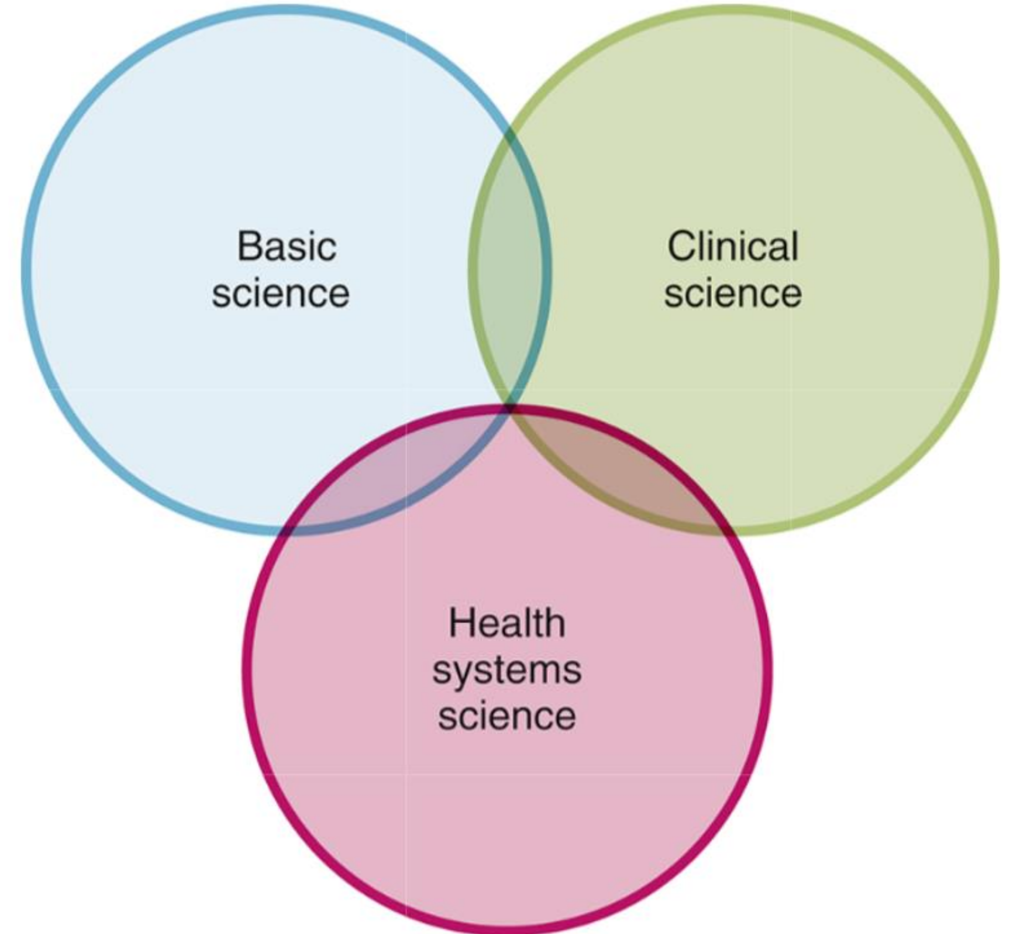
Hemp P. Presenteeism : At work—but out of it. Harvard Business Review. October 2004.

Health Systems Science

Third pillar of medical education

Health systems science

“the principles, methods, and practice of improving quality, outcomes, and costs of healthcare delivery for patients and populations within systems of medical care.”



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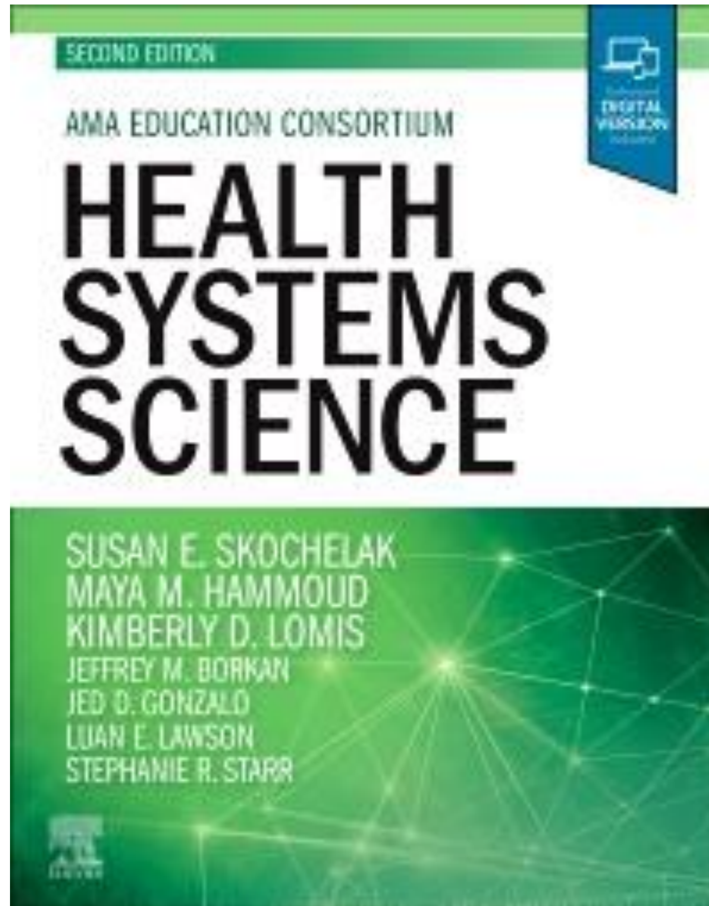
HSS Curricular Framework



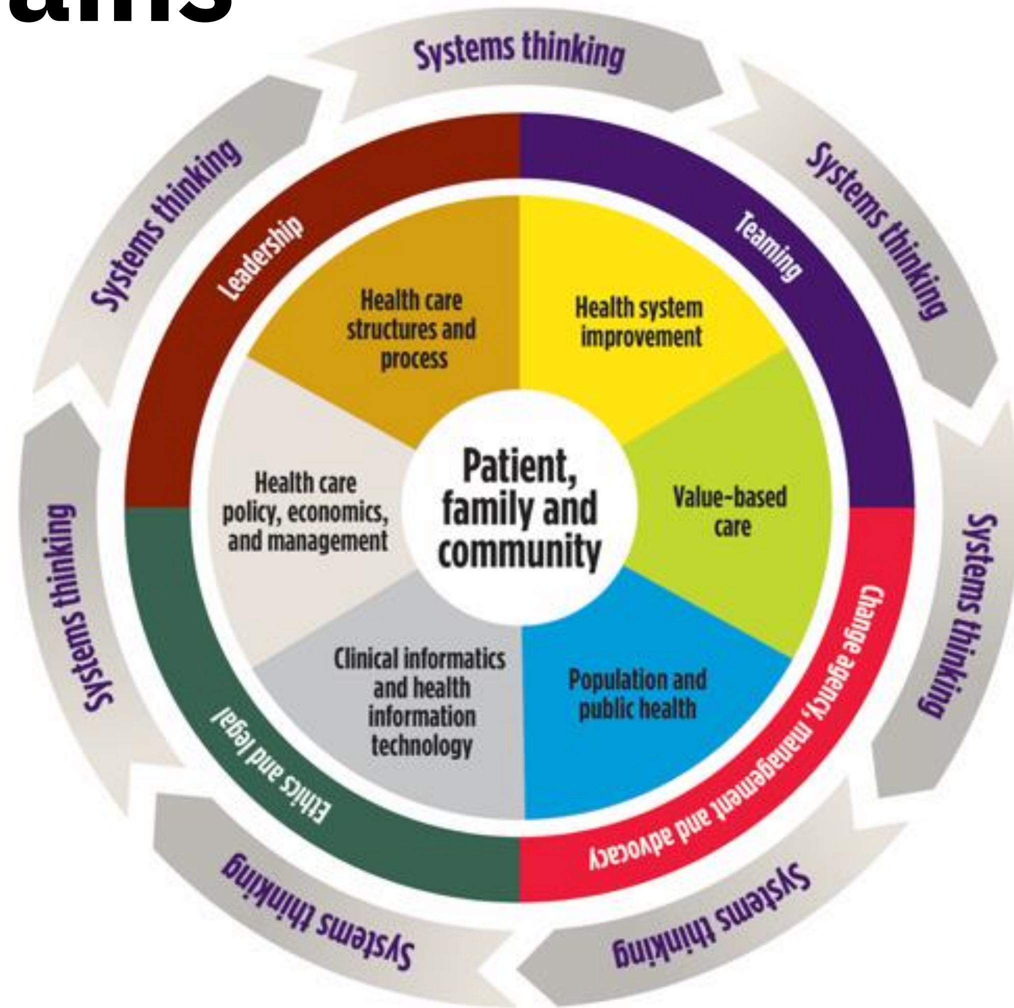
- Unifies several important domains into one framework
- Ensures that certain areas are not marginalized (HSS is not just QI)
- Establishes a foundation for comprehensive pedagogies
- Facilitates a shift towards a shared mental model and national standards
- Catalyzes the creation of systems citizens, a new professional identity

HSS Content Domains

Core functional domains

Foundational domains

Linking domains

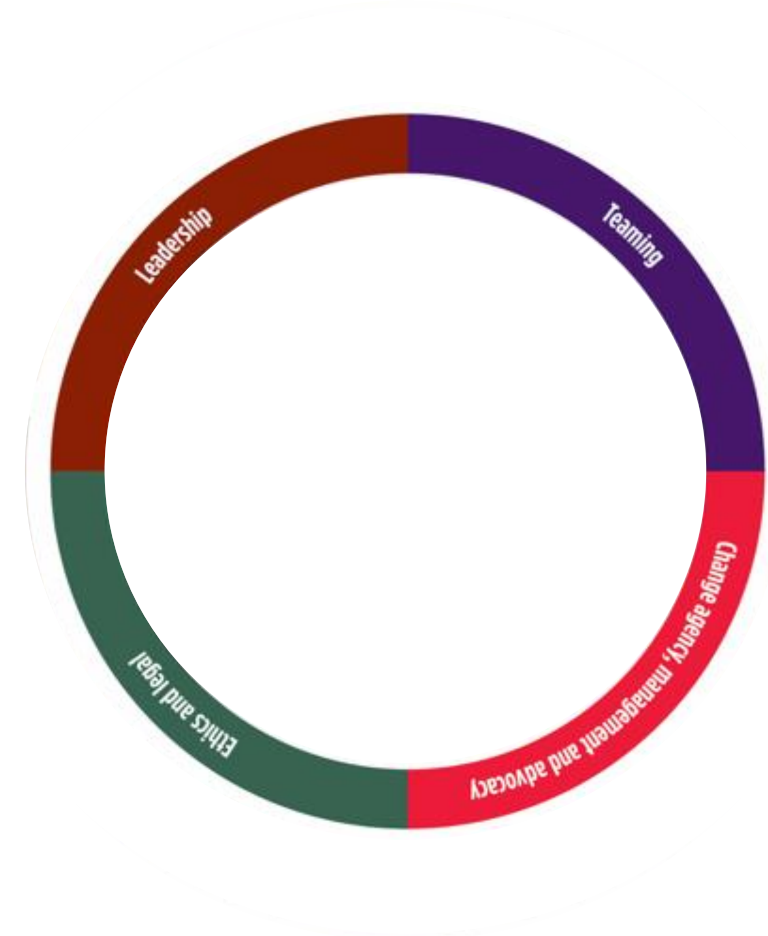


HSS Core Functional Domains

1. Patient, family, community
2. Health care structure and process
3. Health care policy and economics
4. Clinical informatics and health technology
5. Population, public and social determinants of health
6. Value in health care
7. Health system improvement

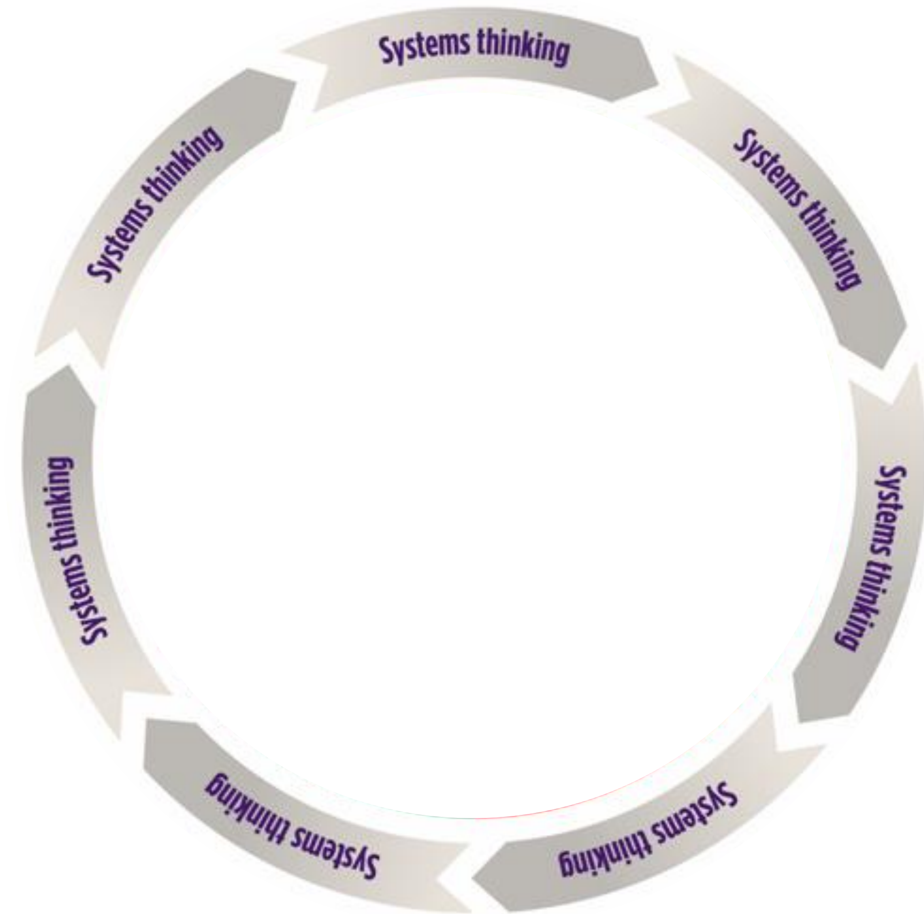
HSS Foundational Domains

1. Change agency, management and advocacy
2. Ethics and legal
3. Leadership
4. Teaming

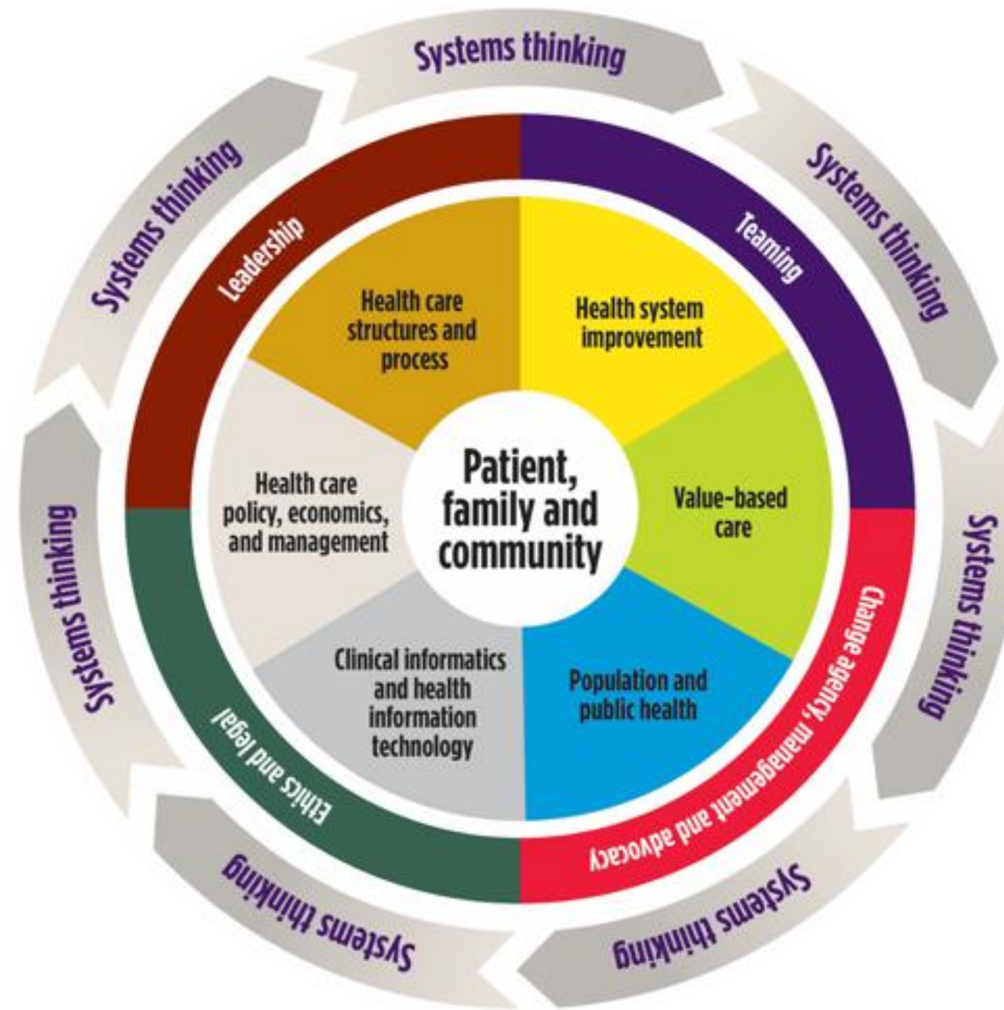


HSS Linking Domain

1. Systems thinking



Evolving to meet the societal needs...



Achieving health equity

Applying HSS knowledge, skills and behaviors

Key Steps to Advancing Health Equity

1

Identify important health disparities that are of concern to key stakeholders, especially those affected. Identify social inequities in access to the resources and opportunities needed to be healthier that are likely to contribute to the health disparities.

2

Change policies, laws, systems, environments and practices to eliminate inequities in the opportunities and resources needed to be as healthy as possible.

3

Evaluate and monitor efforts using short-term and long-term measures.

4

Reassess strategies to plan next steps.

The goal:
Equity in health and its determinants

Braveman P, Arkin E, Orleans T, Proctor D, and Plough A. What Is Health Equity? And What Difference Does a Definition Make? Princeton, NJ: Robert Wood Johnson Foundation, 2017.

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Robert Wood Johnson Foundation

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2

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UCSF
University of California San Francisco

Robert Wood Johnson Foundation

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3

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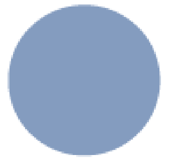
WHITE PAPER



Achieving Health Equity:

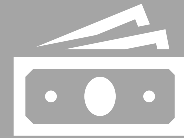
A Guide for Health Care Organizations

Framework for HCO to achieve health equity

1. Make health equity a strategic priority
2. Develop structure and processes to support health equity work
3. Deploy specific strategies to address the multiple determinants of health on which health care organization can have a direct impact
4. Decrease institutional racism within the organization
5. Develop partnerships with community organizations

1. Health equity as a strategic priority

Demonstrate leadership commitment to improving health equity at all levels of the organization



Secure sustainable funding through new payment models

2. Develop structure and processes to support health equity work

Establish a governance committee

Dedicate resources in budget to support equity work

3. Deploy specific strategies to address multiple determinants of health on which HCO can directly impact

- Health Care Services
- Socioeconomic status
- Physical Environment
- Healthy Behaviors

4. Decrease institutional racism within the organization

- Physical space
- Health insurance plans
- Reduce implicit bias

5. Develop partnerships with community organizations to work together on community issues related to improving health and health equity

Formal or informal partnerships with safety net providers or community-based organizations

Financial and in-kind contributions in multi-sectoral partnerships in community to improve health

AMA | STEPSforward

Racial and Health Equity: Concrete STEPS for Smaller Practices

Translate Your Commitment to Racial and Health Equity Into Action in Your Practice

DEVELOPED IN COLLABORATION WITH

Rishi Manchanda, MD, MPH
Founder and President, HealthBegins

Marie T. Brown, MD, MACP
Director of Practice Redesign, Professional Satisfaction, American Medical Association; Professor, Rush University

Five STEPS to Advancing Racial and Health Equity in Your Practice

1. Commit to do the work
2. Start shifting group norms by learning about what you do not know
3. Get a handle on your data
4. Develop a shared, clear, compelling vision and goals
5. Launch targeted improvement efforts

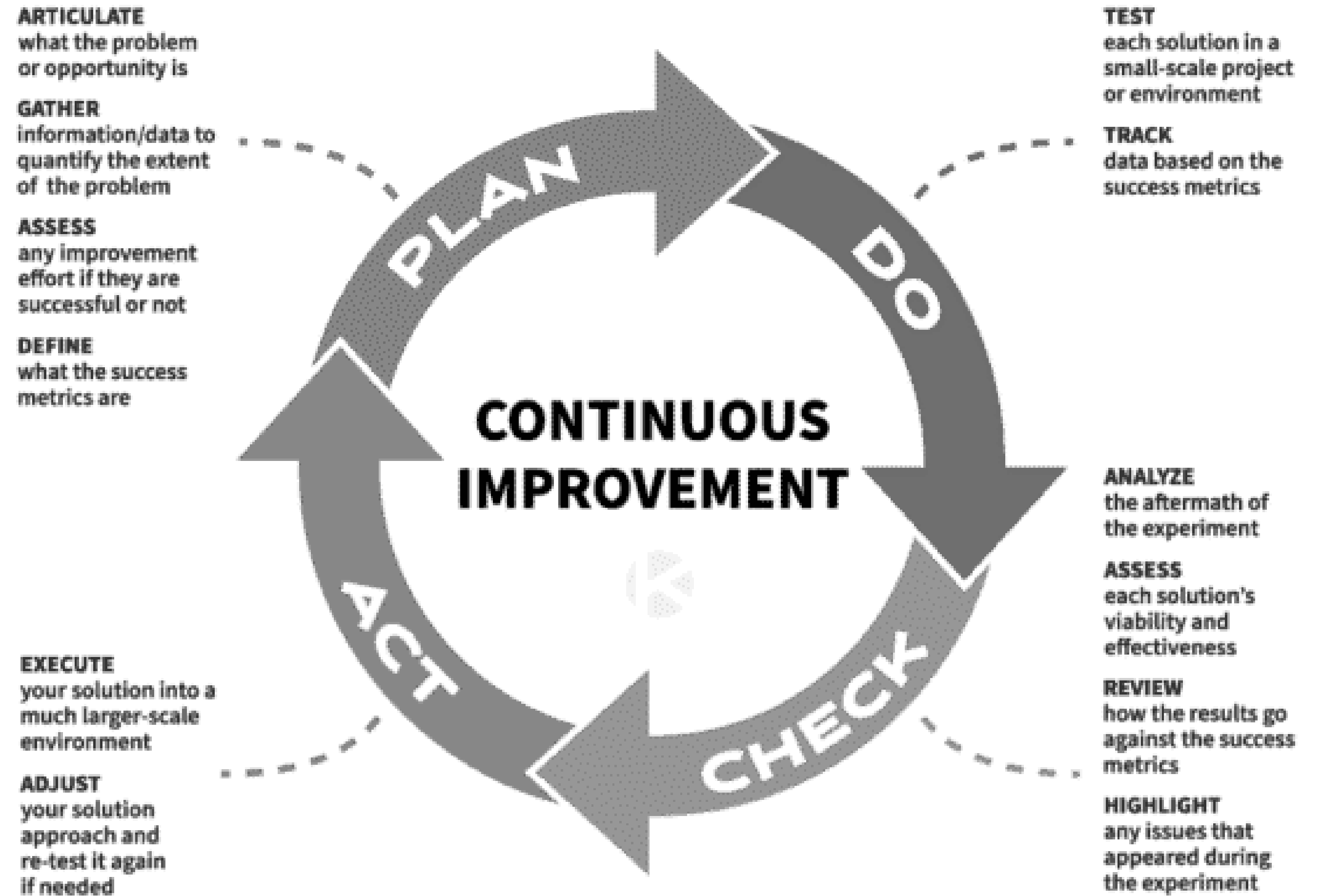
1. Commit to do the work

2. Start shifting group norms by learning about what you do not know

3. Get a handle on your data

4. Develop a shared, clear, compelling vision and goals

5. Launch targeted improvement efforts

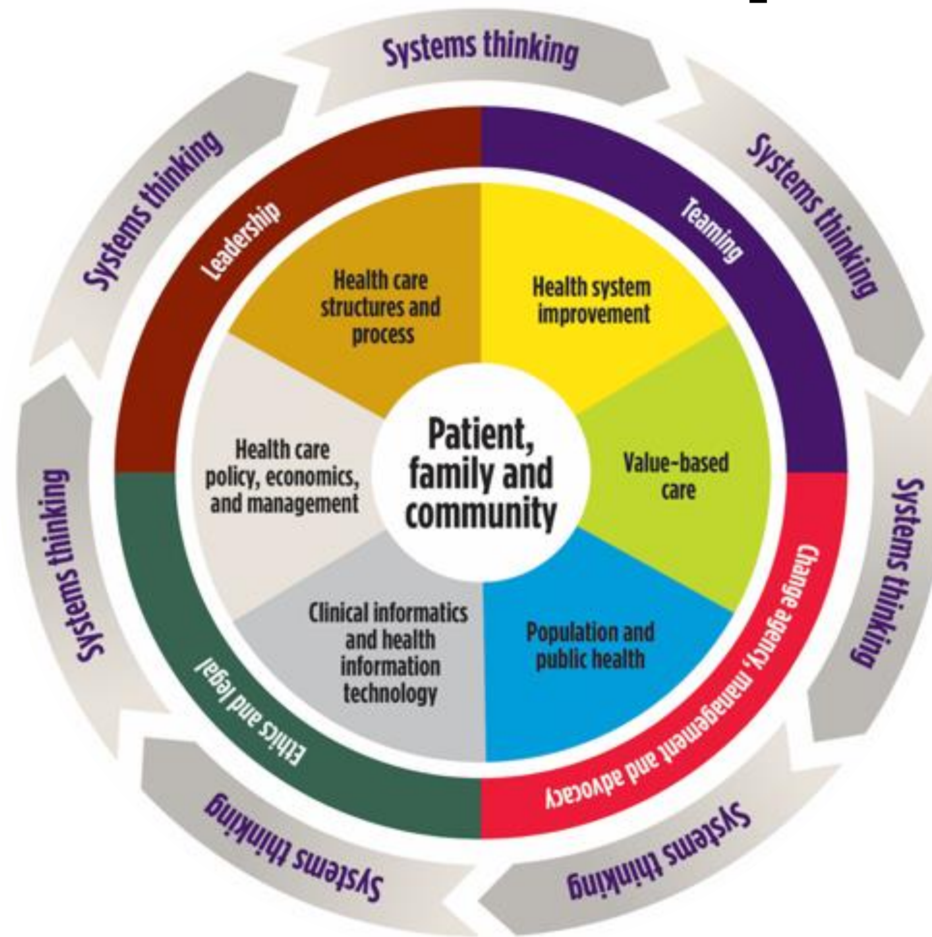


The PDCA Cycle: What is it and Why You Should Use it. Kanban Zone. Published April 14, 2021. Accessed on Nov 14, 2021.
https://kanbanzone.com/2021/what-is-pdca-cycle/

Summary of Frameworks to Achieve Equity

RWJF	IHI	AMA 5 STEPS
Identify important disparities	Establish equity as priority	Commit to do the work
Change policies, laws, systems, environments and practices	Structure and process to support the work	Shift group norms
Evaluate and monitor efforts in short/long-term	Target multiple determinants of health	Collect the data
Reassess and plan next steps	Decrease institutional racism	Develop vision/goals
	Develop community partnerships	Launch targeted QI efforts

HSS competencies are critical to each framework to achieve equity



SYSTEMS CITIZENSHIP:

THE LEADERSHIP MANDATE FOR THIS MILLENNIUM

by Peter Senge

"The GOOD physician treats the DISEASE; the GREAT physician treats the PATIENT who has the disease."

Sir William Osler

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