



American
Heart
Association.

**BP Control takes more than the right RX:
The Role of Social Factors on One's Health**

Target: BP Symposium

December 10, 2019

Eduardo Sanchez, MD, MPH, FAAFP

Chief Medical Officer for Prevention

Chief, Center for Health Metrics and Evaluation

American Heart Association

Mr. and Mrs. M



Mrs. CM - the Person/Patient

- Mrs. AJ - a 68 YO F with hypertension and high cholesterol.
- In for follow up (accompanied by her husband - also my patient).
- BP (High) - 164/108. Up from controlled at 125-129/82-88 in past visits.
- BMI (Overweight but no change) - 26.
- Blood glucose - normal
- Lipid panel - good control.
- Same blood pressure medicines for 3 years with excellent control until this visit.
- Mrs. AJ has never smoked and tries to eat healthy and be active.
- Not eating as healthy but still active.



American Heart Association

- Oldest and largest charitable health organization in the United States dedicated to fighting heart disease and stroke
- Founded in 1924 by six cardiologists
- 4,000 employees and more than 25 million volunteers and supporters in more than 156 local offices
- 2nd largest funder of research related to heart disease and stroke
- The nation's leader in CPR education training
- Developer and promulgator of science-based treatment guidelines for healthcare professionals to help them provide science-derived, evidence-based quality care to their patients.
- Provider of health education to help people understand the importance of healthy lifestyle choices.
- Known for its advocacy for changes to protect and improve the health of our communities.



Causes of Death: USA (2017)

Rank	Cause	Number	Percent
	Total –all causes	2,813,503	100%
1	Heart diseases	647,457	23%
2	Cancer	599,108	21.3%
3	Accidents	169,936	6%
4	Chronic Lower Respiratory Disease	160,201	5.7%
5	Stroke	146,383	5.2%
6	Alzheimer’s disease	121,404	4.3
7	Diabetes mellitus	83,564	3%
8	Influenza/pneumonia	55,672	2%
9	Kidney disease	50,633	1.8%
10	Suicide	47,173	1.7%

SOURCE: NCHS, National Vital Statistics System, Mortality.



American Heart Association 2020 Goal

20%²⁰²⁰

By 2020, improve the cardiovascular health of **all Americans** by 20% while reducing deaths from cardiovascular diseases & stroke by 20%.

Life's Simple 7



Smoking
Status



Physical
Activity



Healthy
Diet



Healthy
Weight



Blood
Glucose



Total
Cholesterol



Blood
Pressure

Ideal cardiovascular health

... the absence of clinically manifest cardiovascular disease together with the simultaneous presence of optimal levels of Life's Simple 7 metrics, including

- 1) not smoking and
- 2) having a healthy diet pattern,
- 3) recommended levels of physical activity,
- 4) normal body weight, and
- 5) normal levels of total cholesterol,
- 6) blood pressure, and
- 7) fasting blood glucose,

in the absence of drug treatment.

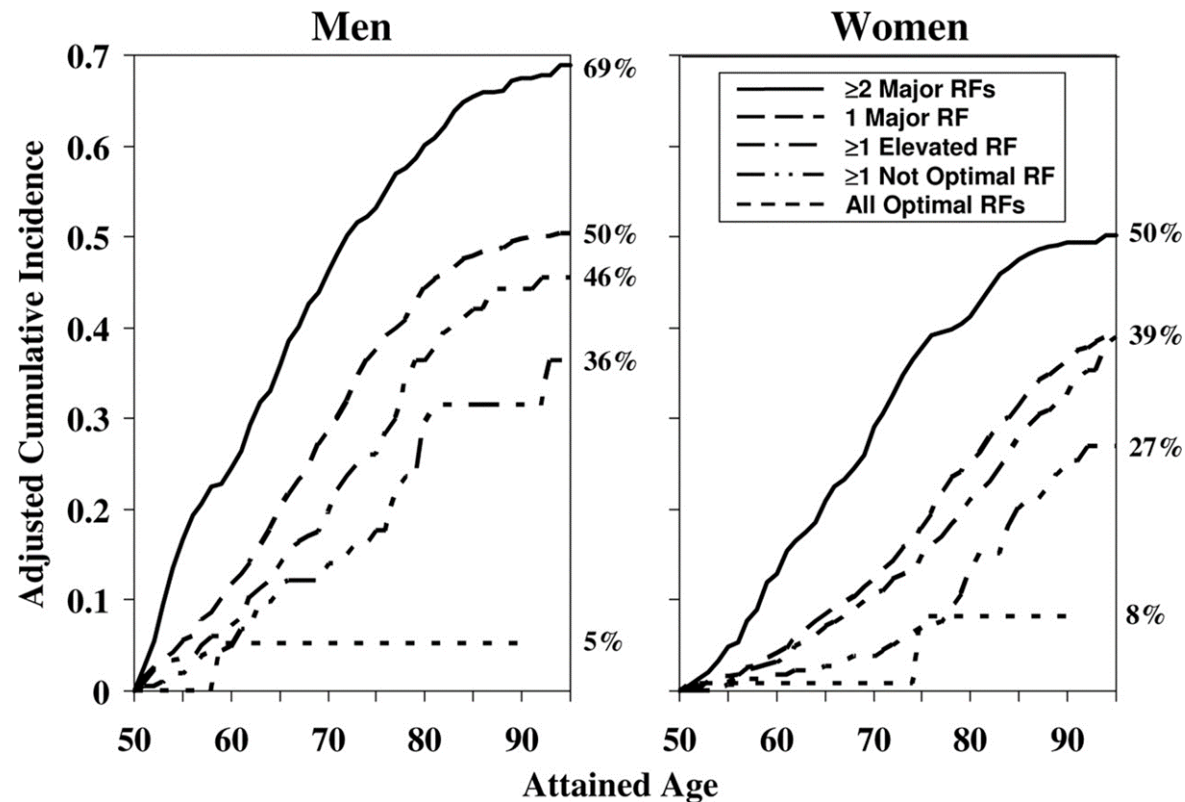
Top 11 Risk factors contributing to death and disability combined in the United States in 2017

1. High body mass index
2. Tobacco
3. Dietary risks
4. High fasting plasma glucose
- 5. High blood pressure**
6. Drug use
7. Alcohol use
8. High LDL cholesterol
9. Impaired Kidney Function
10. Occupational risks
11. Air pollution



Ideal heart health = long, healthy life

Men and women in ideal heart health at age 50 have significantly lower risk of developing heart diseases



Source: Lloyd-Jones et al. *Circulation* (2006)



A high LS7 score (≥ 5 ideal metrics) is associated with lower risk of:

- Heart disease and stroke (Lloyd-Jones et al, 2010, Ford et al., 2012)
- Diabetes (Joseph et al, 2016)
- Incident cancer (Rasmussen-Torvik et al, 2013)
- Depression (Kronish et al, 2012)
- Poor cognitive function (Samieri et al, 2018; Reis et al, 2013)
- Incident dementia (Samieri et al, 2018; Gottesman et al, 2017)

2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease

1. All adults should be assessed at every visit for tobacco use.
2. All adults should consume **a healthy diet which emphasizes the intake of vegetables, fruits, nuts, whole grains, lean protein, and fish and minimizes the intake of trans fats, processed meats, refined carbohydrates, and sugar-sweetened beverages.**
3. Adults should engage in at least 150 minutes per week of accumulated moderate intensity or 75 minutes per week of vigorous intensity physical activity.

2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease

4. For adults who have overweight or obesity, counseling and caloric restriction are recommended for achieving and maintaining weight loss
5. Nonpharmacological interventions are recommended for all adults with elevated blood pressure or hypertension. For those requiring pharmacologic therapy, the target blood pressure should generally be less than 130/80 mm Hg.
6. Statin therapy is first-line treatment for primary ASCVD prevention in:
 1. Patients with elevated LDL-C levels (≥ 190 mg/dl),
 2. Those with diabetes,
 3. Those at sufficient ASCVD risk following a clinician-patient risk discussion
7. For adults with type 2 diabetes mellitus, lifestyle changes such as improving dietary habits and achieving exercise recommendations are crucial. If medication is indicated, metformin is first-line therapy followed by consideration of an SGLT-2 inhibitor or a GLP-1 receptor agonist.

Majority of life years gained is from lower cardiac death rates

Table 2. Causes of Increases in Life Expectancy among Newborns, 1960–2000.*

Cause	Increase in Life Expectancy yr	Relative Contribution %
Reduction in rate of death from cardiovascular disease	4.88	70
Reduction in rate of death in infancy	1.35	19
Reduction in rate of death from external causes	0.36	5
Reduction in rate of death from pneumonia or influenza	0.28	4
Reduction in rate of death from cancer	0.19	3
Total	6.97	100

* The data do not sum to the total because of slight increases in the rates of death from other causes (not listed) and because of rounding.





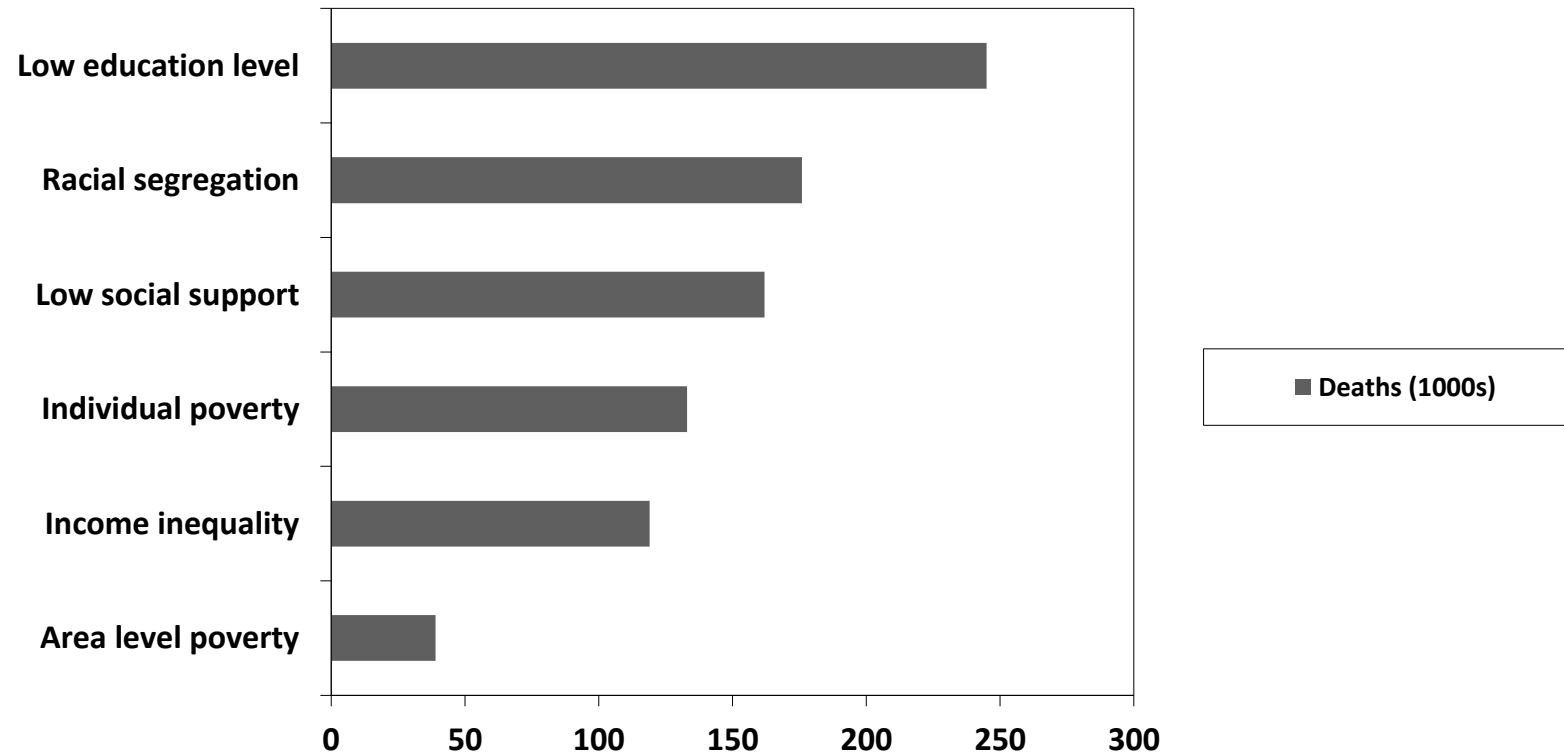
Simple does not mean easy

Mrs. CM (cont.): Social factors

- Her husband, Mr. EM, is a 69 YO M – also my patient.
- Mr. and Mrs. M are exclusively on Medicare – no supplemental insurance or part D participation.
- Their only source of income is social security – \$1100 per month.
- For the past six months they have been the de facto guardians for two grandchildren – 7 YO (boy) and 9 YO (girl).
 - One of the children’s parents is incarcerated.
 - The other is a drug user and has disappeared from the scene.
- Mr. EM had to get a root canal 6 weeks ago – cost \$1000.
- Mrs. and Mr. M have been taking their medications every other day and are using savings to buy school supplies and food for the children and pay for root canal.
- They have a car that is not working – needs new transmission.
- They live in 78702 in Austin, Texas.



Relationship Between Social Factors and Mortality (2000)



Education matters. More education = longer life !

Education level	LE Females	Years added*	LE Males	Years added*
< High school	75 years	-6	69 years	-7
High school graduate	81 years	Baseline - 0	76 years	Baseline - 0
Some college	83 years	+2	77 years	+1
College graduate	87 years	+6	82 years	+6
Graduate degree	87 years	+6	85 years	+9

US Life Expectancy (LE) at Age 25 by Educational Attainment, 2005

Rostran et al, Vital and Health Statistics Series 2, no. 151 (2010): 1-16.

* Years subtracted or added from LE as a high school grad as baseline.





SY2013-14 Adjusted Cohort Graduation Rates (by race/ethnicity)

Race/Ethnicity	Graduation rate (%)
American Indian/Alaska Native	70%
Black	73%
Hispanic	76%
White	87%
Asian	89%

U.S. Department of Education, Office of Elementary and Secondary Education, Consolidated State Performance Report, 2013-14..



Smoking Rates in US by Education Level (2016)

Education level	Rate
Graduate degree	4.5%
Undergraduate degree	7.7%
Associate's degree	16.8%
Some college	18.9%
High school diploma	19.7%
No high school diploma	24.1%
GED	40.6%



Smoking Rates in US by Race/Ethnicity (2016)

Race	Rate
NH American Indian/Alaska Natives	31.8%
NH mixed race	25.2%
NH Whites	16.6%
NH Blacks	16.5%
Hispanics	10.7%
NH Asians	9%





Smoking Rates in US by State, Poverty, and LGB Identification(2016)

	Rate
Lowest state rate – Utah	8.8%
Highest state rate – West Virginia	24.8%
Below poverty	25.3%
Above poverty	14.3%
Self-identified LGB adults	20.5%
Self-identified non-LGB adults	15.3%





Percent of Working Families Below 200% Poverty (by race/ethnicity)

Race/Ethnicity	Below 200% Poverty
American Indian/Alaska Native	48%
Black	49%
Hispanic	55%
White	23%
Asian	24%

The Working Poor Families Project Policy Brief. Winter 2014-2015.
www.workingpoorfamilies.org



Income, Blood Pressure Control, and Mortality

- In one study looking at data from ALLHAT (Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial),
- Despite standardized treatment protocols,
- Participants in the lowest income quintile were:
 1. Half as likely to achieve blood pressure control
 2. 25% higher all-cause mortality
 3. 25% higher heart failure hospitalizations/mortality
 4. And almost double the likelihood of end-stage renal disease.

Income, Zip Code, and Years of Life (2001- 2014)

- **Higher income = longer life –**
 - the **gap in life expectancy** between richest 1% and poorest 1% was **14.6 years** for men
 - the **gap in life expectancy** between richest 1% and poorest 1% was **10.1 years** for women
- **Life expectancy increased unequally between 2001 and 2014**
 - 2.34 years for men and 2.91 years for women among the richest 5%
 - 0.32 years for men and 0.004 years for women among the poorest 5%
- **Life expectancy for persons in the low-income quartile (25%) varied across local areas**
 - The longevity difference between highest to lowest longevity was 4.5 years
 - The change over time ranges from increases of more than 4 years to declines of more than 2 years

Income, Zip Code, and Years of Life (2001- 2014)

- The differences in life expectancy of those in the bottom 25% were positively correlated with exercise and negatively correlated with smoking and obesity
 - Not correlated with access to medical care, physical environment conditions (air pollution), or labor market conditions
 - Positively correlated with local area fraction of immigrants, fraction of college graduates, and government expenditures

Income and Place Matter

- A **10** percentile increase in parent income is associated with a **3.4** percentile increase in a child's income.
- Intergenerational mobility varies across areas within the U.S.
 - The probability that a child reaches the top quintile of the national income distribution starting from a family in the bottom quintile is 4.4% in Charlotte but 12.9% in San Jose.



Income and Place Matter

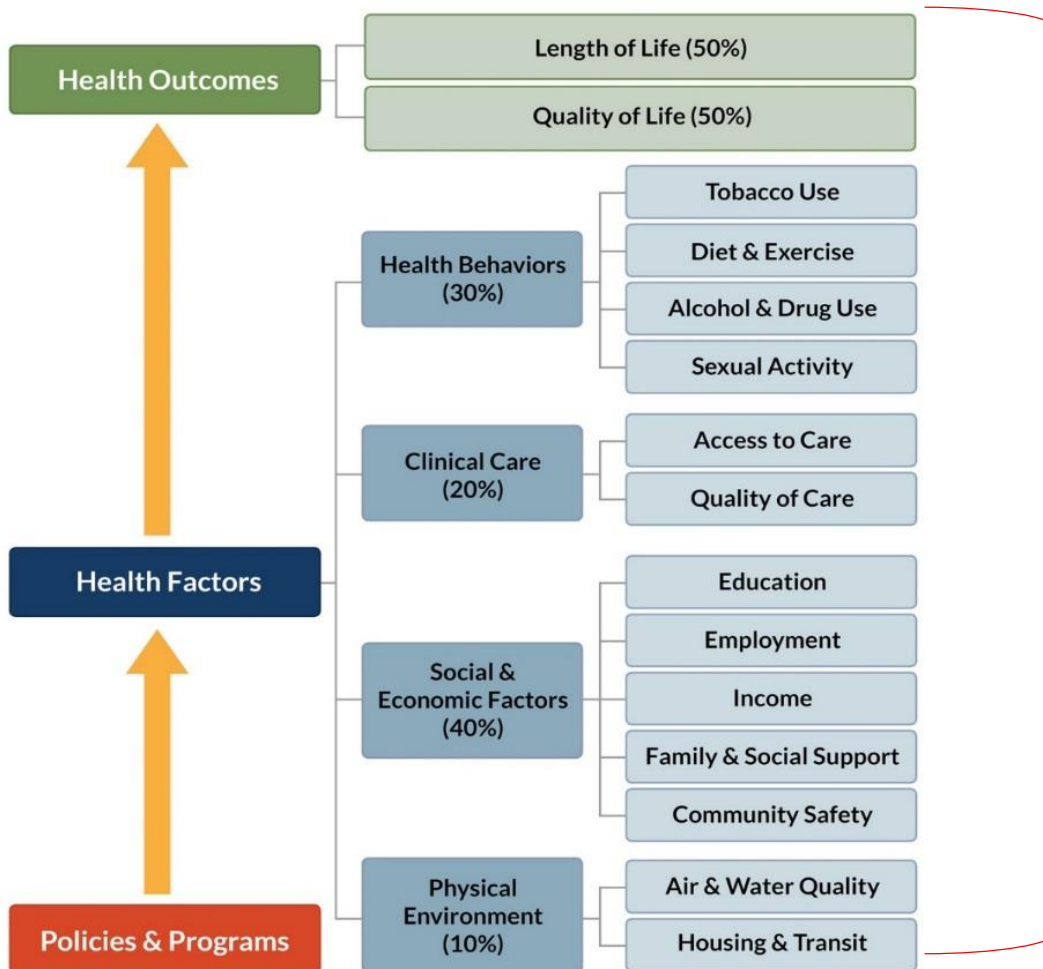
Factors correlated with upward mobility.

1. less residential segregation,
2. less income inequality,
3. better quality K-12 primary schools,
4. greater social capital (social networks and community involvement), and
5. greater family stability (fraction of two parent families).



What Affects Community Health?

County Health Rankings Model



The health of a community





The Health of Missouri

Measure	Value	Rank
Overall rank		38
High school graduation	89%	6
Obesity	32.5%	34
Smoking	20.8%	40
Air pollution		31
Children in poverty	18.6%	32
Public health funds	\$55	44
Uninsured	9%	33
Preventable hospitalizations		40
Primary care physicians		15
Cardiovascular deaths		40
Disparities in health		8

AmericasHealthRankings.org, Accessed 2019.



The Health of St. Louis

Measure	Value	Rank
Population	308,626	6,113,532
Percent below 18	19.4%	22.6%
Percent 65 and older	13%	16.5%
Percent non-Hispanic Black	46.1%	11.6%
Percent American Indian/Alaska Native	0.3%	0.6%
Percent Asian	3.4%	2.1%
Percent Native Hawaiian/Pacific Islander	0.1%	0.1%
Percent Hispanic	4%	4.2%
Percent non-Hispanic White	43.9%	79.5%
Percent limited English proficiency	2%	1%
Percent females	51.6%	50.9%
Percent rural	0.0%	29.6%



The Health of St. Louis

- Overall rank 112/115
- Length of life 112/115
- Quality of life 112/115
- Health behaviors 112/115
- Clinical care 38/115
- Social and economic factors 115/115
- Physical environment 105/115

And, so?



American
Heart
Association.



A new mission statement

AHA Mission

**To be a relentless force for a
world of longer, healthier lives**





The AHA's 2008 Statement of Principles for Healthcare Reform

6 PRINCIPLES

01 UNIVERSAL
HEALTHCARE
COVERAGE

04 ELIMINATION OF RACE,
GENDER AND GEOGRAPHIC
DISPARITIES

02 WITH PREVENTIVE
BENEFITS

05 ROBUST FUNDING of
BIOMEDICAL AND HEALTH
SERVICES RESEARCH

03 AFFORDABLE, HIGH QUALITY
MEDICAL CARE

06 A DIVERSE WORKFORCE

Circulation. 2008;118:2209-2218





Social Determinants of Risk and Outcomes for Cardiovascular Disease: A Statement From the American Heart Association -2015

- Social determinants of health
 - Socioeconomic position
 - Race, ethnicity
 - Social support
 - Culture and language
 - Access to care
 - Residential environment
- Future directions
 - Conduct studies that examine the interactions between social factors in relation to cardiovascular health
 - Incorporate nontraditional measures such as wealth/privilege and institutionalized racism





AHA Office of Health Equity

- Develop a roadmap to guide strategy and establish key performance indicators for health equity initiatives with an emphasis on monitoring and improvement
- Internal - Provide technical assistance and guidance across the organization, enabling business units to work with an equity first lens at the AHA national, Affiliate and community level.
- External –
 - Convene national and regional events that focus on health equity and the social determinants of health.
 - Create a clearinghouse of resources that can accelerate impact by other organizations, companies and individuals and support the AHA's Social Impact Fund.
 - Develop, cultivate and manage national strategic relationships with an emphasis on
 - rural health,
 - education,
 - affordable housing,
 - faith-based communities, and
 - poverty.

Science that includes SDOH: “Income Volatility” and Incident Cardiovascular Disease

Income volatility

- Defined as sudden and unpredictable change in income over time, usually consisting of declines in income
- Associated with an increased risk of cardiovascular disease and all-cause mortality - from CARDIA, a cohort study of young adults (18-32 years) followed for 30 years

Resolution - Mrs. M

Identified and addressed clinical and non-clinical issues – individually-directed

- Optimized generic drug prescriptions and enrolled Mr. and Mrs. M in patient assistance programs.
- Connected with rent assistance resources.
- Connected with food banks/food pantries.
- Referred to local charity dental care provider.
- Referred “family” for eligibility assessment for enrollment in SNAP
- Referred grandchildren for eligibility assessment for enrollment in Medicaid or CHIP
- Arranged to see children as new patients
- Connected with local transportation agency for senior/low-income discounts

Health Literacy

The Healthy People 2020 Social Determinants of Health topic area is organized into 5 place-based domains:

1. Economic Stability
2. Education
3. Health and Health Care
4. Neighborhood and Built Environment
5. Social and Community Context

Health Literacy is a key issue in the Health and Health Care domain and is defined by DHHS as “the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions.”

- Generally discussed in the context of medical care – “being able to read and comprehend essential health-related materials (e.g., prescription bottles, appointment slips, etc.)”
- Low overall literacy may impact health literacy; however, the relationship between them is complex. For example, an individual may have high overall literacy and still have low health literacy.
- A number of factors may influence an individual’s health literacy, including living in poverty, education, race/ethnicity, age, and disability.





Resources available today: The Accountable Health Communities (AHC) Health-Related Social Needs (HRSN) Screening Tool

Living Situation

1. What is your living situation today?
2. Do you have problems with any of the following? Pests, mold, lead paint, lack of heat, ...

Food

3. Within the past 12 months, you worried that your food would run out before you got money to buy more.
4. Within the past 12 months, the food you bought just didn't last and you didn't have money to get more.

Transportation

5. In the past 12 months, has lack of reliable transportation kept you from medical appointments, meetings, work or from getting things needed for daily living?

Utilities

6. In the past 12 months has the electric, gas, oil, or water company threatened to shut off services in your home?

Safety

- 7 -10. How often does anyone, including family and friends, physically hurt you, insult or talk down to you, threaten you with harm, scream or curse at you?





The Accountable Health Communities (AHC) Health-Related Social Needs (HRSN) Screening Tool

Supplemental Questions

Financial Strain

11. How hard is it for you to pay for the very basics like food, housing, medical care, and heating? Wou

Employment

12. Do you want help finding or keeping work or a job?

Family and Community Support

13. If for any reason you need help with day-to-day activities such as bathing, preparing meals, shopping, managing finances, etc., do you get the help you need?

14. How often do you feel lonely or isolated from those around you?



Person-centeredness (addressing individual social needs) is a must but not sufficient nor efficient.

“Meeting Individual Social Needs Falls Short Of Addressing Social Determinants Of Health, " Health Affairs Blog, January 16, 2019.DOI: 10.1377/hblog20190115.234942





Social Services Spending and Health Outcomes

States with a higher ratio of “social” to medical spending
(= social services spending + public health spending divided by Medicare spending + Medicaid spending)

Have Better outcomes in:

- Adult obesity
- Asthma
- Mentally unhealthy days
- Days with activity limitations
- Lung cancer mortality rates
- Acute myocardial infarction mortality rates
- Type 2 diabetes mortality rates



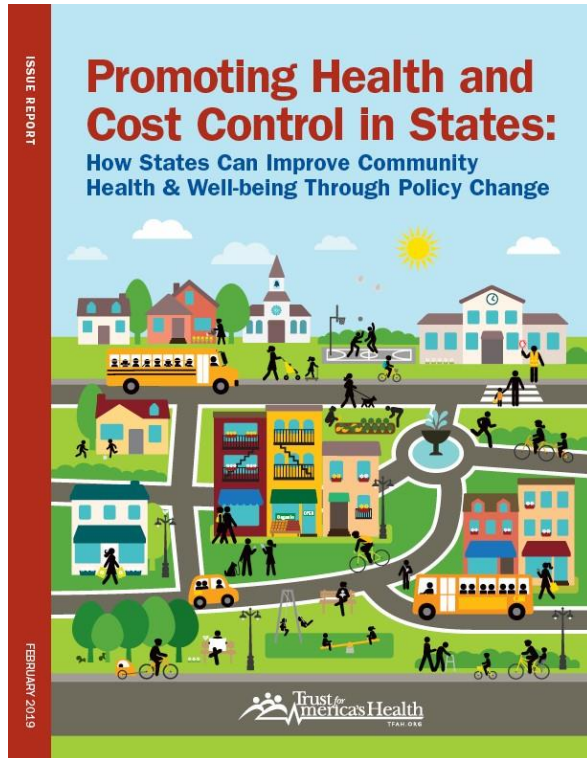


CPSTF Recommendations for Health Equity

Intervention	CPSTF determination
Center-Based Early Childhood Education	March 2015
School-Based Health Centers	March 2015
High School Completion Programs	December 2013
Full-Day Kindergarten Programs	December 2011
General, Reading, and Math-Focused Out-of-School-Time Academic Programs	December 2013
Tenant-Based Rental Assistance Programs	February 2001

Community Preventive Services Task Force; www.thecommunityguide.org

TFAH: Promoting Health & Cost Control in States Report: Goals & Related Policy Recommendations



Goal 1: Support the Connections Between Health & Learning

1. Universal Pre-Kindergarten
2. Enhancing School Nutrition Programs

Goal 2: Employ Harm-Reduction Strategies to Prevent Substance Misuse Deaths and Related Diseases

3. Syringe Access Programs

Goal 3: Promote Healthy Behavior

4. Smoke-Free Policies
5. Tobacco Pricing Strategies
6. Alcohol Pricing Strategies

Goal 4: Promote Active Living & Connectedness

7. Complete Streets

Goal 5: Ensure Safe, health, and Affordable Housing for All

7. Housing Rehabilitation Loan & Grant Programs
8. Rapid Re-Housing

Goal 6: Create Opportunities for Economic Well-Being

10. Earned Income Tax Credit
11. Paid Family Leave
12. Earned Sick Leave
13. Ban the Box (Fair Hiring Protections)

What's St. Louis to do (or advocate for)?

- Increase access to primary care - Patient-centered clinical services that assess and address social factors
- Expand Medicaid
- Focus on improved BP control - Target: BP
- Tobacco/nicotine control laws
- Adequately funded pre-K through 12th grade education
- Sugar sweetened beverage taxes ??
- Adequately fund social services - local, state, national
- Housing policies that improve affordability and build mixed income neighborhoods
- Increase access to healthy, affordable food
- Adequately fund transportation systems





Hans Rosling (1948-2017)

Celebrity statistician; Gapfinder co-developer

“I’m not an optimist.
I’m a very serious possibilist.”

