

Social Determinants of Health

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This is a compilation of the first seven cases published on JGIM Web in 2014-15

1. Dangers of loneliness – Case of the Elderly Hypertensive

A 71-year-old man presents to your clinic for a wellness visit. He is healthy except for knee osteoarthritis and hypertension for which he takes hydrochlorothiazide daily and acetaminophen as needed. His wife of 35 years passed away last year. They did not have children and he has few friends in town. Besides going shopping once a week, he does no other activities. He was a former truck driver, does not smoke, and drinks approximately 4 beers a week. He does not exercise. He has no history of depression and denies feeling sad or hopeless. His physical examination reveals a BP of 142/74, BMI 32.

Which of the following risk factors has been shown to be more strongly associated with mortality than hypertension?

- a) Physical inactivity
- b) Alcohol use
- c) Obesity
- d) **Social isolation**

What are possible interventions to help mitigate this risk factor?

Fast Fact: Social isolation, defined as disengagement from social ties, institutional connections, or community participation is a risk factor for poor health outcomes, including increased mortality. In a meta-analysis by Holt-Lunstad, stronger social relationships had a 50% increased likelihood of survival compared to lean body weight (22%), physical activity (21%) and controlled hypertension (13%). Prevalence of social isolation in community-dwelling older adults ranges from 10 to 43 %. Clinicians may consider encouraging participation in community, volunteer or religious organizations in socially isolated adults.

Reference

Pantell M, et al. [Social isolation: a predictor of mortality comparable to traditional clinical risk factors](#).

Am J Public Health 2013 Nov; 103(11):2056-62

Holt-Lunstad J, Smith TB, Layton JB. [Social relationships and mortality risk: a meta-analytic review](#). Plos

Med 2010; 7(7):e1000316

Seeman TE. [Social ties and health: the benefits of social integration](#). Ann Epidemiol. 1996; 6(5):442-451.

2. Socioeconomic status and coronary heart disease risk – The Case of the Impoverished Janitor

A 52-year-old man presents to a neighborhood health center for evaluation of intermittent chest pressure. His symptoms started 2 weeks ago, worsen with exertion, last 10-15 minutes and are associated with shortness of breath and diaphoresis. He has not seen a doctor in many years. He takes no medications, has smoked 1 pack per day for the last 35 years, and denies alcohol or drug use. He currently works as a janitor at a ballpark, and is usually unemployed for 4-5 months each year. He lives in a rented apartment in a run-down part of town. He was adopted and is uncertain of his family medical history. His physical examination reveals BP 160/96, P 74, BMI 39. Cardiopulmonary exam is normal. 1+ pedal edema is noted with good distal pulses. ECG shows normal sinus rhythm without ST-T change. You are concerned that his chest pain is angina and would like to refer him for further evaluation.

Which of the following risk factors for ischemic heart disease is not included in current risk calculators—Framingham or ASCVD pooled cohort?

- a. Age
- b. Lack of primary care
- c. Hypertension
- d. Smoking
- e. **Low socioeconomic status**
- f. Cholesterol levels

What mechanism or pathway could account for its role in cardiovascular diseases? Would this change your management, and how?

Fast fact: Low socioeconomic status, including living in low-income neighborhoods, is independently predictive of cardiovascular disease and all-cause mortality. For individuals from low socioeconomic backgrounds defined as <12 years of education or <\$12,000 annual income, Framingham scores underestimated CVD risk by 24%. The effects of SES on ASCVD risk calculated with the ACC/AHA Pooled Cohort Equations has not been established.

Reference

Diez Roux AV, et al. [Neighborhood of residence and incidence of coronary heart disease.](#) *NEJM* 2001; 345(2):99-106

Franks P, Tancredi DJ, Winters P, Fiscella K. [Including socioeconomic status in coronary heart disease risk estimation.](#) *Ann Fam Med.* 2010; 8(5):447–453

Singh, G.K. [Area deprivation and widening inequalities in U.S. mortality, 1969–1998.](#) *Am J Public Health.* 2003; 93: 1137–1143

3. Neighborhood environments and obesity – The Case of the Potential New Tenant

A 47-year-old man with obesity and type 2 diabetes presents to your clinic for a follow-up visit. His hemoglobin A1C's have ranged 8-9% while taking glipizide and metformin with good adherence. He has had several failed attempts at losing weight. He eats fast food several times a week and cites broken sidewalks as excuse for not walking. He also works long evening and night shifts as a security guard for an office building downtown. He and his wife are searching for a new apartment because of noisy neighbors. His physical examination reveals a BP 118/72, BMI 45. Your main concern is his elevated A1C and obesity. Though he agrees with your concern, he does not wish to begin insulin therapy.

You should spend this visit discussing:

- a) The importance of seeing a dietician
- b) Carb counting and exercise options
- c) The need to start insulin
- d) Access to healthy food sources, distance from fast food restaurants and proximity to recreational facilities when looking for his next apartment**

Fast fact: Greater availability of chain fast food restaurants may promote greater fast food consumption in low-income groups. Providing or increasing awareness of the availability of parks, playgrounds, or open space may decrease the odds of obesity, especially in ethnically diverse neighborhoods. Access to recreational or playground facilities and more walkable neighborhoods lead to increased physical activity, decreased sedentary behavior, or lower BMI. Proximity to supermarkets might not influence diet quality or promote more fruit and vegetable intake.

Reference

Boone-Heinonen J, Gordon-Larsen P, Kiefe CI, Shikany JM, et al. [Fast food restaurants and food stores: longitudinal associations with diet in young to middle-aged adults: the CARDIA study](#). Arch Intern Med 2011; 171(13): 1162-70.

Sullivan SM, Brashear MM, Broyles ST, Rung AL. [Neighborhood environments and obesity among Afro-Caribbean, African American, and non-Hispanic white adults in the United States: results from the National Survey of American Life](#). Prev Med 2014; 61:1-5

4. *Commuting time as risk factor- The Case of the Diabetic Commuter*

A 38-year-old woman who works as an office manager for a company in an urban center, presents for routine follow up of fibromyalgia, migraine headache and diabetes. She has made several attempts to lose weight but found it difficult to exercise due to limited time in her day for health-related activities. Two years ago, she moved to the suburbs and currently commutes 70 minutes to work each way. On physical examination, her BP is 150/94 and her BMI is 38. You observe normal sensation on foot exam. Labs include: A1C 9.4, creatinine 1.1, and no albuminuria. She has repeatedly deferred eye exam, pap smear and specialist referral due to difficulty in taking time off from her work schedule. She is currently on metformin 1000 mg bid. You plan to add lisinopril and refer her to the diabetes educator to discuss insulin therapy and lifestyle modification.

What other recommendation could play a significant role in her health outcomes?

- a) Refer her to an ophthalmologist close to work and schedule a pap smear at her next visit
- b) Refer her to a health coach for behavioral counseling
- c) Advise her on strategies to minimize her daily commuting time and its impacts**
- d) Refer her to a multidisciplinary fibromyalgia program to address her pain

Fast Fact: A number of studies have documented the association between increased commuting time (by both public transportation and private car, especially greater than 60 min daily) and less time spent on health-related activities such as exercise and food preparation, as well as worse health outcomes, including higher cardiovascular mortality. Men who reported >10 hours per week riding in a car had 82% greater risk of dying from cardiovascular disease than those who reported <4 hours per week.

Reference:

Christian TJ. [Trade-offs between commuting time and health-related activities](#). J Urban Health 2012; 89(5):746-57

Hansson E, Mattisson K, Bjork J, Per-Olof O, Jakobsson K. [Relationship between commuting and health outcomes in a cross-sectional population survey in southern Sweden](#). BMC Public Health 2011; 11:834

Warren TY, Barry V, Hooker SP, Sui X, Church, TS, Blair SN. [Sedentary behaviors increase risk of cardiovascular disease mortality in men](#). Medicine and Science and Sports and Exercise 2010; 42(5): 879-885

Hoehner CM, Barlow CE, Allen P, Schootman M. [Commuting distance, cardiorespiratory fitness, and metabolic risk](#). Am J Prev Med 2012; 42(6): 571-578

5. *Health benefits of weatherization – The Case of Winter Doldrums*

A 45-year-old man with previously well-controlled type 2 diabetes mellitus and hypertension is evaluated for recent elevation in blood sugars. Over the past 6 months, his hemoglobin A1C has increased and you also note several elevated blood pressure recordings in his daily log. He readily admits that his medication adherence has worsened, and he has been more reliant on fast food. He attributes these changes to recent financial strain and an inability to afford his monthly medications and fresh food. He has less income from landscaping work in the winter months, and his utility bills have dramatically increased, largely due to costs of heating his poorly insulated home. On physical examination, his blood pressure is 149/92mmHg and his BMI is 27. His A1C is 8.2%.

In addition to ensuring that he is prescribed generic medications that are available on the local pharmacy's \$4 prescription list, which of the following options might help your patient improve medication adherence and access to healthier food?

- a) Refer him to a dietician and/or diabetes educator
- b) Refer him to the food bank and department of public welfare to apply for cash assistance and/or Medicaid
- c) Referral to a weatherization assistance program to reduce energy bills thereby freeing up money for food and prescriptions**
- d) Verify that his blood pressure cuff is calibrated correctly
- e) Motivational interviewing to improve his medication and diet adherence.

Fast fact: Weatherization assistance programs include a wide variety of measures to improve energy efficiency and reduce utility costs, including window replacement, heating and cooling system inspection and repair, and repair or replacement of low efficiency electrical appliances. Weatherization and energy efficient programs could provide health benefits for low-income families who suffer disproportionately from house fire, injuries and asthma. Patients may also be referred to a Low-Income Home Energy Assistance Program to help with utility costs during the winter months.

Reference

Where to apply for weatherization assistance. U.S. Office of Energy & Renewable Energy. Available at:

<http://energy.gov/eere/wipo/where-apply-weatherization-assistance>

Low-Income Home Energy Assistance Program (LIHEAP). U.S. Office of Energy & Renewable Energy.

Available at: <http://www.acf.hhs.gov/programs/ocs/liheap-state-and-territory-contact-listing>

Salls AM, et al. [Rapid health assessment impact: weatherization plus health in Connecticut](#). 2013

6. *Work and disability- The Not So Disabled Machinist*

A 45-year-old former machinist at a pipe manufacturing company, currently receiving Social Security Disability Insurance (SSDI) income, presents to your clinic. He fractured his right shoulder 3 years ago after a fall at work, and has been receiving chronic opioid therapy because of daily shoulder and back pain. He was evaluated by orthopedic surgery and had physical therapy with little improvement. He feels depressed due to financial insecurity and inability to work. He is able to earn extra income doing minor maintenance work for a friend who owns an apartment building. He expresses interest in part-time work but fears losing his benefits. He previously tried citalopram and fluoxetine without improvement in his mood, pain, or energy level, and does not want to try another medication. He denies feeling hopeless or suicidal but does endorse insomnia.

The best next step to help him with depression and financial distress is:

- a) Refer him to self-help or support groups
- b) Refer him to the local Social Security office to inquire about trial work without losing disability benefits**
- c) Refer him to a comprehensive pain management program
- d) Suggest a trial of quetiapine for both depression and insomnia

Fast fact: Social Security rules make it possible for people with disabilities receiving Social Security or Supplemental Security Income (SSI) to work for a limited period of time and still receive monthly payments and Medicare or Medicaid benefits as long as their disability persists. The trial work period allows a Social Security recipient to test his/her ability to work for at least 9 months. In 2014, recipients may still retain benefits under an extended period of eligibility if earnings are under \$1,070 per month. Vocational rehabilitation has the potential to enhance the number of injured workers returning to the labor market, prevent illness, and increase well-being. There is currently no high-level evidence to support or refute the efficacy of such interventions in improving return-to-work outcomes.

Reference

[Social security administration website on work incentives](#)

Hou WH, Chi CC, Lo HL, Kuo KN, Chuang HY. [Vocational rehabilitation for enhancing return-to-work in workers with traumatic upper limb injuries](#). Cochrane Database Syst Rev 2013; 10

7. Tobacco-free workplace- The Case of the Reluctant Smoker

A 52-year-old man with diabetes, hypertension, hyperlipidemia, and COPD presents to your clinic for a routine visit. He takes 6 medications in addition to 2 inhalers. He lives with his wife who is disabled from a motor vehicle accident, and they have 2 children in high school. He has smoked 1 pack per day for the past 25 years, but does not drink alcohol. He is working for a small manufacturing company for almost 20 years, but with the weak economy, he constantly fears losing his job. His diabetes and hypertension are well-controlled. Your major concern for this visit is his continued tobacco use. Repeated efforts to quit smoking by using nicotine gum, patches, and bupropion have not been successful. He says, "all the guys at work smoke and it's hard to be the only guy not doing it."

Which factor listed below would most likely increase his ability to stop smoking?

- a) Educational materials on how to quit smoking
- b) Acupuncture and hypnosis therapy
- c) Long-term use of nicotine replacement therapy
- d) A smoke-free work place**

Which action plan would increase his chance of smoking cessation while taking into account his clearly identified workplace obstacles to doing so?

Fast Fact: Smoke-free worksite policies, such as company property smoking bans and coverage of smoking cessation referrals and resources, help employees reduce or discontinue their use of tobacco. Implementing smoke-free workplace policies was estimated to be more cost-effective than nicotine replacement therapy. Employers may see benefits in improved workplace productivity and decreases in absenteeism. Some states and municipalities have adopted 100% smoke-free laws in non-hospitality workplaces, restaurants, and bars.

Reference

Glasgow RE, Cummings KM, Hyland A. [Relationship of worksite smoking policy changes in employee tobacco use](#): Findings from COMMIT. *Tobacco Control* 1997; 6(Suppl 2):S44–S48

Osinubi OYO, Sinha S, Rovner E, Perez-Lugo M, Jain NJ, Demissie K, Goldman M. [Efficacy of tobacco dependence treatment in the context of a "smoke-free grounds" worksite policy](#): A case study. *American Journal of Industrial Medicine* 2004; 46:180–187

Halpern MT, Shikhar R, Rentz AM, Khan ZM. [Impact of smoking status on workplace absenteeism and productivity](#). *Tob Control*. 2001; 10(3):233–238

Ong MK, Stanton GA. [Free nicotine replacement programs vs implementing smoke-free workplaces: a cost-effectiveness comparison](#). *Am J Public Health* 2005; 95(6): 969-975