Prevention in All Policies:

Alcohol, Addiction, & Fiscal Sustainability in NYS

August, 2016

Council on Addictions
OF NEW YORK STATE

The Council on Addiction of New York State (CANYS) is an organization of prevention, education, intervention and treatment agencies throughout New York State working to effectively address problems related to alcohol, tobacco, drug use and gambling problems in our local communities as well as regionally and statewide.

For more information, please visit www.canys.net

The CANYS Board of Directors:

Executive Summary

A series of interlocking realities point to the necessity of embracing a prevention-focused philosophy in New York State:

1. Poor health, high health care costs, and related lost productivity in New York State (and the rest of the US) are largely driven by **unhealthy behaviors** - including tobacco use, poor diet, lack of exercise, and alcohol and other drug use. These problems are, therefore, largely *preventable*.

    - The majority of deaths and health care costs in the US are attributable to chronic diseases. The "Big Four" risk factors for these diseases are tobacco use, excessive alcohol consumption, poor diet, and sedentary lifestyle.

    - Alcohol use is the biggest underlying risk factor for death, disease, and disability for young adults aged 15-49 in the U.S. It is also a major driver of expensive-to-treat health conditions and modes of health care utilization.

    - Overdose deaths by opioid analgesics and heroin have increased dramatically in NYS since 2009. Illicit drug use is the second biggest underlying risk factor for death, disease, and disability for U.S. young adults aged 15-49.

2. While the expansion and improvement of medical care and treatment are valuable, only advances in **prevention** can deliver health and cost outcomes that can establish a truly sustainable health care system and maximum population health.

    - Unhealthy behaviors are not simply "bad choices," but are driven by environments and community conditions. This calls for policies and programs which transform these environments, allowing healthy choices to be the default.

    - Preventing these problems before they occur is more effective, efficient, and humane than intervening in a clinical setting.

    - Evidence-based prevention policies and programs can address the wide range of population health risk factors which drive many of NYS' most tragic and expensive health and social problems.

3. Since population health is a foundational value, a **Health in All Policies** approach to shape all New York State policies - including economic development policies – is needed to maximize the health, well-being, and prosperity of all New Yorkers.

   - Economic development policies should not work at cross-purposes with public health.
   - Prevention in NYS should be fully funded, with at least 10% of all state expenditures on the education, health, protection, and welfare of children allocated to effective universal, selective, and indicated interventions (policies and programs) for preventing alcohol and other drug problems as well as other unhealthy behaviors.
   - NYS needs cross-cutting prevention Communities of Practice to maximize health behavior change across all domains.
   - A Health in All Policies (HiAP) approach in NYS would best be served by the formation of an independent Health in All Policies Review Board which conducts Health Impact Reviews.

Public Health *is* Fiscal Health

Benjamin Disraeli famously stated, "The health of the people is really the foundation upon which all their happiness and all their powers as a state depend."[1] While governments by necessity have to find balance among many competing values, population health is a core condition of a functioning, robust democracy.

Sadly, the United States spends far more per citizen for health care than other industrialized democracies, yet achieves among the worse health outcomes.[2] Advocates across the political spectrum - despite fundamental differences regarding methods - agree that health care costs must be better controlled to ensure sustainable U.S. fiscal health. At the national level, health spending growth continues to outpace growth of the U.S. economy, with 17.5% of U.S. GDP devoted to health spending.[3]

In NYS, growth in Medicaid spending has slowed due to comprehensive reform efforts.[4] Yet it is still a disproportionately expensive element of the budget– with costs amounting to $55.3 billion for 2013-14, with the State paying $18.0 billion (or 32.5 percent) and New York City and county governments paying $8.8 billion (or 15.9 percent). In 2015, the county share of Medicaid consumed about 47 percent of all county property taxes levied statewide (outside of New York City).[5]

Clearly, much more work needs to be done in order to adequately contain health care costs in NYS, and this will require our leaders to look beyond structural health care reforms and case management strategies to embrace cross-cutting population health improvement.

And it must be cross-cutting to be effective. Two of the three aims of the Triple Aim of health care reform[6] – improving the individual experience of care and reducing the per capita costs of care – fall largely within the domain of traditional health care systems. But the third aim – improved population health – requires a broader, integrated effort among government agencies, health care and public health practitioners, and other stakeholders.[7] As the originators of the Triple Aim concept explain:

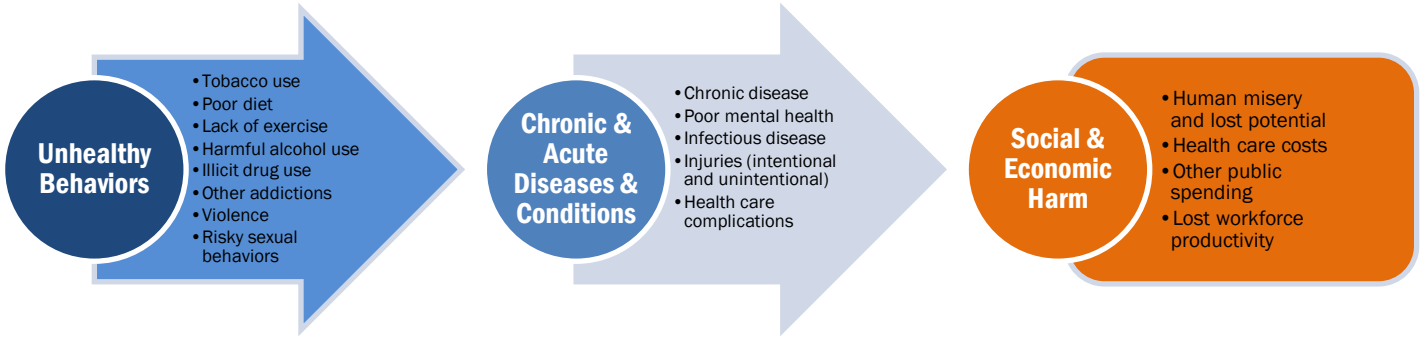
> Famously, the "actual" causes of mortality in the United States lie in behavior that the individual health care system addresses unreliably or not at all, such as smoking, violence, physical inactivity, poor nutrition, and unsafe choices.[8]

McClellan and Rivlin elaborate further:

> Non-medical factors, such as genetics, diet, exercise, substance abuse, pollution, are far more important determinants of health than health care and thus, preventing or delaying disease can potentially contribute far more to population wellness than curing or managing disease after it occurs. This suggests that successful efforts to mitigate environmental hazards and **induce healthy behaviors** may have more potential than health care reform to improve population health and affect the health care cost trends resulting from changes in population health over time.[9]

Prevention is the science and practice of designing and implementing evidence-based policies and programs in order to induce healthy behaviors. More than ever, this work is urgently needed in NYS.

This report explains why.



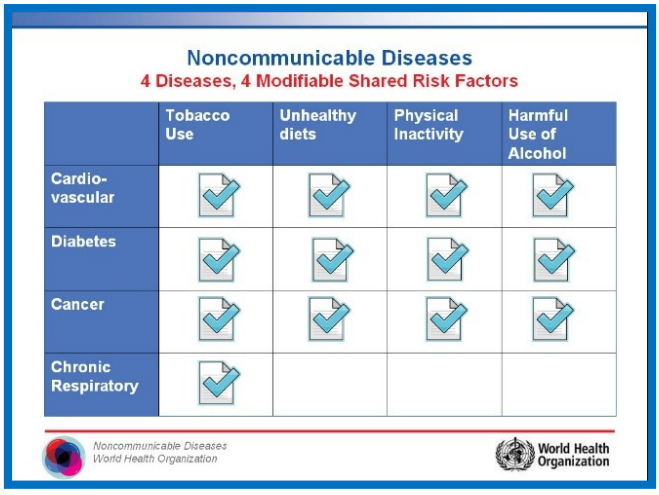
The Challenge of Unhealthy Behaviors

The infectious disease epidemics that devastated previous generations of Americans – cholera,[10] Spanish influenza,[11] typhoid,[12] and poliomyelitis[13] – are no longer the greatest threat to our health. While outbreaks of novel infectious disease rightfully cause great concern - and have the potential to cause enormous harm - the public health burden presented by all microbial agents combined (viral, bacterial, and amoebic) actually account for fewer deaths than either tobacco, poor diet/sedentary lifestyle, or alcohol consumption as individual underlying risk factors.[14]

Indeed, the problems most plaguing the American health care system today are conditions stemming from unhealthy behaviors, and the environments which foster those behaviors. New York State's health and health care problem is essentially a health behavior problem.

Chronic Diseases & The Big Four

The New York State Department of Health (DOH) reports that chronic diseases (including cancer, heart disease, stroke, diabetes, and chronic respiratory disease) are responsible for about sixty percent of all deaths and seventy-five percent of all health care costs in NYS.[15] Indeed, some studies have reported that up to 83% of Medicaid costs are attributable to chronic conditions.[16] Additionally, the World Health Organization has reported that chronic diseases (also, known as noncommunicable diseases, or NCDs) are largely driven by what have been termed "The Big Four" behavioral risk factors: tobacco use, unhealthy diet, physical inactivity, and harmful alcohol consumption.[17]



Moreover, these conditions often disproportionately impact underserved communities. For examples, Spees and colleagues - in their study of the utilization of emergency department services of low income adults - report that "sixty-eight percent of all-cause mortality in low SES conditions can be attributed to high-risk health behaviors (smoking, drinking alcohol, and physical inactivity)"[18]

In fact, *only eight percent* of Americans can be said to be maintaining consistently healthy behaviors among all of the "Big Four" risk domains[19] (see illustration, below). While there have been some notable successes (e.g., adult smoking rates)[20] – these risk behaviors continue to erode American health. Consider:

- More than half of all calories consumed in the U.S. come from "ultra-processed" foods.[21] The added sugars from these foods contribute to excess obesity, type 2 diabetes, dyslipidaemia, hypertension and coronary heart disease.[22]
- Rates of physical activity among U.S. adults have not improved (or worsened slightly, depending on the measure) in the last few years.[23]
- Progress in reducing alcohol-impaired driving fatalities in the United States has stagnated in recent years, with little progress since the late 1990s.[24]

Many of the health care costs in NYS are associated with these behaviors:

- NYS spends an estimated $11.8 billion each year on obesity-related medical expenditures – the second highest among all states.[25]
- Diabetes costs New York about $12 billion a year in direct medical costs and lost productivity for all payers, including Medicaid.[26]
- Excessive alcohol consumption cost NYS over $16.3 billion in 2010, including about $6.9 billion costs to government.[27]

Only 8% of Americans meet all five of these criteria

No use of tobacco products

Limit alcohol consumption to 2 or fewer drinks per day

Maintain body weight within 5 lbs. of ideal

Eat a healthy diet with 5 fruits/vegetables most days

Exercise 30 mins. or more most days of the week

Data source: Academy of Lifestyle Medicine

The Other Chronic Disease

Global leaders in public health have urged that mental illness be treated as a chronic disease,[28] rather than as a siloed, stigmatized problem. Major depression, for example, enacts an enormous toll of morbidity and is the single greatest source of disability in NYC.[29] As with other chronic diseases, mental health problems are inextricably linked to our most problematic unhealthy behaviors:

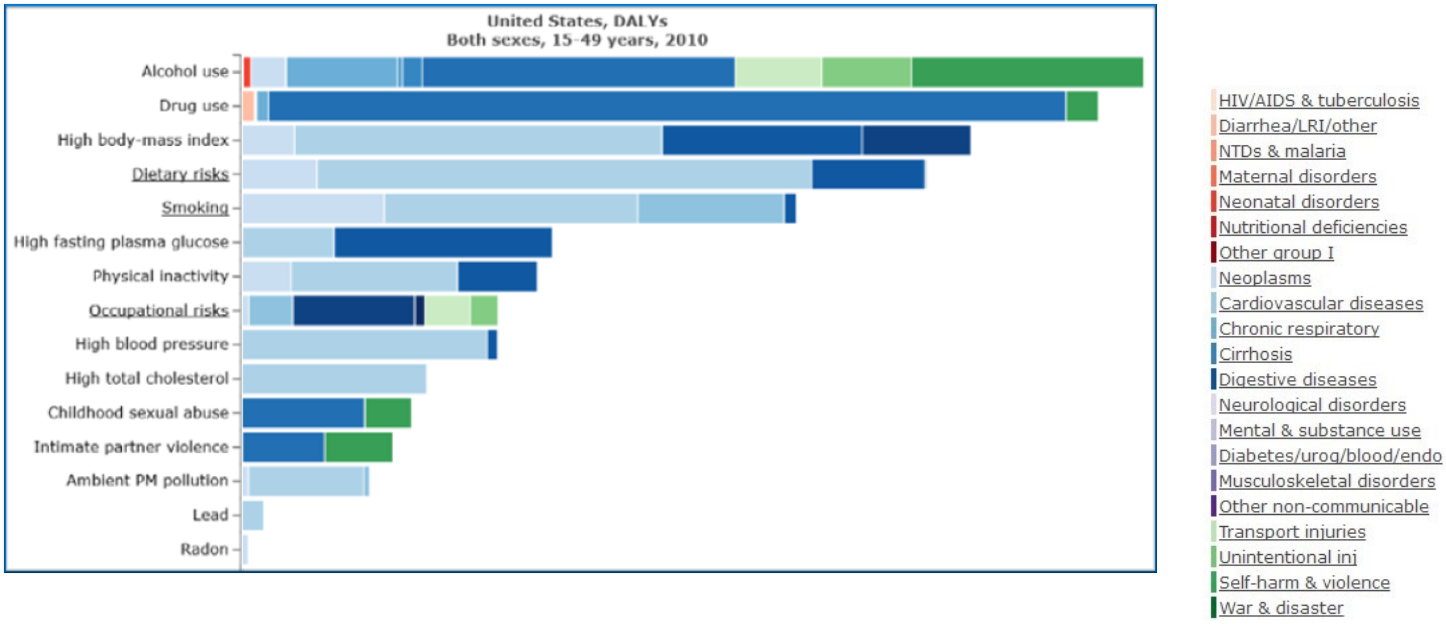
- Alcohol use is a causal risk factor for unipolar major depression, according to the World Health Organization,[30] and exacerbates a number of other mental health conditions – including schizophrenia and bipolar disorder.[31]
- Cigarette smoking and depression appear to have a reciprocal, self-perpetuating relationship.[32]
- Diet and exercise "play a significant mediating role in the development, progression and treatment" of major depression.[33]

NYS' Alcohol & Other Drug Problem

A recent, highly reported study from the *Proceedings of the American Academy of Science*[34] uncovered a troubling trend: increased death rates among middle-aged, white Americans, "largely accounted for by increasing death rates from drug and alcohol poisonings, suicide, and chronic liver diseases and cirrhosis."[35]

This research backs up the assertion of actress and recovery advocate Kristen Johnston when she describes the societal impact of addiction: "This is our epidemic."[36]

In fact, the Global Burden of Diseases, Injuries, and Risk Factors Study[37] (GBD) brings home just how serious America's drug problem is. GBD risk factor analysis (examination of the underlying, root causes of death, disease and disability) determined that alcohol use is the leading risk for death, disease, and disability for Americans ages 15-49.[38] The second largest risk factor for that age group – close behind alcohol - is illicit drug use.[39]



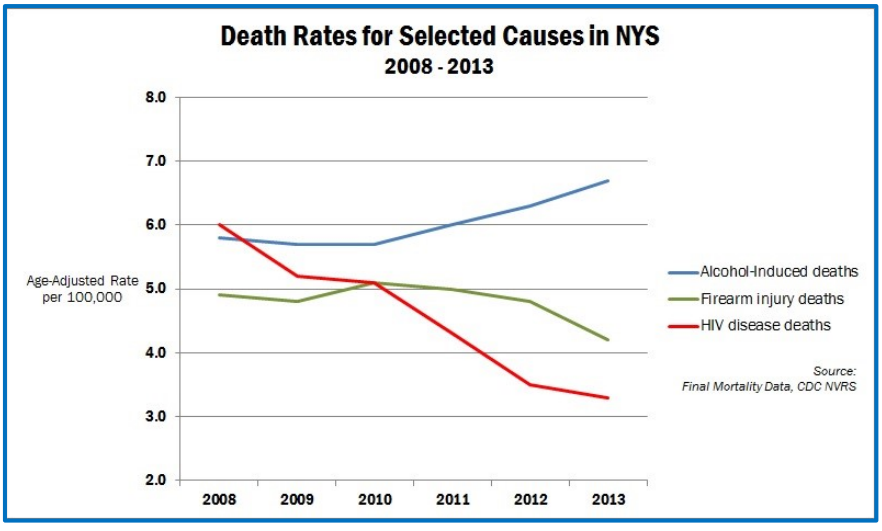
Alcohol: NY's Most Destructive Drug

Alcohol is unique among the factors that we are addressing in that it is a risk factor both for chronic disease and for acute injuries and social harm. While many of the harms of smoking, poor diet, and sedentary lifestyle generally take their toll after years of continued behavior, excessive alcohol use can have immediate deadly effects (alcohol poisoning, fall-related injuries, etc.) or effects from chronic, long-term use (cirrhosis, cardiomyopathy, etc).

Some of these consequences are both tragic and largely misunderstood by many New Yorkers:

Alcohol-related cancers

Although many Americans are unaware of the connection,[40] alcohol consumption is a causal risk factor for several cancers – including those of the female breast, colorectum, liver, stomach, head and neck.[41] That list includes some of the biggest cancer killers of New Yorkers, both in terms of numbers of deaths (breast, colorectal)[42] and recalcitrance (liver, esophageal, stomach).[43] Furthermore, the risk for some of these cancers (most notably breast cancer) increases at even light to moderate levels of alcohol consumption.[44]



Developmental Effects

Prenatal alcohol exposure is the leading preventable cause of birth defects and intellectual and neurodevelopmental disabilities.[45] In fact, the Institute of Medicine has declared that "of all the substances of abuse (including cocaine, heroin, and marijuana), alcohol produces by far the most serious neurobehavioral effects in the fetus."[46] Prevalence rates of fetal alcohol spectrum disorders (FASD) may be as high as 2%-5%,[47] and place a great burden on our educational, juvenile justice, and criminal justice systems.[48]

Second-Hand Effects

The conception of excessive drinking as a type of self-contained, "victimless" behavior doesn't comport with reality. The families, friends, and neighbors of the excessive drinker are often unfairly harmed by that drinking.[49] These second hand effects of drinking include violence,[50] child maltreatment,[51] and poor mental health outcomes[52] among many others.

The Wrong Direction

While the rates for deaths due to firearm injury and HIV disease have been falling in NYS in recent years, the age-adjusted death rate for alcohol-induced deaths[53] has been climbing in at the same time.[54] Efforts to deregulate alcohol control systems in NYS in order to boost alcohol sales[55] would be likely to contribute to the continuance – if not an exacerbation - of that trend over the long term.

Drilling Down on Alcohol Costs

While statistics regarding the health care costs associated with alcohol problems may seem broad and abstract, the costs associated with specific outcomes can be very real – and very expensive for health care providers and governments. Some of these outcomes bear directly on health care systems. For example, the Readmissions Reduction Program (HRRP) - instituted by the Affordable Care Act – penalizes hospitals for readmissions occurring within 30 days.[56]

Tables 1 & 2 (below) detail the impact of alcohol problems on the leading causes of rehospitalization for both medical and surgical conditions.

Additionally, sepsis is a major concern for hospitals and other health care domains, costing U.S. health systems over $20 billion annually.[57] Alcohol use disorder (AUD) "is known to complicate and exacerbate infections and sepsis in hospitalized patients"[58] and lead to "persistent fever, delayed resolution of symptoms, increased rates of bacteremia, increased use of intensive care, prolonged duration of hospital stay, and increased cost of hospitalization for infected patients."[59]

Lost Productivity

Another largely underaddressed cost of excessive alcohol consumption is that of lost workforce productivity. And this is not a trivial problem, with Frone reporting that an estimated 15.3% of the U.S. workforce (19.2 million workers) reported workplace alcohol use/impairment during the previous year.[60] To wit:

> an estimated 1.8% (2.3 million workers) drank before work, 7.1% (8.9 million workers) drank during the workday (i.e., during lunch breaks, during other breaks, or while working), 1.7% (2.1 million workers) worked under the influence of alcohol, and 9.2% (11.6 million workers) worked with a hangover.

The workforce consequences of excessive alcohol use include:

- Increased morbidity and mortality[61]
- Decreased worker retention[62]
- Increased employer health insurance costs[63]
- Compromised work performance due to poor decision-making, sleeping on the job, etc.[64]
- Lower morale for employees who do not drink on the job[65]
- On-the-job (unintentional) injuries – especially in agricultural and casual labor settings [66]
- Workplace violence, with extensive research especially identifying alcohol intoxication as a risk factor for violence against nurses and other health care workers.[67] Risk is increased for both employee drinking and for those in positions requiring "contact with individuals under the influence of alcohol."[68]
- Higher rates of absenteeism[69]
- Presenteeism, which is defined by the Hazelden Foundation as the condition whereby employees are present at work, but less productive due to family problems.[70] Hazelden's nationwide survey of employed individuals found that 36% of employees reported that "at least one of their coworkers had been distracted, less productive, or missed work because of alcohol/drug abuse or addiction within their family."[71]

Primary diagnosis at discharge *Medical Conditions*	% readmitted within 30 days	Alcohol-related complications (chronic & acute excessive consumption)
Heart failure	26.9%	Cardiomyopathy[72] Early coronary calcification[73] Acute myocardial injury[74] Unfavorable long-term outcomes after CPVI[75] Increased risk of atrial fibrillation recurrence[76]
Psychoses	24.6%	Severe mental illness (more frequent psychiatric hospitalizations,[77] more severe psychiatric symptoms,[78] less stable living situations,[79] fewer regular meals and activities[80]) Schizophrenia (increased risk for hospitalization[81] and rehospitalization,[82] undermined medication compliance,[83] greater symptom severity,[84] more cognitive impairment,[85] greater risk of depression,[86] more physical illness,[87] greater risk for violent behavior,[88] increased risk of premature mortality[89]) Bipolar disorder (increased cognitive impairment,[90] more rapid cycling and mood episode recurrence,[91] increased risk of depressive relapse in bipolar I patients,[92] increased risk of suicide,[93] temporal mismatch negativity impairments[94])
Chronic obstructive pulmonary disease (COPD)	22.6%	AATD-associated COPD ER Visits[95] Increased frequency of exacerbations in COPDs with hypertension[96] Other COPD exacerbations[97]
Pneumonia	20.1%	Increased risk of acquiring a pneumococcal infection,[98] more severe pneumonia,[99] admitted more often to the ICU,[100] require MV more often,[101] more prolonged treatment regimen of IV antibiotics,[102] longer hospital stays,[103]
Gastrointestinal problems	19.2%	Liver cancer,[104] other liver problems, colorectal cancer, stomach cancer,[105] gastritis and heartburn (GERD), peptic ulcers, non-variceal upper gastrointestinal bleeding (NVUGIB),[106] pancreatitis

Primary diagnosis at discharge *Surgical Conditions*	% readmitted within 30 days	Alcohol-related complications (chronic & acute excessive consumption)
Other vascular surgery	23.9%	Every fifth surgery patient drinks excessively and this often leads to poorer perioperative outcomes, including higher rates of pneumonia and other infections[107] Alcoholism independently associated with increased risk of surgical site infection[108] Probable alcohol abuse/dependence significantly more intensive-care setting readmissions[109] Alcohol use an independent predictor of superficial surgical site infection, wound disruption, and prolonged length of stay[110] Alcohol misuse independent risk factor for poorer postoperative outcomes following primary total hip and total knee arthroplasty[111] Adverse cerebral outcomes (type ii) after coronary bypass surgery[112]
Other hip or femur surgery	17.9%	
Major bowel surgery	16.6%	
Cardiac stent placement	14.5%	
Major hip or knee surgery	9.9%	

Heroin and Opioid Analgesics

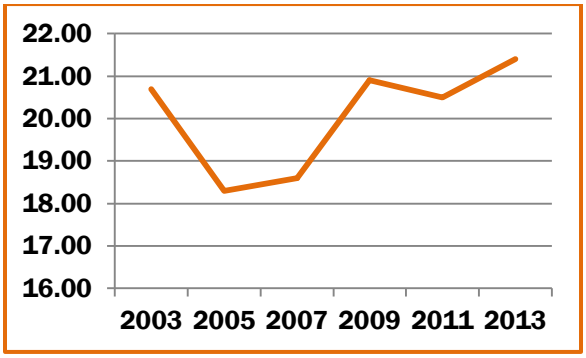
DOH has documented the dramatic and disturbing growth of heroin and opioid overdose deaths in NYS during the past few years:[113]

- 2,175 drug-related deaths were reported in 2013, increase of 40% since 2009
- Heroin was involved in 637 (29%) of drug-related deaths in 2013 vs. 242 (16%) in 2009
- Opioid analgesic-related deaths increased 30% from 2009 to 2013 (from 735 to 952)
- Opioid-related emergency department visits increased 73% from 2010 to 2014

Marijuana

While marijuana may be considerably less harmful than legal drugs like alcohol and "hard" drugs such as heroin,[114] it is not harmless, especially when smoked regularly. Some of the harms engendered by marijuana use may include unintentional injury,[115] cognitive and behavioral problems,[116] neuropsychiatric disease,[117] pulmonary problems,[118] and cardiovascular impacts.[119]

Youth marijuana use has been on the rise in NYS, associated with decreased perception of the harm of regular cannabis use.[120]



Pct. of high school youth who currently used marijuana, NYS (1 or more times during the 30 days before the survey)
data source: CDC High School Youth Risk Behavior Survey

Other Addictions

Problem/pathological gambling (PPG) has typically been viewed a social problem, not a public health problem. Nevertheless, a growing body of literature has identified its serious health consequences:

- PPG is strongly associated with suicidal ideation and suicide attempts,[121] with frequent alcohol consumption increasing those risks.[122]
- Problem gamblers and their partners faced elevated rates of depression, anxiety, insomnia, gastro-intestinal disorders, migraine and other stress-related disorders.[123]
- PPG has also found to be associated with poor diet, sedentary lifestyle, obesity, and smoking.[124]

Furthermore, greater population-level exposure to legal gambling (including more types of legal gambling) appears to increase rates of problem gambling.[125]

There has been vigorous controversy over whether other compulsive behaviors (hypersexual behavior, compulsive overeating, etc.) technically qualify as addictions.[126] What is beyond doubt is: 1) these behaviors take a considerable toll on public health;[127] 2) community resources are necessary for the prevention and treatment of - and recovery from – these compulsions/addictions for individuals and their families.

Look to the Evidence

Traditional approaches to preventing unhealthy behaviors have relied on the premise that simple education about the health consequences of a behavior would necessarily lead to positive behavior change. These educational messages are sometimes linked to moralistic calls for "personal responsibility."

Decades of public health research have established that education – in isolation – is ineffective in changing ingrained behavior.[128] A look at the CDC's *Ten Great Public Health Achievements in the 20th Century* reveals that none of these successes featured simple education as a primary strategy to achieve a public health goal.[129]

The most vivid example is that of tobacco, as recounted by Tom Farley and Deborah Cohen.[130] Governments and non-profit organizations spent many millions of dollars from the 1960s through the 1990s on programs devoted to educating young people about the health risks of smoking. The outcomes of these programs were very disappointing. It was not until the implementation of healthy public policy solutions (including smoke-free buildings, increased tobacco taxes, restrictions on marketing, etc.) - in conjunction with evidence-based media campaigns - that smoking rates began to drop considerably.[131]

Evidence-based prevention programs (which beyond raising awareness of harms described above) have also been shown to be highly effective, with many producing positive effects across multiple behavioral health outcomes.[132]

Similarly, reversing long-standing patterns of unhealthy behaviors in NYS will require a layered approached to prevention, with healthy public policies wedded to evidence-based school- and community-based prevention programming (including tailored educational efforts).

Prioritizing Prevention

Too often, prevention is treated as an afterthought in our health and human services systems, with meager resources compared to the massive amounts of time, talent and treasure devoted to downstream interventions.

This is what the National Center on Addiction and Substance Abuse at Columbia University (CASA) has characterized as "shoveling up the wreckage."[133] Their analysis of federal and state spending on substance use and addiction found that 95.6 cents of every dollar went to dealing with the consequences of alcohol and other drug use (health, mental health, law enforcement, justice system, social services, etc.) with only 1.9 cents of every dollar going to prevention and treatment.

By contrast, spending on science-based prevention is remarkably effective and efficient. As Hawkins, et al., document, numerous cost-benefit analyses have found that "preventive interventions offer significant cost savings over alternatives such as incarceration or long-term treatment."[134]

The long-term cost savings brought about by evidence-based prevention policies and programs are especially relevant given the almost certain ballooning of chronic disease costs over the next decade in NYS due to an aging population and the prevalence of high-risk behaviors.[135]

Health in *All* Policies, not Health in *Some* Policies

The concept of Health in All Policies (HiAP) acknowledges the centrality of health to the thriving of NYS and its citizens. Unfortunately, NYS' economic policies are typically developed with little or no thought to their health impacts.

We can identify three key concepts which illuminate the interrelationship of economic development and unhealthy behaviors in NYS.

1. Legal Doesn't Always Mean Harmless

As noted above, illicit drugs are only a small part of the population health problem in NYS.

As Nicholas Freudenberg clarifies:

> Today, the decisions made by executives and managers in the food, tobacco, alcohol, pharmaceutical, firearms, automobile and other industries have a far greater impact on public health than the decisions of health officials, hospital directors, and doctors.[136]

Whether or not we'd like to admit it, many legally available[137] but harmful products have profound impacts on the health of New Yorkers. Our economic development policies need to take that into account if we ever hope to control health care costs and maximize the health and productivity of our work force.

2. The Addiction Surplus

Adams and Livingstone (2015) note the higher profitability of products/services with addictive potential.[138] This profitability may be best illustrated by a quote attributed to Warren Buffett:

> "I'll tell you why I like the cigarette business. It costs a penny to make. Sell it for a dollar. It's addictive. And there's fantastic brand loyalty."[139]

Adams and Livingstone describe the challenge in limiting the harm posed by addictogenic industries:

> Addictive consumptions generate financial surpluses over-and-above non-addictive consumptions because of the excessive consumption of addicted consumers. This add-on margin or 'addiction surplus' provides a powerful incentive for beneficiaries to protect their income by ensuring addicted consumers keep consuming. Not only that, addiction surplus provides the financial base that enables producers to sponsor activities which aim to prevent public health initiatives from reducing consumption.[140]

3. Promoting Thick Value

Economist Umair Haque has made the distinction between thin value and thick value.[141] Thick value businesses not only produce short-term profits, but also offer lasting, societally-enriching value. Such enterprises can be contrasted with those that create thin value, i.e. generate lucrative profits, but create negative externalities for broader society.

Haque's prototypical example of a thin value business is a fast-food restaurant, which may benefit its owners and shareholders, but also increases rates of obesity and chronic disease. In the same way, economic development strategies which depend on population-level increases in alcohol consumption are likely to lead to greater levels of alcohol-related problems, such as alcohol-related cancers and reduced workforce productivity. Such thin value economic development strategies may appear to be lucrative in the short-term, but ultimately extract from rather than add value for the majority of citizens.

Haque instead calls for a renewed, reformed capitalism which adds meaningful, thick value to the lives of consumers.[142]

CANYS Recommendations:

1. Prioritize Prevention in NYS

NYS should make significant investments in evidence-based, community-centered prevention.

Specifically, over the next 10 years, NYS should ensure that at least 10% of all state expenditures on the education, health, protection, and welfare of children will be allocated to effective universal, selective, and indicated interventions for preventing alcohol and other drug use and other unhealthy behaviors – in line with the recommendation of the American Academy of Social Work and Social Welfare.[143]

2. Establish Cross-Cutting Prevention Community of Practice

NYS should expand on its substance use-focused communities of practice (CoPs) and establish expanded CoPs around the promotion of healthy behaviors.

Similar to the CoPs recommended by the CDC for violence prevention,[144] these new CoPs would foster collaboration and exchange to maximize prevention efforts among a range of harmful behaviors, including alcohol and other drug use, problem/pathological gambling, tobacco use, unhealthy eating, lack of exercise, violence, and risky sexual behaviors. These CoPs should be structurally based in population-level, evidence-based prevention and intervention strategies and be supported by relevant staff from NYS agencies including DOH, OMH, OASAS, OPWDD, CCF, and others.

3. Create a Health in All Policies Review Board

NYS should follow the example of Washington State and institute an independent Health in All Policies Review Board (HiAPRB) to conduct Health Impact Reviews (HIR).

In Washington, these reviews

> provide objective information on proposals to help inform policy making, deliver information quickly – within 10 days of received request during legislative session, may directly impact health or the factors that influence health, and can be requested for any topic including, but not limited to: transportation, housing, education, environment, health care, and workforce development. Only the Governor or a state legislator can request a HIR.[145]

Similar to the structuring of New York City's Independent Budget Office,[146] the HiAPRB should be nonpartisan, fully and sustainably funded, and independent of the Executive and Legislative branches in order to minimize purely political interference. A strict conflict-of-interest policy should also be in place to ensure that parties with financial interests cannot influence the results of the reviews.[147]

We stand at a critical moment for NYS to embrace a prevention strategy to maximize public health and fiscal responsibility.

Whether or not we adopt such a strategy may very well determine the degree to which New York State will have a healthy and sustainable future.

Endnotes:

[1] Benjamin Disraeli, Speech given to the British House of Commons, July 24, 1877

[2] Woolf, S.H. & Aron, L, Eds (2013). *U.S. health in international perspective: Shorter lives, poorer health*. National Academies Press. Available at: http://www.nap.edu/catalog/13497/us-health-in-international-perspective-shorter-lives-poorer-health

[3] Kaiser Family Foundation (2016). How has health spending changed over time? [annotated chart collection] Available at http://www.healthsystemtracker.org/chart-collection/how-has-health-spending-changed-over-time/?slide=1

[4] Office of the State Comptroller (2015a). *Medicaid in New York: The continuing challenge to improve care and control costs.* Available at: https://www.osc.state.ny.us/reports/health/medicaid_2015.pdf

[5] NYS Association of Counties (2016). "NYSAC details state budget priorities" [media release]. Available at: http://www.nysac.org/blog_home.asp?Display=19

[6] Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs, 27*(3), 759-769

[7] ibid.

[8] ibid, p. 764

[9] McClellan, M. & Rivlin, A. (2014). *Improving health while reducing cost growth: What is possible?* Brookings Institution. Available at: March 19, 2016 from http://www.brookings.edu/~/media/events/2014/04/11-health-care-spending/improving_health_reducing_cost_growth_mcclellan_rivlin.pdf

[10] Rosenberg, C.E. (1987). *The cholera years: The United States in 1832, 1849, and 1866.* Chicago: University of Chicago Press.

[11] Reid, A. H., Taubenberger, J. K., & Fanning, T. G. (2001). The 1918 Spanish influenza: Integrating history and biology. *Microbes and Infection, 3*(1), 81-87.

[12] Olson, B. H. (1989). The safety of our drinking water. *New England Journal of Medicine, 320(*21), 1413-1414.

[13] de Quadros, C. A., Andrus, J. K., Olive, J. M., de Macedo, C. G., & Henderson, D. A. (1992). Polio eradication from the Western Hemisphere. *Annual Review of Public Health, 13*(1), 239-252.

[14] Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the United States, 2000. *JAMA, 291*(10), 1238-1245.

[15] NYS Department of Health (2015). "Chronic diseases and conditions" [webpage]. Available at: https://www.health.ny.gov/diseases/chronic/

[16] Council of State Governments (2006). *Costs of chronic diseases: What are states facing?* Trends Alert series. [report]. Available at: https://hit.health.tn.gov/Reports/ChronicTrendsAlert120063050306.pdf

[17] World Health Organization (2015). "Noncommunicable diseases prematurely take 16 million lives annually, WHO urges more action." [media release]. Available at http://www.who.int/mediacentre/news/releases/2015/noncommunicable-diseases/en/

[18] Spees, C. K., Wexler, R. K., Bittoni, M., Panchal, A. R., & Taylor, C. A. (2015). Characterization of low income adults' use of emergency department services. *Health Behavior and Policy Review, 2*(4), 251-259.

[19] American College of Lifestyle Medicine

[20] The smoking rate among U.S. adults fell to a record low of 14.9 percent in the first half of 2015. cf. New York Times (2015) "Don't let progress on tobacco evaporate." [editorial] Available at: http://www.nytimes.com/2015/11/22/opinion/sunday/dont-let-progress-on-tobacco-evaporate.html?_r=0

[21] Steele, E. M., Baraldi, L. G., da Costa Louzada, M. L., Moubarac, J. C., Mozaffarian, D., & Monteiro, C. A. (2016). Ultra-processed foods and added sugars in the US diet: Evidence from a nationally representative cross-sectional study. *BMJ Open, 6*(3), e009892.

[22] ibid.

[23] Centers for Disease Control and Prevention (2015). Nutrition, Physical Activity and Obesity Data, Trends and Maps website. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity and Obesity, Atlanta, GA, 2015. Available at: https://nccd.cdc.gov/NPAO_DTM/LocationSummary.aspx?statecode=94

[24] Fell, J. C., Beirness, D. J., Voas, R. B., Smith, G. S., Jonah, B., Maxwell, J. C., et al. (2016). Can progress in reducing alcohol-impaired driving fatalities be resumed? Results of a workshop sponsored by the Transportation Research Board Alcohol, Other Drugs, and Transportation Committee (ANB50). *Traffic Injury Prevention*. Published online http://www.tandfonline.com/doi/abs/10.1080/15389588.2016.1157592

[25] NYS Department of Health (2014). "Preventing chronic diseases: A wise investment for New York State" [fact sheet]. Available at: https://www.health.ny.gov/diseases/chronic/toolkit/docs/preventing_chronic_diseases.pdf

[26] Office of the State Comptroller (2015b*). Diabetes in New York State*. Available at: http://www.osc.state.ny.us/reports/health/diabetes_2015.pdf

[27] Sacks, J. J., Gonzales, K. R., Bouchery, E. E., Tomedi, L. E., & Brewer, R. D. (2015). 2010 national and state costs of excessive alcohol consumption. *American Journal of Preventive Medicine, 49*(5), e73-e79.

[28] Perry, G. S., Presley-Cantrell, L. R., & Dhingra, S. (2010). Addressing mental health promotion in chronic disease prevention and health promotion. *American Journal of Public Health*, *100*(12), 2337–2339.

[29] NYC Office of the Mayor (2015). *Understanding New York City's mental health challenge*. Available at: http://www1.nyc.gov/assets/home/downloads/pdf/press-releases/2015/thriveNYC_white_paper.pdf

[30] World Health Organization (2004). *Global status report on alcohol.* Available at: http://www.who.int/entity/substance_abuse/publications/global_status_report_2004_overview.pdf

[31] Smith, M. J., & Csernansky, J. G. (2012). Clinical implications of alcohol-use disorders in schizophrenia. *Neuropsychiatry, 2*(3), 239–252.

Batki, S. L., Meszaros, Z. S., Strutynski, K., Dimmock, J. A., Leontieva, L., Ploutz-Snyder, R., et al. (2009). Medical comorbidity in patients with schizophrenia and alcohol dependence. *Schizophrenia Research, 107*(2-3), 139-146

Cuffel, B. J., Shumway, M., Chouljian, T. L., & MacDonald, T. (1994). A longitudinal study of substance use and community violence in schizophrenia. *Journal of Nervous and Mental Disease, 182*(12), 704-708.

Rakofsky, J. J., & Dunlop, B. W. (2012). Do alcohol use disorders destabilize the course of bipolar disorder? *Journal of Affective Disorders, 145*(1), 1-10.

[32] Windle, M., & Windle, R. C. (2001). Depressive symptoms and cigarette smoking among middle adolescents: Prospective associations and intrapersonal and interpersonal influences. *Journal of Consulting and Clinical Psychology, 69*(2), 215.

[33] Lopresti, A. L., Hood, S. D., & Drummond, P. D. (2013). A review of lifestyle factors that contribute to important pathways associated with major depression: Diet, sleep and exercise. *Journal of Affective Disorders, 148*(1), 12-27.

[34] Case, A., & Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences, 112*(49), 15078-15083.

[35] ibid.

[36] Fambro, C. (2015). "Actress Kristen Johnston of '3rd Rock' and 'Exes' fame headlines Drug Education Council Luncheon." Available at http://www.al.com/news/mobile/index.ssf/2015/03/actress_kristen_johnston_headl.html

[37] The GBD is "the largest and most comprehensive effort to date to measure epidemiological levels and trends worldwide, utilizing over 1,000 collaborating researchers from 108 countries." cf. http://www.healthdata.org/gbd/about

[38] Institute for Health Metrics and Evaluation (IHME) (2015). GBD Compare [data visualization]. Seattle, WA: IHME, University of Washington. Available from http://vizhub.healthdata.org/gbd-compare. Specific data retrieved on February 24, 2016 from http://ihmeuw.org/3rqb

[39] ibid.

[40] AICR (2015). *The AICR 2015 cancer risk awareness survey report.* Available at: http://www.aicr.org/assets/docs/pdf/education/aicr-awareness-report-2015.pdf

[41] International Agency for Research on Cancer (2010). "Alcohol consumption and ethyl carbamate." *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans / World Health Organization*, International Agency for Research on Cancer, 96, 3–1383.

Nelson, D. E., Jarman, D. W., Rehm, J., Greenfield, T. K., Rey, G., Kerr, W. C., & Naimi, T. S. (2013). Alcohol-attributable cancer deaths and years of potential life lost in the United States. *American Journal of Public Health, 103*(4), 641–648.

Rehm, J. & Shield, K. (2014). "Alcohol consumption" in *World Cancer Report 2014*, Stewart, B.W. & Wild, C.P. (eds) (pp. 96-104). Lyon: IARC/World Health Organization

World Cancer Research Fund International/American Institute for Cancer Research (2016). *Continuous Update Project Report: Diet, Nutrition, Physical Activity and Stomach Cancer.* Available at: http://www.wcrf.org/sites/default/files/Stomach-Cancer-2016-Report.pdf

[42] American Cancer Society (2015). *Cancer Facts & Figures 2015.* Atlanta: American Cancer Society. Available at: http://www.cancer.org/acs/groups/content/@editorial/documents/document/acspc-044552.pdf

[43] Deadliest Cancers Coalition (2015). What are the deadliest, or recalcitrant, cancers? [webpage]. Available at: http://www.deadliestcancers.org/what-are-deadly-cancers.html

[44] Scoccianti, C., Cecchini, M., Anderson, A. S., Berrino, F., Boutron-Ruault, M. C., Espina, C., et al. (2015). European Code against Cancer 4th Edition: Alcohol drinking and cancer. *Cancer Epidemiology, 39*, S67-S74.

Rehm, J. & Shield, K. (2014)

Nelson, et al. (2013)

[45] Williams, J.F., Smith, V.C., and the Committee on Substance Abuse of the American Academy of Pediatrics (2015). Fetal alcohol spectrum disorders [clinical report]. *Pediatrics, 136*(5).

[46] Institute of Medicine (1996). *Fetal Alcohol Syndrome: Diagnosis, epidemiology, prevention, and treatment.* National Academies Press. Available at: http://www.nap.edu/catalog/4991/fetal-alcohol-syndrome-diagnosis-epidemiology-prevention-and-treatment

[47] May, P. A., Baete, A., Russo, J., Elliott, A. J., Blankenship, J., Kalberg, W. O., et al. (2014). Prevalence and characteristics of fetal alcohol spectrum disorders. *Pediatrics, 134*(5), 855-866.

[48] DHHS (2007). *Fetal alcohol spectrum disorders and the criminal justice system*. U.S. Department of Health and Human Services, SAMHSA– Center for Substance Abuse Prevention. DHHS Publication No. (SMA) 06-4238. Available at: http://adaiclearinghouse.org/downloads/Fetal-

Alcohol-Spectrum-Disorders-FASD-and-the-Criminal-Justice-System-498.pdf

Brown, J., Russell, A., Wartnik, A. P., Hesse, M. L., Huntley, D., Rafferty, E., & Andrews, T. (2015). FASD and the juvenile justice system: A need for increased awareness. *The Journal of Law Enforcement, 4*(6).

Wyper, K., & Pei, J. (2016). "Neurocognitive difficulties underlying high risk and criminal behaviour in FASD: Clinical implications." In *Fetal Alcohol Spectrum Disorders in Adults: Ethical and Legal Perspectives* (pp. 101-120). Springer International Publishing.

Brownell, M.D., Hanlon-Dearman, A., MacWilliam, L.R., Chudley, A.E., Roos, N.P., & Yallop, L.P. (2013). Use of health, education, and social services by individuals with Fetal Alcohol Spectrum Disorder. *Journal of Population Therapeutics and Clinical Pharmacology, 20*, 95e-106.

[49] Giesbrecht, N., Cukier, S., & Steeves, D. (2010). Collateral damage from alcohol: Implications of 'second-hand effects of drinking' for populations and health priorities. *Addiction, 105*(8), 1323-1325

[50] Giesbrecht, N., Cukier, S., & Steeves, D. (2010). Schofield, T. P., & Denson, T. F. (2013). Alcohol outlet business hours and violent crime in New York State. *Alcohol and Alcoholism, 48*(3), 363-369

Branas, C. C., Han, S., & Wiebe, D. J. (2016). Alcohol use and firearm violence. *Epidemiologic Reviews, 38*(1), 32-45

[51] Wolf, J. P., & Freisthler, B. (2015). Understanding the roles of context, frequency, and quantity of alcohol consumption in child physical abuse: Risks for mothers and fathers. *Journal of Family Violence*, 1-10.

Freisthler, B., Wolf, J. P., & Johnson-Motoyama, M. (2015). Understanding the role of context-specific drinking in neglectful parenting behaviors. *Alcohol and Alcoholism, 50*(5), 542-550.

[52] Ferris, J. A., Laslett, A.-M., Livingston, M., Room, R., & Wilkinson, C. (2011). The impacts of others' drinking on mental health. *Medical Journal of Australia, 195*(3), S22-26

Greenfield, T. K., Karriker-Jaffe, K. J., Kerr, W. C., Ye, Y., & Kaplan, L. M. (2016). Those harmed by others' drinking in the US population are more depressed and distressed. *Drug and Alcohol Review, 35*(1), 22-29

[53] *Alcohol-induced* deaths are those with explicitly alcohol-connected codes (e.g. alcoholic cardiomyopathy). *Alcohol-related* deaths include alcohol-induced deaths in addition to causes of death which have an established alcohol attributable fraction (e.g. homicide).

[54] Xu J.Q., Murphy S.L., Kochanek K.D., & Bastian B.A.. (2016). Deaths: Final data for 2013. *National Vital Statistics Reports*, *64*(2). Hyattsville, MD: CDC National Center for Health Statistics.

Murphy S.L., Kochanek K.D., Xu J.Q., & Heron M. (2015). Deaths: Final data for 2012. *National Vital Statistics Reports*, *63*(9). Hyattsville, MD: National Center for Health Statistics.

Kochanek K.D., Murphy S.L., & Xu J.Q. (2015). Deaths: Final data for 2011. *National Vital Statistics Reports*, *63*(3). Hyattsville, MD: National Center for Health Statistics.

Murphy S.L., Xu J.Q., & Kochanek K.D. (2013). Deaths: Final data for 2010. *National Vital Statistics Reports*, *61*(4). Hyattsville, MD: National Center for Health Statistics.

Kochanek K.D., Xu J.Q, Murphy S.L., et al. (2012). Deaths: Final Data for 2009. *National Vital Statistics Reports*, *60*(3). Hyattsville, MD: National Center for Health Statistics.

Miniño A.M., Murphy S.L., Xu J.Q., & Kochanek K.D. (2011). Deaths: Final data for 2008. *National Vital Statistics Reports*, *59*(10). Hyattsville, MD: National Center for Health Statistics.

[55] Office of NYS Governor (2016). "Governor Cuomo announces new legislation to modernize New York's Alcoholic Beverage Control law" [media release] Available at: https://www.governor.ny.gov/news/governor-cuomo-announces-new-legislation-modernize-new-yorks-alcoholic-beverage-control-law

[56] Centers for Medicare and Medicaid Services (2016). Readmissions Reduction Program (HRRP) [webpage]. Available at: https://www.cms.gov/medicare/medicare-fee-for-service-payment/acuteinpatientpps/readmissions-reduction-program.html

[57] Sepsis Alliance (2013). "Sepsis Alliance responds to U.S. Government findings that most expensive condition to treat in hospitals is sepsis" [media release] Available at http://www.sepsis.org/news/2013/sepsis_most_expensive_condition/

[58] Calvert, J., Desautels, T., Chettipally, U., Barton, C., Hoffman, J., Jay, M., et al. (2016). High-performance detection and early prediction of septic shock for alcohol-use disorder patients. Annals of Medicine and Surgery.

[59] Moss, M. (2005). Epidemiology of sepsis: Race, sex, and chronic alcohol abuse. *Clinical Infectious Diseases, 41*(S7), S490-S497

de Wit, M., Jones, D. G., Sessler, C. N., Zilberberg, M. D., & Weaver, M. F. (2010). Alcohol-use disorders in the critically ill patient. *Chest, 138*(4), 994–1003.

[60] Frone, M. R. (2006). Prevalence and distribution of alcohol use and impairment in the workplace: A U.S. national survey. Journal of Studies on Alcohol, 76, 147-156.

[61] Cercarelli, R., Allsop, S., Evans, M. & Velander, F. (2012). *Reducing alcohol-related harm in the workplace* (An evidence review: full report), Victorian Health Promotion Foundation, Melbourne, Australia. Available at: http://nceta.flinders.edu.au/files/8714/5870/4166/CHW_Alcohol_Full_Web_Final.pdf

[62] Ames, G. M., & Bennett, J. B. (2011). Prevention interventions of alcohol problems in the workplace: a review and guiding framework. *Alcohol Research and Health, 34*(2), 175.

[63] ibid.

[64] Ames, G. M., & Bennett, J. B. (2011). Prevention interventions of alcohol problems in the workplace: a review and guiding framework. *Alcohol Research and Health, 34*(2), 175.

[65] Frone, M. R. (2009). Does a permissive workplace substance use climate affect employees who do not use alcohol and drugs at work? A U.S. national study. *Psychology of Addictive Behaviors, 23*(2), 386-390.

[66] Foster, C. A., & Dissanaike, S. D. (2014). Prevalence and consequences of positive blood alcohol levels among patients injured at work. *Journal of Emergencies, Trauma, and Shock, 7*(4), 268.

Parish, M., Rohlman, D. S., Elliot, D. L., & Lasarev, M. (2015). Factors associated with occupational injuries in seasonal young workers. Occupational medicine, kqv183.

[67] Berry, P. (2013). Stressful incidents of physical violence against emergency nurses. *Online Journal of Issues in Nursing, 18*(1), 76.

Speroni, K. G., Fitch, T., Dawson, E., Dugan, L., & Atherton, M. (2014). Incidence and cost of nurse workplace violence perpetrated by hospital patients or patient visitors. *Journal of Emergency Nursing, 40*(3), 218-228.

[68] LeBlanc, M. M., & Kelloway, E. K. (2002). Predictors and outcomes of workplace violence and aggression. *Journal of Applied Psychology, 87*(3), 444.

[69] Cercarelli, R., Allsop, S., Evans, M. & Velander, F. (2012).

Cunradi, C. B., Greiner, B. A., Ragland, D. R., & Fisher, J. (2005). Alcohol, stress-related factors, and short-term absenteeism among urban transit operators. *Journal of Urban Health, 82*(1), 43-57.

[70] Hazelden Foundation (2005). "New Hazelden survey: More than one-third of employees report coworkers are distracted or less productive due to substance abuse/addiction within family" [media release]. Available at http://www.businesswire.com/news/home/20050331005216/en/Hazelden-Survey-One-Third-Employees-Report-Coworkers-Distracted

[71] ibid.

[72] Leon, D. A., Shkolnikov, V. M., McKee, M., Kiryanov, N., & Andreev, E. (2010). Alcohol increases circulatory disease mortality in Russia: Acute and chronic effects or misattribution of cause? *International Journal of Epidemiology, 39*(5), 1279–1290.

[73] Pletcher, M. J., Varosy, P., Kiefe, C. I., Lewis, C. E., Sidney, S., & Hulley, S. B. (2005). Alcohol consumption, binge drinking, and early coronary calcification: Findings from the Coronary Artery Risk Development in Young Adults (CARDIA) study. *American Journal of Epidemiology, 161*(5), 423–433.

[74] Tzemos, N., & Mordi, I. (2013). Reversible acute myocardial injury following alcohol bingeing. *Journal of Postgraduate Medicine, 59*(3), 240.

Waszkiewicz, N., Szulc, A., & Zwierz, K. (2013). Binge drinking-induced subtle myocardial injury. *Alcoholism: Clinical and Experimental Research, 37*(8), 1261–1263.

[75] Qiao, Y., Shi, R., Hou, B., Wu, L., Zheng, L., Ding, L., ... & Yao, Y. (2015). Impact of alcohol consumption on substrate remodeling and ablation outcome of paroxysmal atrial fibrillation. *Journal of the American Heart Association, 4*(11), e002349.

[76] ibid.

[77] Flensborg-Madsen, T., Becker, U., Grønbæk, M., Knop, J., Sher, L., & Mortensen, E. L. (2011). Alcohol consumption and later risk of hospitalization with psychiatric disorders: Prospective cohort study. *Psychiatry Research, 187*(1-2), 214–219.

[78] Carey, M. P., Carey, K. B., & Meisler, A. W. (1991). Psychiatric symptoms in mentally ill chemical abusers. *Journal of Nervous and Mental Disease, 179*(3), 136–138.

[79] Drake, R. E., & Wallach, M. A. (1989). Substance abuse among the chronic mentally ill. *Hospital & Community Psychiatry, 40*(10), 1041-1046.

[80] ibid.

[81] Cuffel, B.J. & Chase, P. (1994). Remission and relapse of substance use disorders in schizophrenia. Results from a one-year prospective study. *Journal of Nervous & Mental Disorders, 182*, 342–348.

[82] Drake, R. E., Osher, F. C., & Wallach, M. A. (1989). Alcohol use and abuse in schizophrenia: A prospective community study. *The Journal of Nervous and Mental Disease, 177*(7), 408-414.

[83] Smith, M. J., & Csernansky, J. G. (2012). Clinical implications of alcohol-use disorders in schizophrenia. *Neuropsychiatry, 2*(3), 239-252.

[84] Margolese, H. C., Malchy, L., Negrete, J. C., Tempier, R., & Gill, K. (2004). Drug and alcohol use among patients with schizophrenia and related psychoses: Levels and consequences. *Schizophrenia Research, 67*(2-3), 157-166

[85] Smith & Csernansky (2012)

[86] Cuffel, B.J. & Chase, P. (1994). Remission and relapse of substance use disorders in schizophrenia. Results from a one-year prospective study. *Journal of Nervous & Mental Disorders, 182*, 342–348.

[87] Batki, S. L., Meszaros, Z. S., Strutynski, K., Dimmock, J. A., Leontieva, L., Ploutz-Snyder, R., et al. (2009). Medical comorbidity in patients with schizophrenia and alcohol dependence. *Schizophrenia Research, 107*(2-3), 139-146

[88] Cuffel, B. J., Shumway, M., Chouljian, T. L., & MacDonald, T. (1994). A longitudinal study of substance use and community violence in schizophrenia. *The Journal of Nervous and Mental Disease, 182*(12), 704-708.

[89] Olfson, M., Gerhard, T., Huang, C., Crystal, S., & Stroup, T. S. (2015). Premature mortality among adults with schizophrenia in the United States. *JAMA Psychiatry, 72*(12), 1172-1181.

[90] Van Gorp WG, Altshuler L, Theberge DC, Wilkins J, & Dixon W. (1998). Cognitive impairment in euthymic bipolar patients with and without prior alcohol

dependence: A preliminary study. *Archives of General Psychiatry, 55*(1), 41–46.

[91] Rakofsky, J. J., & Dunlop, B. W. (2013). Do alcohol use disorders destabilize the course of bipolar disorder? *Journal of Affective Disorders, 145*(1), 1-10.

[92] Gitlin, M. J., Swendsen, J., Heller, T. L., & Hammen, C. (1995). Relapse and impairment in bipolar disorder. *American Journal of Psychiatry, 152*(11), 1635.

[93] Schaffer, A., Isometsä, E. T., Tondo, L., H Moreno, D., Turecki, G., Reis, C., et al. (2015). International Society for Bipolar Disorders Task Force on Suicide: Meta-analyses and meta-regression of correlates of suicide attempts and suicide deaths in bipolar disorder. *Bipolar Disorders, 17*(1), 1-16.

[94] Chitty, K. M., Kaur, M., Lagopoulos, J., Hickie, I. B., & Hermens, D. F. (2014). Risky alcohol use predicts temporal mismatch negativity impairments in young people with bipolar disorder. *Biological Psychology, 99*, 60–68.

[95] Hoth, K. F., Ford, D. W., Sandhaus, R. A., Strange, C., Wamboldt, F. S., & Holm, K. E. (2012). Alcohol use predicts ER visits in individuals with alpha-1 antitrypsin deficiency (AATD) associated COPD. *Journal of Chronic Obstructive Pulmonary Disease, 9*(4), 417-425.

[96] Stojanovski, Z., Peltekovski, A., & Minov, J. (2014). COPD exacerbations and hospitalizations in COPDs with hypertension. *European Respiratory Journal, 44*(S58), P812.

[97] Greene, C. C., Bradley, K. A., Bryson, C. L., Blough, D. K., Evans, L. E., Udris, E. M., & Au, D. H. (2008). The association between alcohol consumption and risk of COPD exacerbation in a veteran population. *Chest, 134*(4), 761–767.

[98] de Roux, A., Cavalcanti, M., Marcos, M. A., Garcia, E., Ewig, S., Mensa, J., & Torres, A. (2006). Impact of alcohol abuse in the etiology and severity of community-acquired pneumonia. *CHEST Journal, 129*(5), 1219-1225.

[99] ibid.

[100] Fernández-Solá, J., Junqué, A., Estruch, R., Monforte, R., Torres, A., & Urbano-Márquez, A. (1995). High alcohol intake as a risk and prognostic factor for community-acquired pneumonia. *Archives of Internal Medicine, 155*(15), 1649–1654.)

[101] ibid.

[102] ibid.

[103] ibid.

[104] World Cancer Research Fund/American Institute for Cancer Research (2015). Diet, nutrition, physical activity and liver cancer. Available at http://www.wcrf.org/sites/default/files/Liver-Cancer-2015-Report.pdf

[105] World Cancer Research Fund/American Institute for Cancer Research (2016). Diet, nutrition, physical activity and stomach cancer. Available at http://www.wcrf.org/sites/default/files/Stomach-Cancer-2016-Report.pdf

[106] Kärkkäinen, J. M., Miilunpohja, S., Rantanen, T., Koskela, J. M., Jyrkkä, J., Hartikainen, J., & Paajanen, H. (2015). Alcohol abuse increases rebleeding risk and mortality in patients with non-variceal upper gastrointestinal bleeding. *Digestive Diseases and Sciences, 60*(12), 3707-3715.

[107] Spies, C. D., von Dossow, V., Eggers, V., Jetschmann, G., El-Hilali, R., Egert, J., et al. (2004). Altered cell-mediated immunity and increased postoperative infection rate in long-term alcoholic patients. *The Journal of the American Society of Anesthesiologists, 100*(5), 1088-1100.

[108] Neumayer, L., Hosokawa, P., Itani, K., El-Tamer, M., Henderson, W. G., & Khuri, S. F. (2007). Multivariable predictors of postoperative surgical site infection after general and vascular surgery: Results from the patient safety in surgery study. *Journal of the American College of Surgeons, 204*(6), 1178-1187.

[109] Maxson, P. M., Schultz, K. L., Berge, K. H., Lange, C. M., Schroeder, D. R., Rummans, T. A., & GROUP, M. P. O. (1999, May). Probable alcohol abuse or dependence: A risk factor for intensive-care readmission in patients undergoing elective vascular and thoracic surgical procedures. In Mayo Clinic Proceedings (Vol. 74, No. 5, pp. 448-453). Elsevier.

[110] Nath, B., Li, Y., Carroll, J. E., Szabo, G., Tseng, J. F., & Shah, S. A. (2010). Alcohol exposure as a risk factor for adverse outcomes in elective surgery. *Journal of Gastrointestinal Surgery, 14*(11), 1732-1741.

[111] Best, M. J., Buller, L. T., Gosthe, R. G., Klika, A. K., & Barsoum, W. K. (2015). Alcohol misuse is an independent risk factor for poorer postoperative outcomes following primary total hip and total knee arthroplasty. *The Journal of Arthroplasty, 30*(8), 1293-1298.

[112] Roach, G. W., Kanchuger, M., Mangano, C. M., Newman, M., Nussmeier, N., Wolman, R., et al. (1996). Adverse cerebral outcomes after coronary bypass surgery. *New England Journal of Medicine, 335*(25), 1857-1864.

[113] NYS DOH (2015). *Opioid poisoning, overdose and prevention 2015: Report to the Governor and NYS Legislature.* Available at: http://www.health.ny.gov/diseases/aids/general/opioid_overdose_prevention/docs/annual_report2015.pdf

[114] Nutt, D. J., King, L. A., & Phillips, L. D. (2010). Drug harms in the UK: A multicriteria decision analysis. *The Lancet, 376*(9752), 1558-1565.
Lachenmeier, D. W., & Rehm, J. (2015). Comparative risk assessment of alcohol, tobacco, cannabis and other illicit drugs using the margin of exposure approach. *Scientific Reports, 5*, 8126.

[115] Ramaekers, J. G., Berghaus, G., van Laar, M., & Drummer, O. H. (2004). Dose related risk of motor vehicle crashes after cannabis use. *Drug and Alcohol Dependence, 73*(2), 109-119.

[116] Scholes-Balog, K. E., Hemphill, S. A., Evans-Whipp, T. J., Toumbourou, J. W., & Patton, G. C. (2016). Developmental trajectories of adolescent cannabis use and their relationship to young adult social and behavioural adjustment: A longitudinal study of Australian youth. *Addictive Behaviors, 53*, 11-18.

Norström, T., & Rossow, I. (2014). Cannabis use and violence: Is there a link? *Scandinavian Journal of Public Health, 42*(4), 358-363.

Shorey, R. C., Moore, T. M., McNulty, J. K., & Stuart, G. L. (2015). Do Alcohol and Marijuana Increase the Risk for Female Dating Violence Victimization? A Prospective Daily Diary Investigation.

Howard, R. C., & Menkes, D. B. (2007). Changes in brain function during acute cannabis intoxication: Preliminary findings suggest a mechanism for cannabis-induced violence. *Criminal Behaviour and Mental Health, 17*(2), 113-117.

Moore, T. M., & Stuart, G. L. (2005). A review of the literature on marijuana and interpersonal violence. *Aggression and Violent Behavior, 10*(2), 171-192.

Meier, M. H., Caspi, A., Ambler, A., Harrington, H., Houts, R., Keefe, R. S., et al. (2012). Persistent cannabis users show neuropsychological decline from childhood to midlife. *Proceedings of the National Academy of Sciences, 109*(40), E2657-E2664.

[117] Manrique-Garcia, E., Zammit, S., Dalman, C., Hemmingsson, T., Andreasson, S., & Allebeck, P. (2012). Cannabis, schizophrenia and other non-affective psychoses: 35 years of follow-up of a population-based cohort. *Psychological Medicine, 42*(06), 1321-1328.

Giordano, G. N., Ohlsson, H., Sundquist, K., Sundquist, J., & Kendler, K. S. (2015). The association between cannabis abuse and subsequent schizophrenia: a Swedish national co-relative control study. *Psychological Medicine, 45*(02), 407-414.

Lev-Ran, S., Roerecke, M., Le Foll, B., George, T. P., McKenzie, K., & Rehm, J. (2014). The association between cannabis use and depression: A systematic review and meta-analysis of longitudinal studies. *Psychological Medicine, 44*(04), 797-810

De Graaf, R., Radovanovic, M., Van Laar, M., Fairman, B., Degenhardt, L., Aguilar-Gaxiola, S., et al. (2010). Early cannabis use and estimated risk of later onset of depression spells: Epidemiologic evidence from the population-based World Health Organization World Mental Health Survey Initiative. American Journal of Epidemiology, kwq096.

Kedzior, K. K., & Laeber, L. T. (2014). A positive association between anxiety disorders and cannabis use or cannabis use disorders in the general population: A meta-analysis of 31 studies. *BMC Psychiatry, 14*(1), 1.

[118] Joshi, M., Joshi, A., & Bartter, T. (2014). Marijuana and lung diseases. *Current Opinion in Pulmonary Medicine, 20*(2), 173-179.

Underner, et al. (2014)

[119] Thomas, G., Kloner, R. A., & Rezkalla, S. (2014). Adverse cardiovascular, cerebrovascular, and peripheral vascular effects of marijuana inhalation: what cardiologists need to know. *American Journal of Cardiology, 113*(1), 187-190.

[120] Centers for Disease Control and Prevention (2013). Youth Risk Behavior Survey Data. Available at: www.cdc.gov/yrbs

[121] Moghaddam, J. F., Yoon, G., Dickerson, D. L., Kim, S. W., & Westermeyer, J. (2015). Suicidal ideation and suicide attempts in five groups with different severities of gambling: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *American Journal on Addictions, 24*(4), 292-298.

Ledgerwood, D.M., M.A. Steinberg, R. Wu, M.N. Potenza (2005). Self-reported gambling-related suicidality among gambling helpline callers. *Psychology of Addictive Behaviors, 19*, pp. 175–183

[122] Kim, H. S., Salmon, M., Wohl, M. J., & Young, M. (2016). A dangerous cocktail: Alcohol consumption increases suicidal ideations among problem gamblers in the general population. *Addictive behaviors, 55*, 50-55.

[123] Griffiths, M., Scarfe, A., & Bellringer, P. (1999). The UK national telephone gambling helpline—Results on the first year of operation. *Journal of Gambling studies, 15*(1), 83-90.

[124] Black, D. W., Shaw, M., McCormick, B., & Allen, J. (2013). Pathological gambling: relationship to obesity, self-reported chronic medical conditions, poor lifestyle choices, and impaired quality of life. Comprehensive psychiatry, 54(2), 97-104.

Algren, M. H., Ekholm, O., Davidsen, M., Larsen, C. V., & Juel, K. (2015). Health behaviour and body mass index among problem gamblers: Results from a nationwide survey. *Journal of Gambling Studies, 31*(2), 547-556.

[125] Welte, J. W., Tidwell, M. C. O., Barnes, G. M., Hoffman, J. H., & Wieczorek, W. F. (2015). The Relationship between the number of types of legal gambling and the rates of gambling behaviors and problems across US States. *Journal of Gambling Studies*, 1-12.

[126] Giugliano, J. R. (2013). Sex addiction as a mental health diagnosis: Coming together or coming apart? Sexologies, 22(3), e77-e80.

Bird, S. P., Murphy, M., Bake, T., Albayrak, Ö., & Mercer, J. G. (2013). Getting Science to the Citizen-'Food Addiction' at the British Science Festival as a Case Study of Interactive Public Engagement with High Profile Scientific Controversy. Obesity facts, 6(1), 103-108.

Ifland, J., Preuss, H. G., Marcus, M. T., Rourke, K. M., Taylor, W., & Theresa Wright, H. (2015). Clearing the Confusion around Processed Food Addiction. Journal of the American College of Nutrition, 34(3), 240-243.

[127] Mirzaei, M., Ahmadi, K., Saadat, S.-H., & Ramezani, M. A. (2016). Instruments of high risk sexual behavior assessment: A systematic review. *Materia Socio-Medica, 28*(1), 46–50.

Carlier, N., Marshe, V. S., Cmorejova, J., Davis, C., & Müller, D. J. (2015). Genetic Similarities between Compulsive Overeating and Addiction Phenotypes: A Case for "Food Addiction"? *Current Psychiatry Reports, 17*(12), 1-11.

Kuss, D. J., & Griffiths, M. D. (2012). Internet gaming addiction: A systematic review of empirical research. *International Journal of Mental Health and Addiction, 10*(2), 278-296

Rose, S., & Dhandayudham, A. (2014). Towards an understanding of Internet-based problem shopping behaviour: The concept of online shopping addiction and its proposed predictors. *Journal of Behavioral Addictions, 3*(2), 83-89.

[128] Farley, T. & Cohen, D. (2005). *Prescription for a Healthy Nation: A new approach to improving our lives by fixing our everyday world.* Beacon Press.

Babor, T.F., Caetano, R., Casswell, S., Edwards, E., Giesbrecht, N., Graham, K. et al. (2010). *Alcohol: No ordinary commodity: Research and public policy.* (2nd edition). Oxford University Press.

[129] CDC (2013). "Ten great public health achievements in the 20th century." Available at: http://www.cdc.gov/about/history/tengpha.htm

[130] Farley & Cohen (2005)

[131] ibid.

[132] Hawkins, J. D., Jenson, J. M., Catalano, R. F., Fraser, M. W., Botvin, G. J., Shapiro, V., et al. (2015). Unleashing the Power of Prevention. *Working Paper No. 10, Grand Challenges for Social Work Initiative*, p. 11. Available at http://aaswsw.org/wp-content/uploads/2013/10/Unleashing-the-Power-of-Prevention-formatted-4.29.15.pdf

[133] CASA (2009) *Shoveling up II: The impact of substance abuse on federal, state and local budgets.* Available at: http://www.centeronaddiction.org/addiction-research/reports/shoveling-ii-impact-substance-abuse-federal-state-and-local-budgets

[134] Hawkins, et al. (2015), p.

[135] Partnership to Fight Chronic Disease (n.d.). The growing crisis of chronic disease in the United States [fact sheet]. Available at: http://www.fightchronicdisease.org/sites/default/files/docs/GrowingCrisisofChronicDiseaseintheUSfactsheet_81009.pdf

[136] Freudenberg, N. (2014*). Lethal but legal: Corporations, consumption, and protecting public health.* Oxford University Press., p. 3

[137] Many of the products produced by these industries are legally available, but regulated in some way (age restrictions, licensing, etc.).

[138] Adams, P. J., & Livingstone, C. (2015). Addiction surplus: The add-on margin that makes addictive consumptions difficult to contain. *International Journal of Drug Policy, 26*(1), 107-111.

[139] Quoted in Lubitz, L. (2014). "Warren Buffet's best buys." Investopedia. Available at: http://www.investopedia.com/articles/stocks/08/buffett-best-buys.asp

[140] Adams & Livingstone (2015), p. 107

[141] Haque, U. (2011). *The new capitalist manifesto: Building a disruptively better business.* Harvard Business Review Press.

[142] Haque, U. (2009). "The value every business needs to create now." *Harvard Business Review.* Available at https://hbr.org/2009/07/the-value-every-business-needs

[143] Hawkins, J. D., Jenson, J. M., Catalano, R. F., Fraser, M. W., Botvin, G. J., Shapiro, V., et al. (2015). Unleashing the Power of Prevention. *Working Paper No. 10, Grand Challenges for Social Work Initiative*, Available at http://aaswsw.org/wp-content/uploads/2013/10/Unleashing-the-Power-of-Prevention-formatted-4.29.15.pdf

[144] Centers for Disease Control and Prevention (2016). *Preventing multiple forms of violence: A strategic vision for connecting the dots*. Atlanta, GA: Division of Violence Prevention, National Center for Injury Prevention and Control, CDC. Available at: http://www.cdc.gov/violenceprevention/pdf/strategic_vision.pdf

[145] Washington State Board of Health (n.d.). Washington State health impact reviews [fact sheet]. Available at: http://sboh.wa.gov/Portals/7/Doc/Meetings/2014/03-12/WSBOH-03-12-14-Tab08c.pdf

[146] NY Times (1996). "The people's budget office" [editorial]. Available at: http://www.nytimes.com/1996/01/08/opinion/the-people-s-budget-office.html

[147] Babor, T. F. (2009). Alcohol research and the alcoholic beverage industry: issues, concerns and conflicts of interest. *Addiction, 104*(s1), 34-47.

Choi, C. (2016). "How candy makers shape nutrition science." Associated Press. Available at http://bigstory.ap.org/article/f9483d554430445fa6566bb0aaa293d1/ap-exclusive-how-candy-makers-shape-nutrition-science