



New Hampshire Chapter ACP: Highlights from the World of Public Health and its Nexus with Primary Care, with a Focus on the Opioid Crisis

Mark A. Levine, MD

Commissioner

Vermont Department of Health

October 25, 2019

Goals

- Focus on the nexus of Public Health, Primary Care and ACP positions and policies:
 - Describe the elements of a comprehensive public health approach to the opioid epidemic, and successes in prevention, harm reduction, and treatment amidst ongoing challenges.
 - Explain health equity and address state and healthcare system approaches to the “social determinants”.
 - Discuss a public health approach to firearm-related injury and death.
 - Provide up to date information on the dual epidemics of ENDS use and EVALI.

Health and Public Policy ...

Annals of Internal Medicine

POSITION PAPER

Health and Public Policy to Facilitate Effective Prevention and Treatment of Substance Use Disorders Involving Illicit and Prescription Drugs: An American College of Physicians Position Paper

Ryan Crowley, BSJ; Neil Kirschner, PhD; Andrew S. Dunn, MD; and Sue S. Bornstein, MD; for the Health and Public Policy Committee of the American College of Physicians*

Impact of the Opioid Crisis

Touches everyone

Health:

- Hepatitis C, HIV
- Premature death
- Other Infections

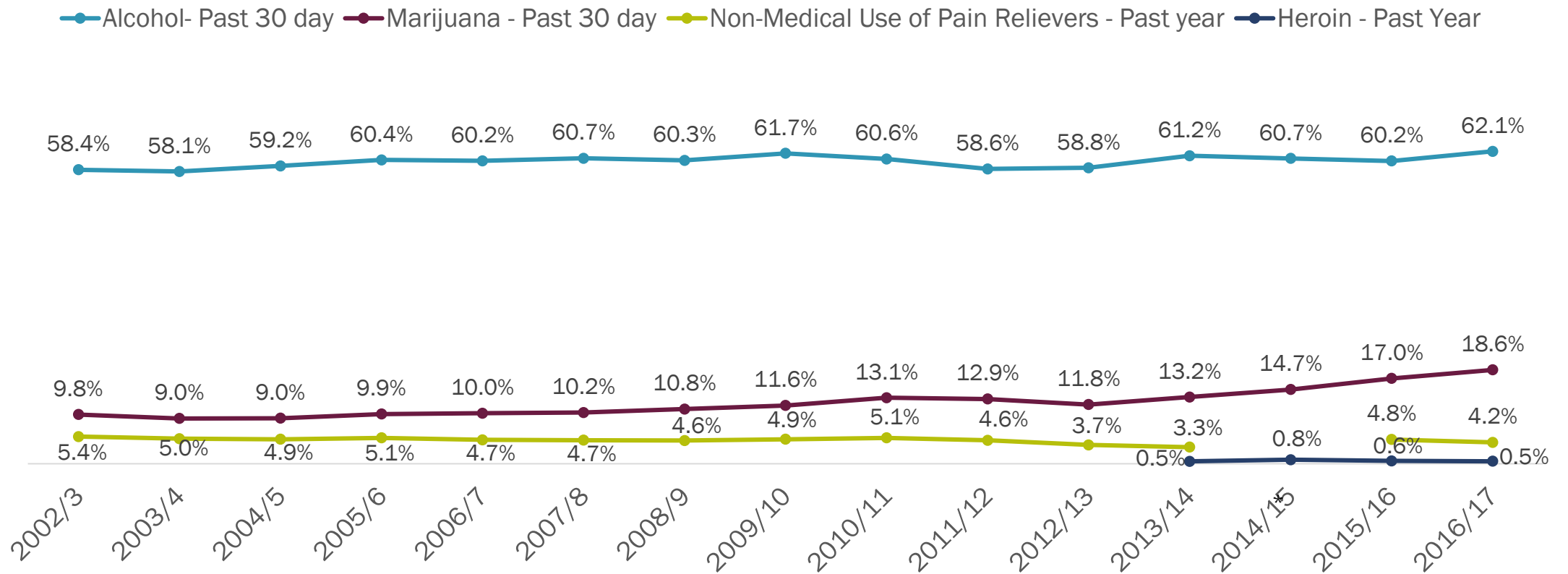
Families:

- Child neglect, custody issues
- Splintering of families

Communities:

- Workforce issues
- Housing
- Social
- Economic
- Crime

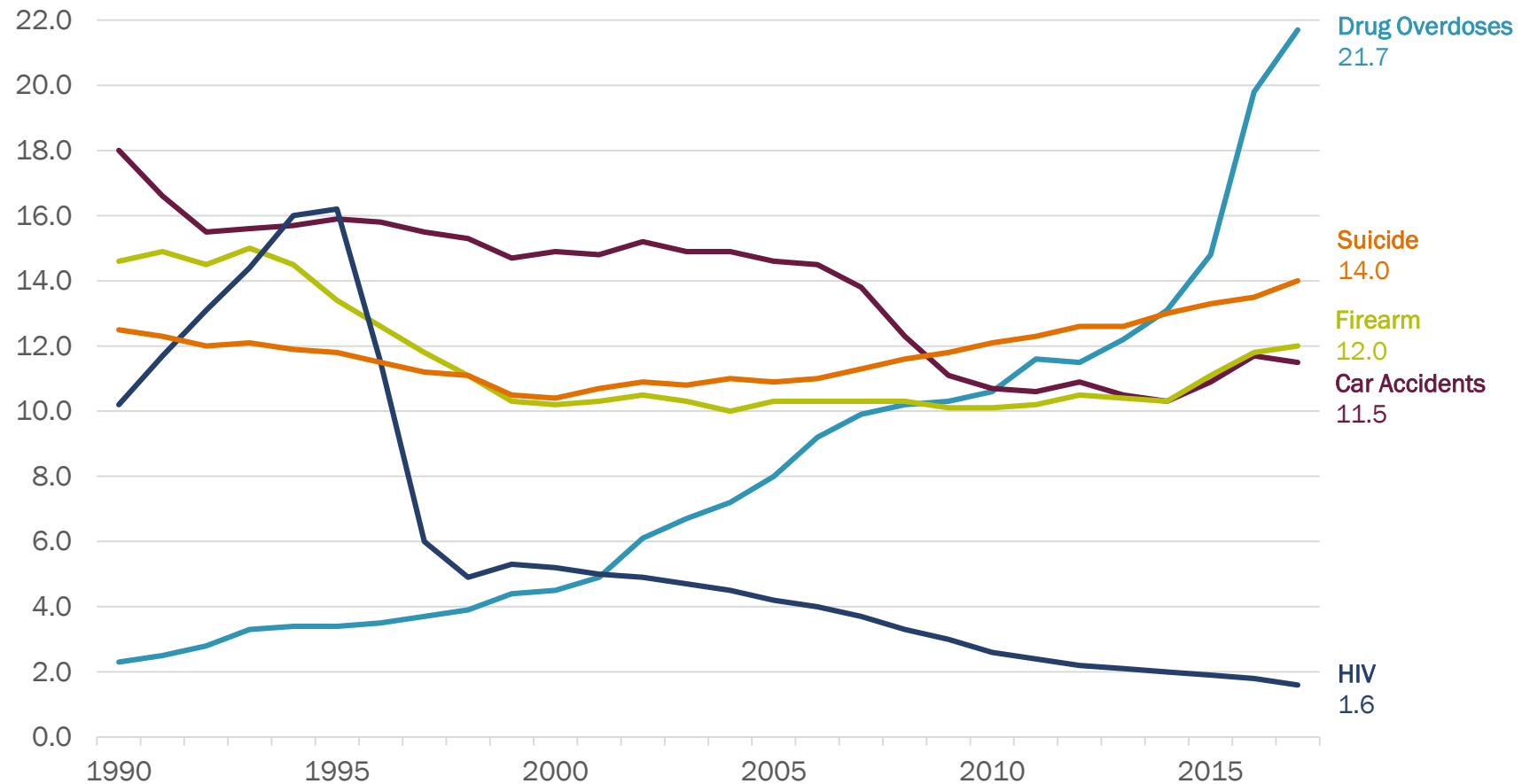
Percent of Vermonters age 12+ using selected substances: Alcohol is the mostly commonly used substance



* Pain reliever question changed 2014/2015 data are not available and 2015/16 and above are not comparable to previous years

Drug overdoses have overtaken car accidents, guns and suicide as cause of death

(Age-adjusted rate per 100,000 people)



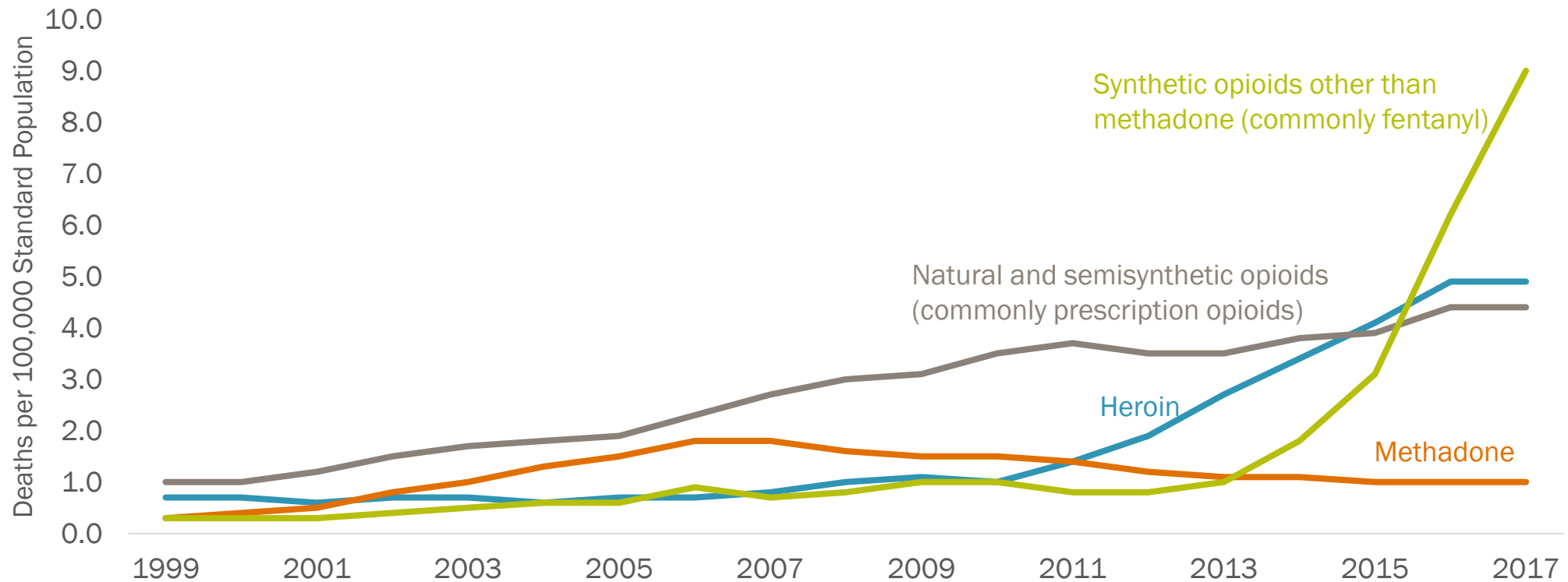
2017 is preliminary and not all measures are available

Source: CDC - Table 17. Age-adjusted death rates for selected causes of death, by sex, race, and Hispanic origin: United States, selected years 1950-2016

The age-adjusted rate of drug overdose deaths involving synthetic opioids other than methadone increased by 45% from 2016 to 2017

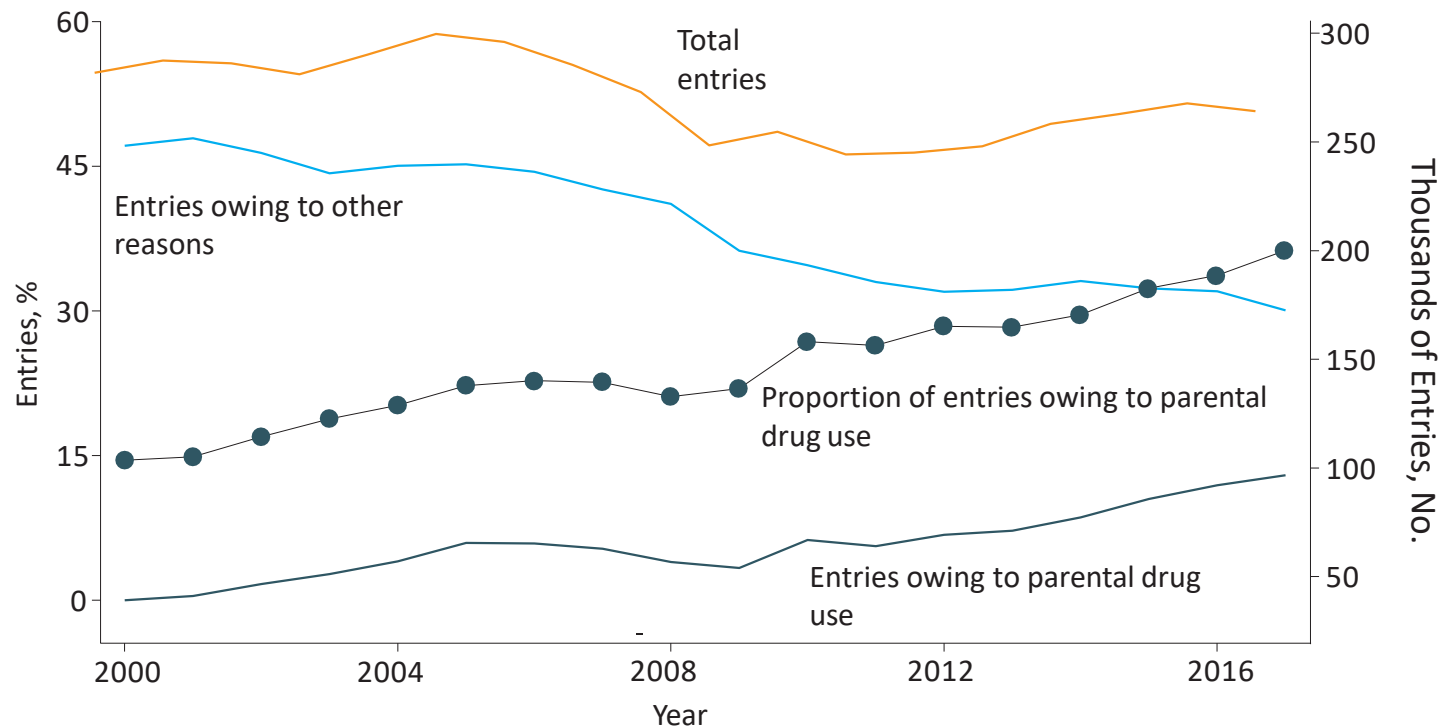
Age-adjusted drug overdose death rates, by opioid category:
United States, 1999–2017

Source:



JAMA National Trends in Foster Care

Figure. National Trends in Foster Care Entries Attributable to Parental Drug Use, 2000 to 2017

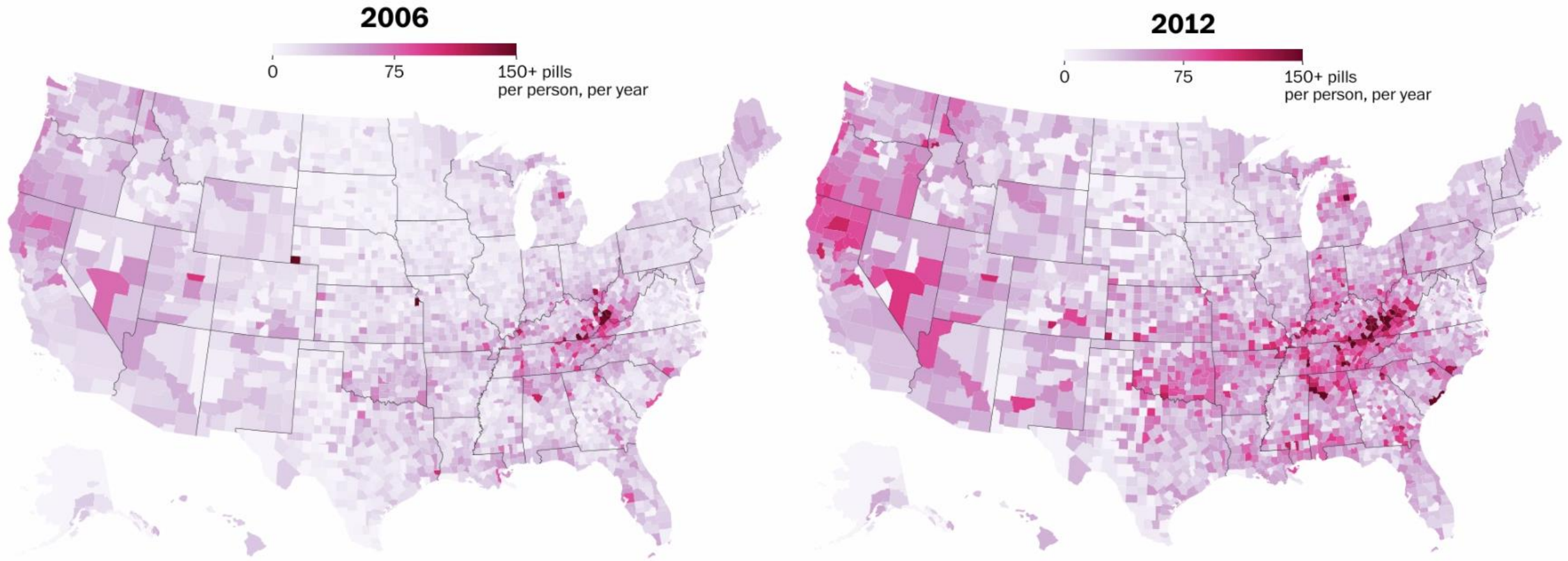


Adoption and Foster Care Analysis and Reporting System data for fiscal years 2000 to 2017. Fiscal years are from October 1 to September 30. Parental drug use was missing for 3.5% of the sample. Total foster care entries were stratified into removals for parental drug use ($n = 1162\,668$) and other reasons ($n = 3\,636\,177$). Logistic regression was performed to estimate a linear trend in the proportion of entries for parental drug use during the study period (coefficient, 1.07; $P < .001$).

Major Factors Driving the Prescription Opioid and Heroin Epidemic

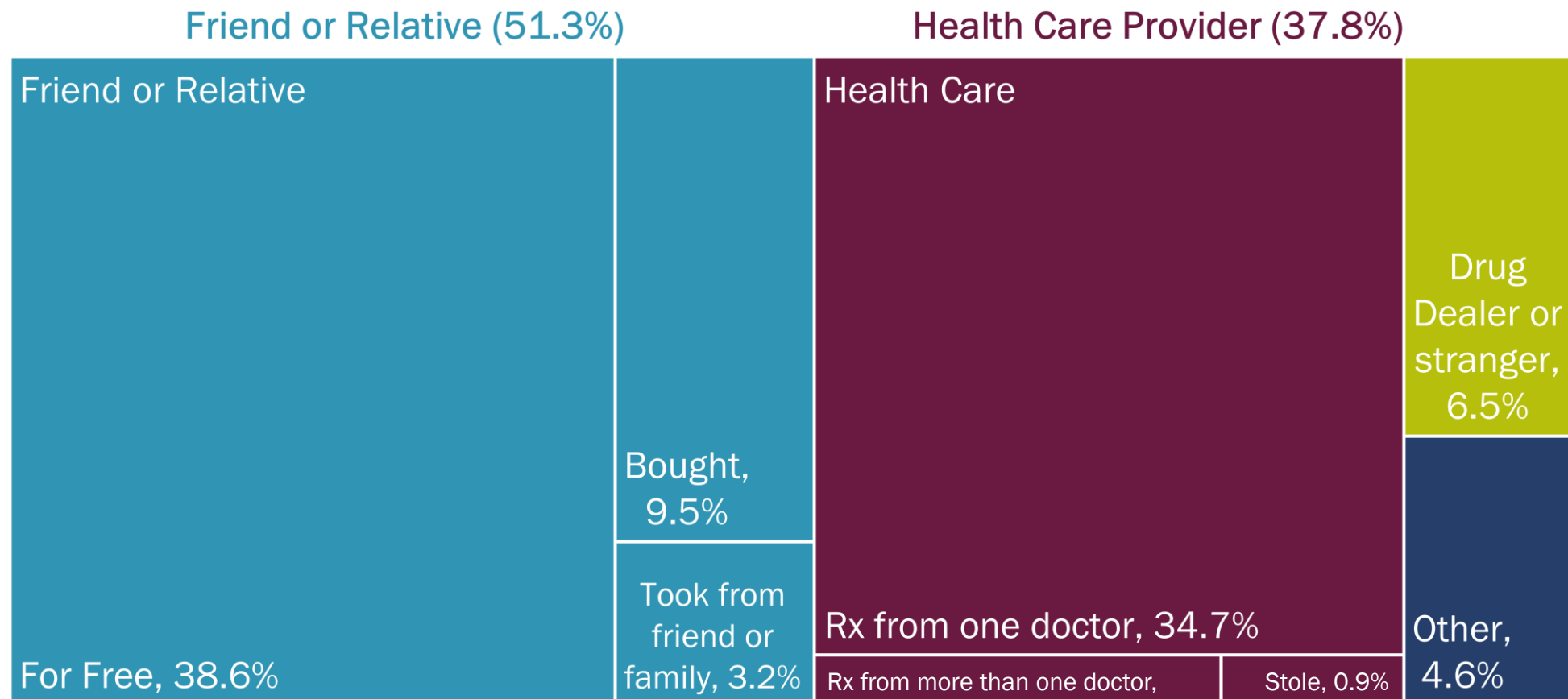


Oxycodone and hydrocodone distribution increased in most parts of the United States between 2006 and 2012



Over half of those who misused a prescription pain reliever got it from a friend or relative

Source Where Pain Relievers Were Obtained for Most Recent Misuse, 2018



The “Basic” Elements of a Comprehensive Public Health Response

1. Leadership – shared vision
2. Partnership and collaboration: multi sector work
3. Epidemiology and surveillance capacity for near real time data for decision making.
4. Prevention – Intervention – Treatment – Recovery strategies

The Basic Three Components that any State Must Prioritize

1. Prescriber-focused prevention: decrease circulating supply, develop clinical and surveillance tools.
2. Harm reduction-focused: improve naloxone availability, SSPs
3. Treatment-focused: expand access to Medication-Assisted Treatment.

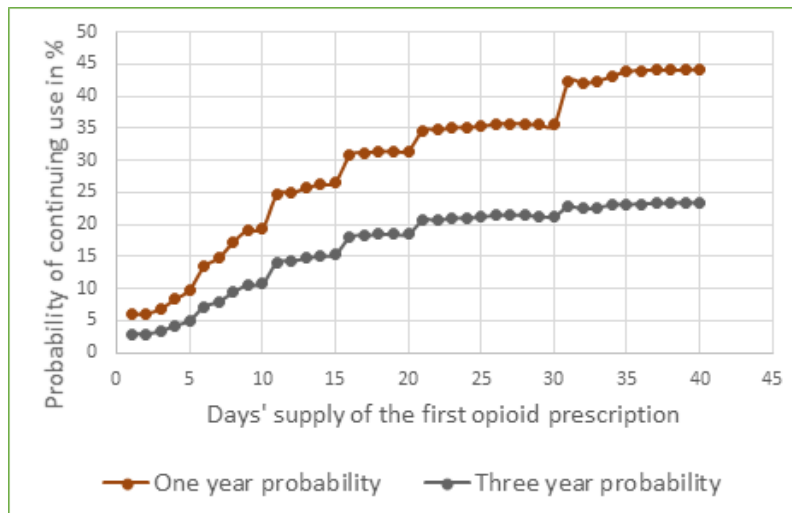
Prescriber-Focused Prevention

- ❑ Pain management and prescribing practices:
 - ❑ Pain management core competency education for practicing clinicians, students, graduate medical education, dental students and practitioners.
 - ❑ Prescriber rules, guidelines and tools
 - ❑ Prescription Drug Monitoring Program – clinical, surveillance, and self-monitoring system. Enhancements include interstate data sharing and quality improvement tools.
- ❑ DATA waiver training for all medical students and residents before graduation.

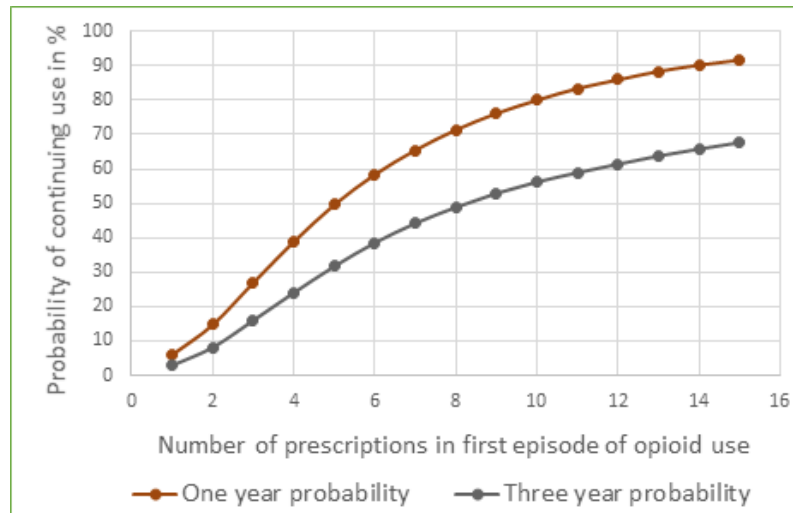
The more opioids prescribed during the first episode of opioid use, the greater the likelihood of continued opioid use

Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015

One- and 3-year probabilities of continued opioid use among opioid-naïve patients, by number of days' supply* of the first opioid prescription — United States, 2006–2015



One- and 3-year probabilities of continued opioid use among opioid-naïve patients, by number of prescriptions* in the first episode of opioid use — United States, 2006–2015



Source: Shah A, Hayes CJ, Martin BC. Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015. MMWR Morb Mortal Wkly Rep 2017;66:265–269. DOI: <http://dx.doi.org/10.15585/mmwr.mm6610a1>.

Prescriber Report

STATE
Seal

STATE PRESCRIPTION MONITORING PROGRAM PDMP Prescriber Report



DATE COVERED BY THIS REPORT: 10/01/2016 - 03/31/2017

DATE: 5/15/2017

Carl Flansbaum

Physician

SPECIALTY: Family Medicine

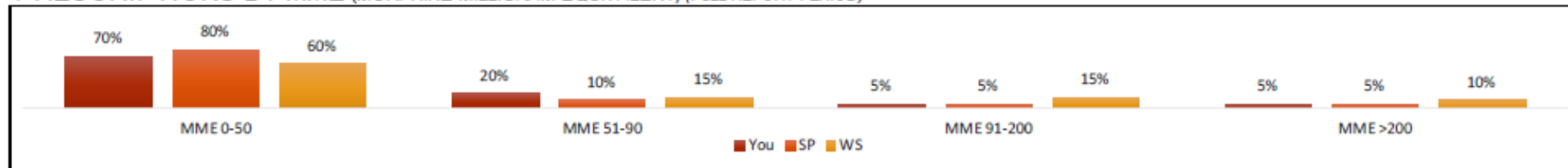
DEA #: AB123456789

NUMBER OF YOUR PATIENTS RECEIVING OPIOIDS (MONTHLY AVERAGE)			NUMBER OF PRESCRIPTIONS YOU WROTE FOR OPIOIDS (MONTHLY AVERAGE)		
400	300	350	1015	750	800
You	Similar Prescriber (SP)	Within your Specialty (WS)	You	Similar Prescriber (SP)	Within your Specialty (WS)

TOP MEDICATIONS PRESCRIBED (FULL REPORT PERIOD)

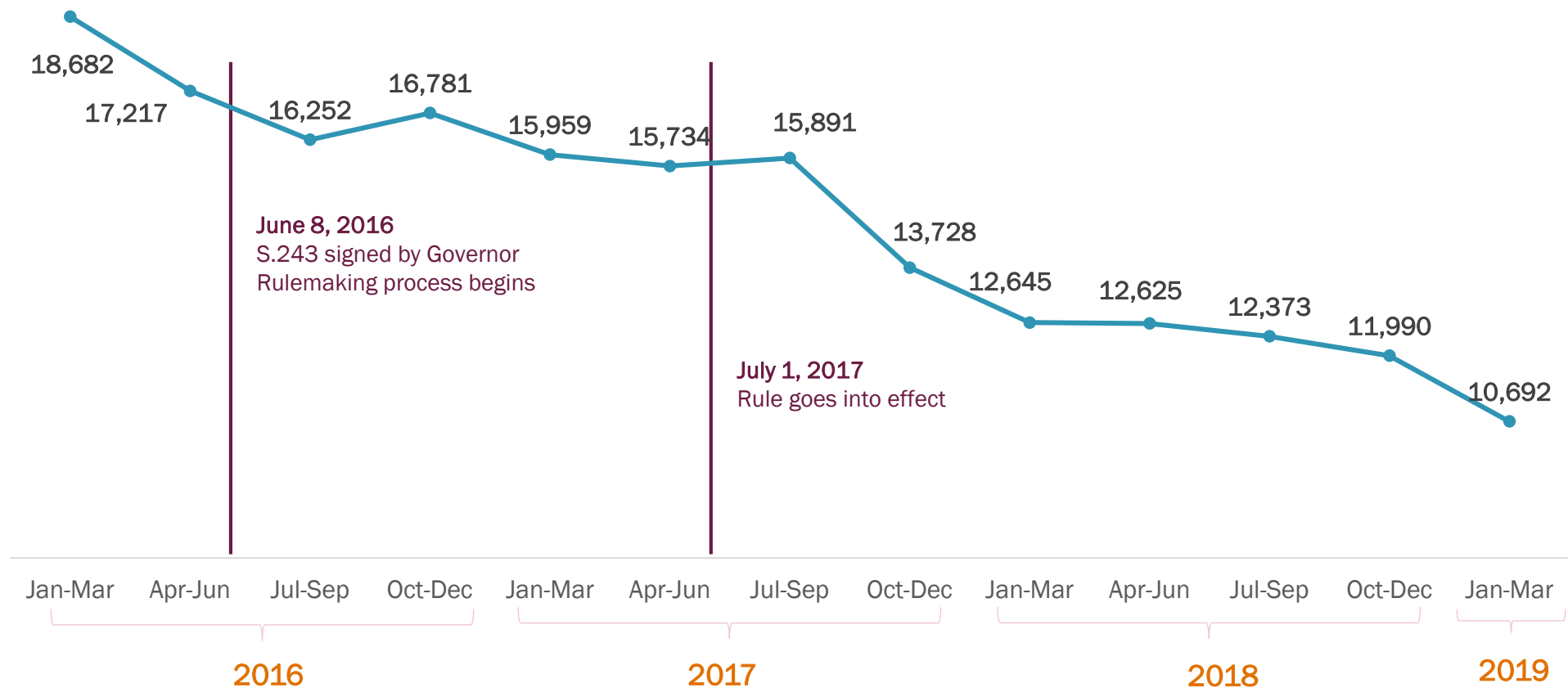
HYDROCODONE BITARTRATE/ACETAMINOPHEN	ALPRAZOLAM	ZOLPIDEM TARTRATE
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PRESCRIPTIONS BY MME (MORPHINE MILLIGRAM EQUIVALENT) (FULL REPORT PERIOD)



MME Opioid Analgesics per 100 Residents began to decrease as discussion began around the implementation of the Vermont Pain Rule

There was a 43% decrease in MME/100 people dispensed between Q1 (Jan-Mar) 2016 and Q1 (Jan-Mar) 2019



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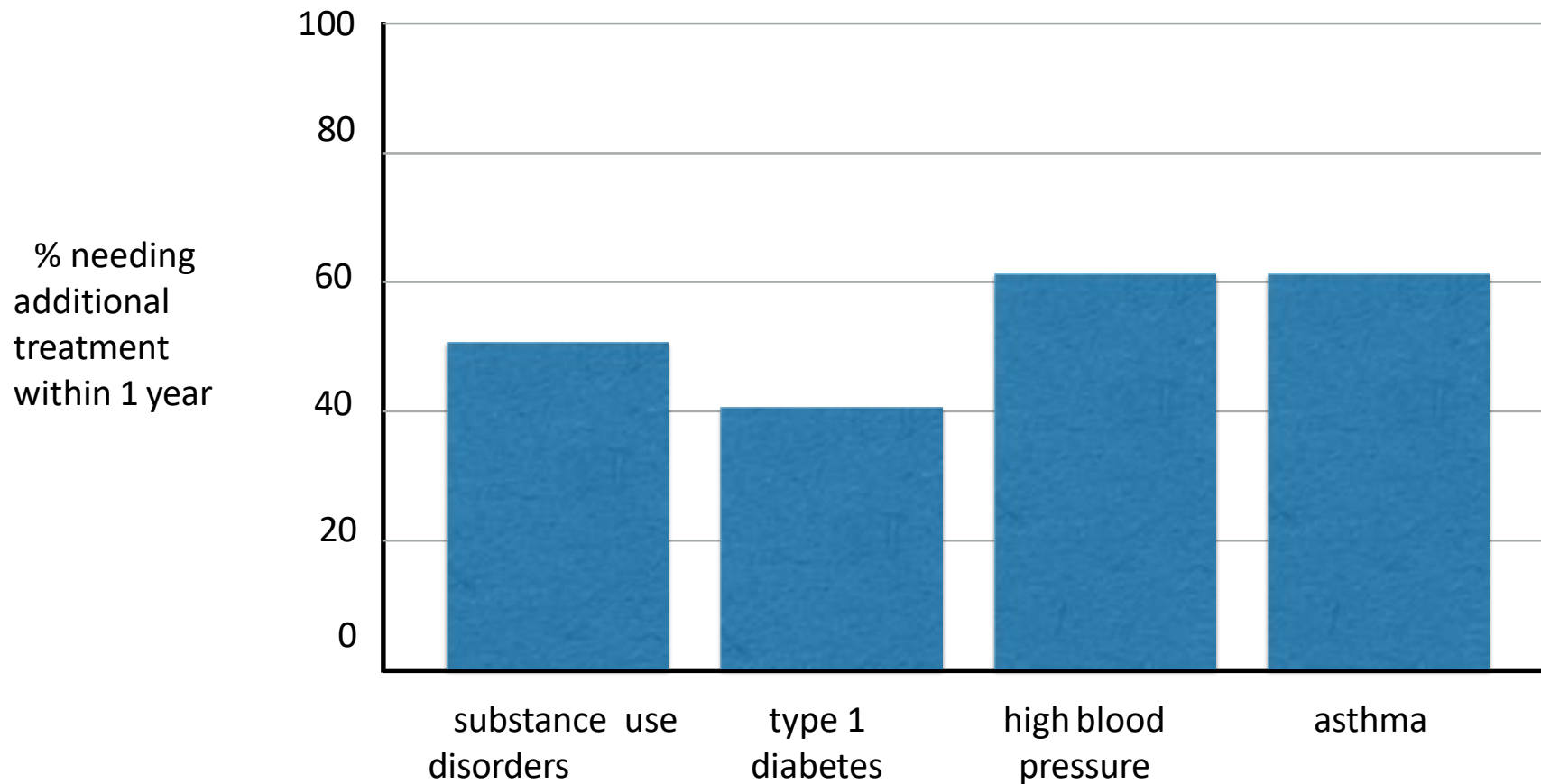
Opioid Use Disorder = A Disease of the Brain

In my experience, stigma can be distilled down to a lack of understanding of brain chemistry.

Opioid Use Disorder = A Disease of the Brain

1. Humans have brain systems that motivate us to seek out pleasure, avoid distress, and learn behaviors that help us do these things.
2. Addictive substances hijack these basic systems by activating them more powerfully than natural experiences.
3. Addiction involves long-term changes in the brain that decrease pleasure, increase distress, and impair decision-making.
4. Adolescent and young adult brains have enhanced susceptibility.

Substance use disorders should be treated and evaluated like other chronic illnesses



Source: McLellan et al., 2000

Vermont Department of Health

Harm-reduction strategies:

- Drug disposal systems; safe storage guidelines
- Sharps collection and disposal programs
- Naloxone distribution programs/training for first responders and the public
- Statewide Naloxone standing order
- Good Samaritan Law
- Syringe services programs

The Importance of Syringe Service Programs (SSP)

- The actual “exchange”
- Case management services
- Naloxone distribution point
- HIV/Hep C prevention and screening
- Fentanyl test strips
- A social community behind every client
- Referral to treatment opportunity
- Rapid Access to Medication-Assisted Treatment (RAM)

Syringe Services Programs (SSPs) are safe, effective, and save money. They do not increase illegal drug use or crime and they reduce transmission of HIV, viral hepatitis and other infections

Compared to users who don't access SSP services:

- new users of SSPs are five times more likely to enter drug treatment
- new users of SSPs are about three times more likely to stop using drugs
- Users who meet with a nurse are more likely to access primary care

SSPs are associated with an approximately 50% reduction in HIV and HCV incidence. When combined with MAT, transmission is reduced by more than two-thirds. Lifetime cost of treating a person with HIV is estimated to be nearly \$450,000

SSPs can reduce overdose deaths by teaching people who inject drugs how to prevent and respond to a drug overdose

SSPs protect first responders and the public by providing safe needle disposal and reducing community presence of needles. Miami, with no SSPs, had eight times as many improperly disposed of syringes than San Francisco which has SSPs.

Studies in Baltimore and New York City found no difference in crime rates between areas with and without SSPs

Vermont and New Hampshire Efforts to Address OUD and Opioid Overdose

Measure	Vermont	New Hampshire
PDMP	Legislation: 2006 Implementation: 2009 Managed by: Health Department	Legislation: 2012 Implementation: 2014 Managed by: Board of Pharmacy
Pain Rule Effective Dates	Chronic Pain: 2015 Acute & universal precautions Rule: 2017	Emergency Rules: 2015 Rules for opioid prescribing: 2017
Good Samaritan Law	2013	2015
Syringe Service Programs	Authorizing legislation passed: 1999	Authorizing legislation passed: 2017
Naloxone Distribution	Authorizing legislation passed: 2013	Authorizing legislation passed: 2015
Opioid Data Dashboard	Limited: https://www.healthvermont.gov/scorecard-opioids	Limited SUD: https://nhcenterforexcellence.org/rphn-data-dashboard/
Hub and Spoke System for OUD	2014	Currently under development – structurally different than VT.

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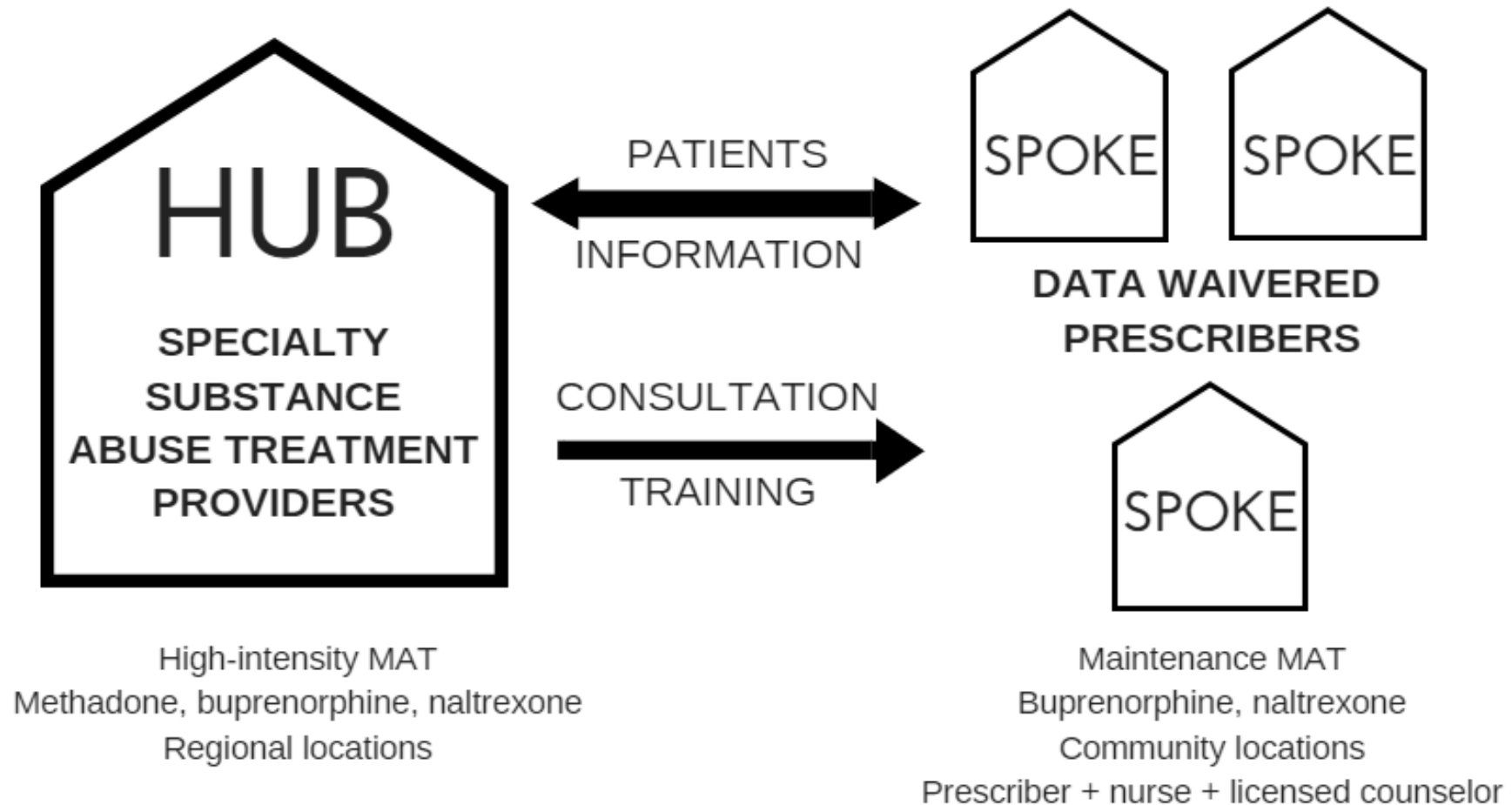
Effectiveness of Medication Assisted Treatment

- ❑ Several studies have clearly demonstrated MAT is effective across a number of behavioral dimensions compared to placebo or psychological treatment alone:
 - ❑ Reduced opioid use (including injection drug use)
 - ❑ Increased engagement and retention in treatment
 - ❑ Reduced morbidity and mortality
 - ❑ Improved social functioning
 - ❑ Reduced criminal activity
 - ❑ Reduced transmission of infectious diseases

Treatment-focused: expand access to Medication-Assisted Treatment

- ❑ Widely available evidence-based outpatient Medication Assisted Treatment (MAT) with methadone, buprenorphine or naltrexone
- ❑ Health Home model: integrate and coordinate primary, acute, behavioral health, and long-term services and supports
 - ❑ With added counseling services and treatment for poly substance use
 - ❑ Effective use of Medicaid design, reimbursement, rebatesm waivers
 - ❑ A system of residential treatment facilities

Vermont's Hub and Spoke Model

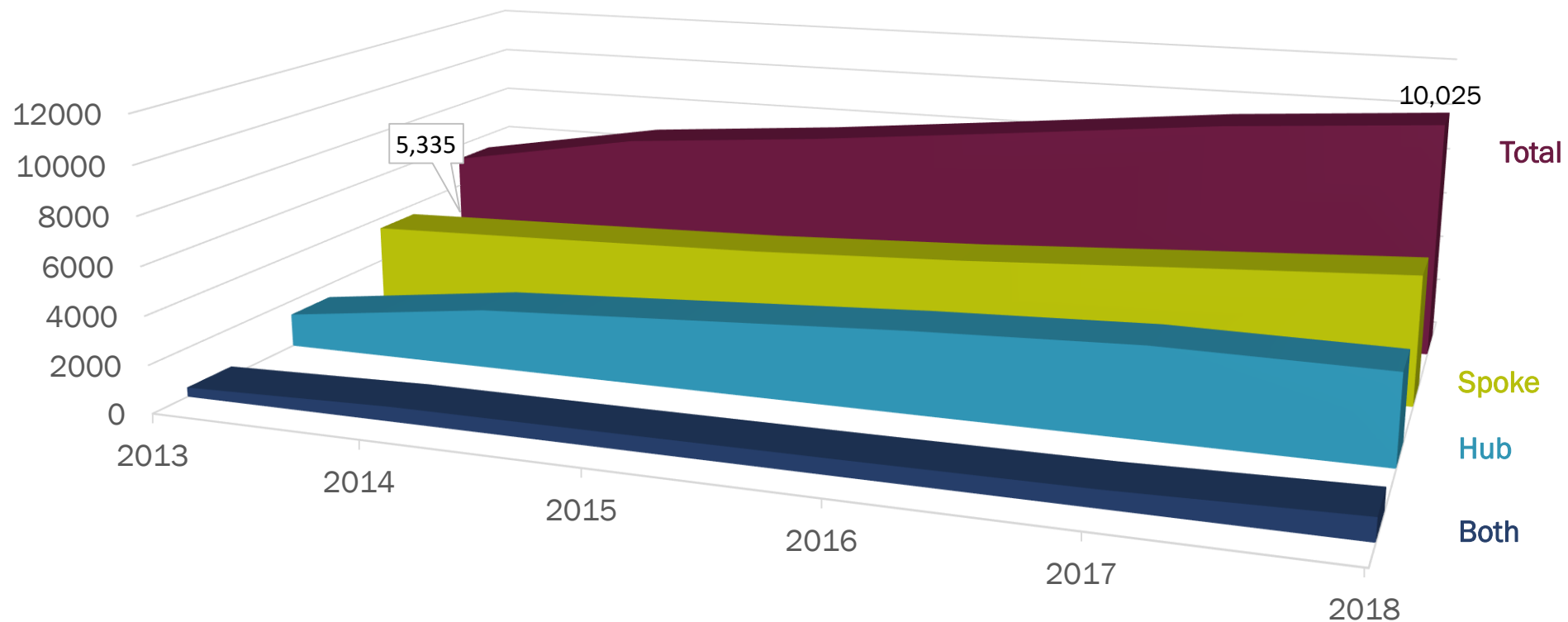


What Does it Take to Have a Successful Health Home Model, or Why did the Hub & Spoke Work in Vermont?

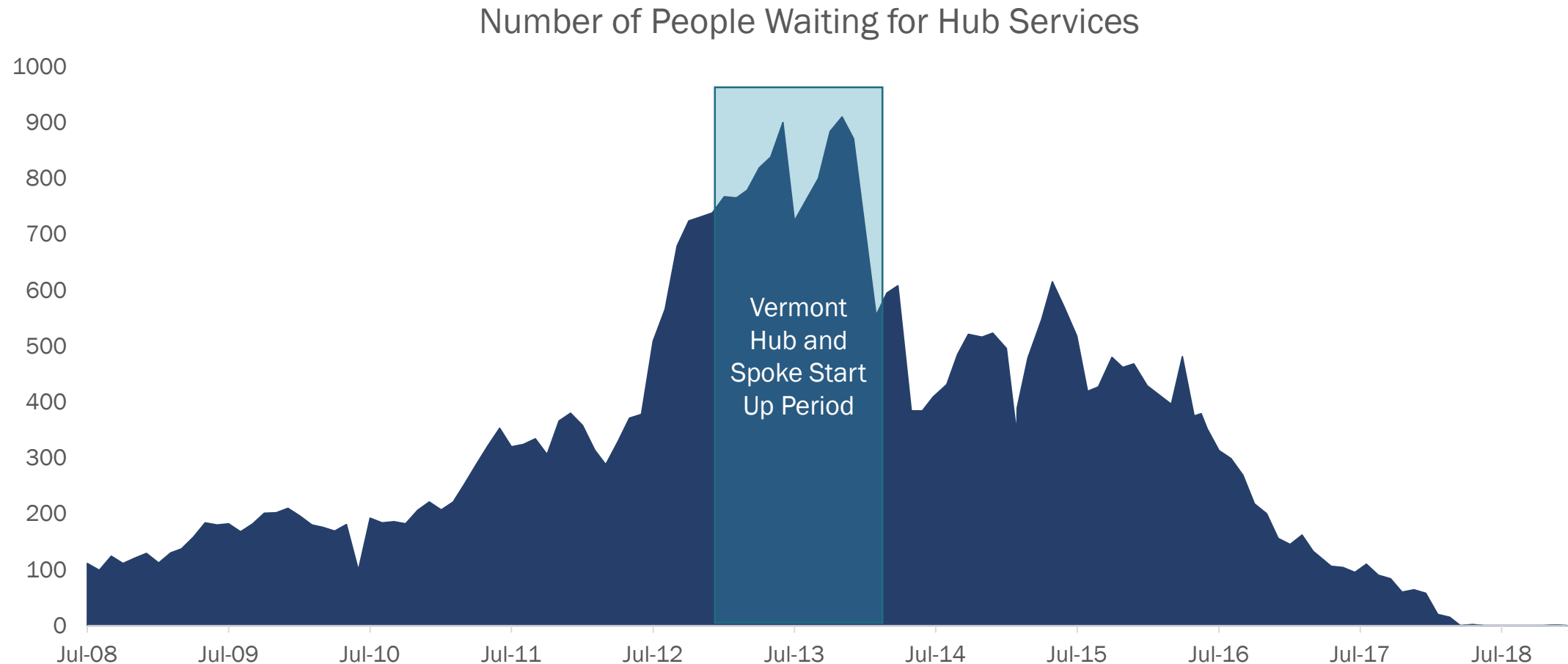
- ❑ Collaborative effort: Health Department, State Medicaid program, substance abuse treatment providers, primary care practices
- ❑ Pre-existing medical model of chronic disease management = PCMH
- ❑ “Culture” bidirectional integrated care system
- ❑ Medicaid 1115 waiver, Blueprint for Health, framework for health reform
- ❑ VDH = SOTA = historically oversaw OUD treatment

Vermont nearly doubled the number of people receiving Medication Assisted Treatment between 2014 and 2018

In 2018, 2.6% of the Vermont Population Age 18-64 Received MAT for OUD



Waits for medication assisted treatment in hubs were eliminated



Mostly Non-Controversial Innovations in Treatment

- ❑ Meet the person with OUD where they are
- ❑ Rapid access to MAT (“low barrier buprenorphine”)
 - ❑ In Emergency Departments and Hospitals
 - ❑ In Syringe Service Programs
 - ❑ In the correctional setting
 - ❑ In the NICU
- ❑ The first line of offense = peer recovery coaches
 - ❑ Issues:
 - ❑ Career/salary
 - ❑ Credentialing issues
 - ❑ Academic
 - ❑ Workforce
- ❑ Drug courts as a vehicle to MAT

Provision of MAT to individuals in corrections custody in RI was associated with decreased overdose fatalities after release from custody

- Screening and protocolized treatment with MAT is provided in the facility
- Those on MAT entering the facility stayed on MAT
- Those needing MAT received services in custody
- At release, inmates are transferred to community treatment providers – the provider is involved in the program at the facility

In the 2016 period, 26 of 179 individuals (14.5%) who died of an overdose were recently incarcerated compared with 9 of 157 individuals (5.7%) in the 2017 period, representing a 60.5% reduction in mortality

Green TC, Clarke J, Brinkley-Rubinstein L, et al. Postincarceration Fatal Overdoses After Implementing Medications for Addiction Treatment in a Statewide Correctional System. JAMA Psychiatry. 2018;75(4):405–407. doi:10.1001/jamapsychiatry.2017.4614

Controversial Aspects of Treatment

- ❑ The role and efficacy of residential programs
- ❑ The role and efficacy of faith-based programs
- ❑ The role and efficacy of abstinence based, 12 step programs
- ❑ The role and efficacy of telehealth
- ❑ Is counseling even needed with MAT?

It is Essential to Support Recovery

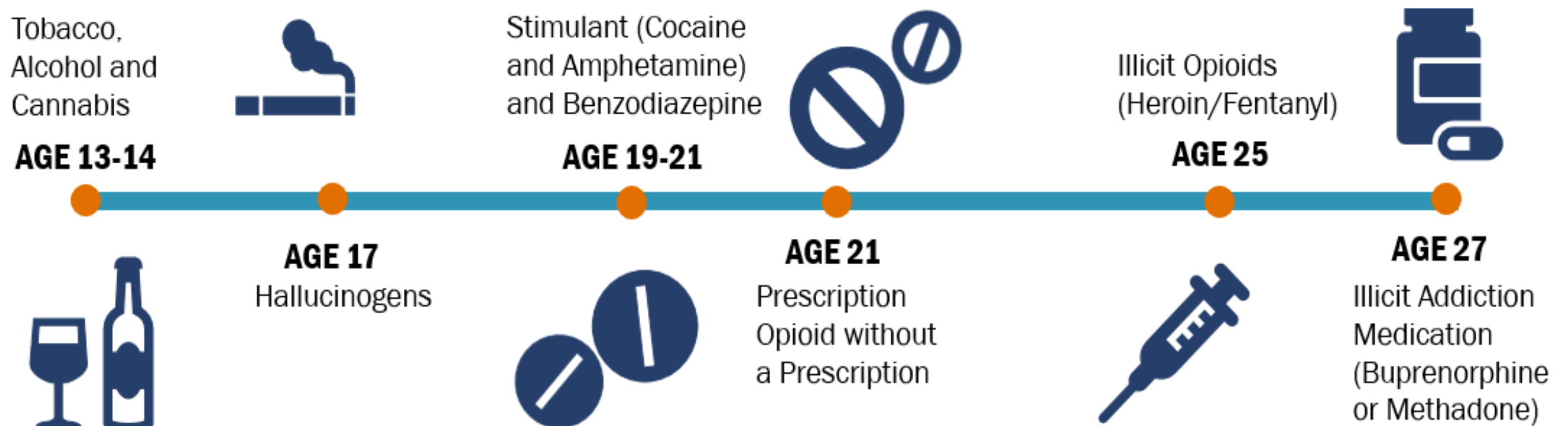
- ❑ Statewide network of recovery centers with a wide variety of supports and services
- ❑ Peer recovery coach training and use – Academy, certification, workforce
- ❑ Access to stable recovery housing
- ❑ Employment supports and opportunities for individuals in recovery
- ❑ Transportation supports

Prevention

Hope for a brighter future

People who use opioids typically use other substances before beginning to use opioids

Typical Substance Use History of Study Participants

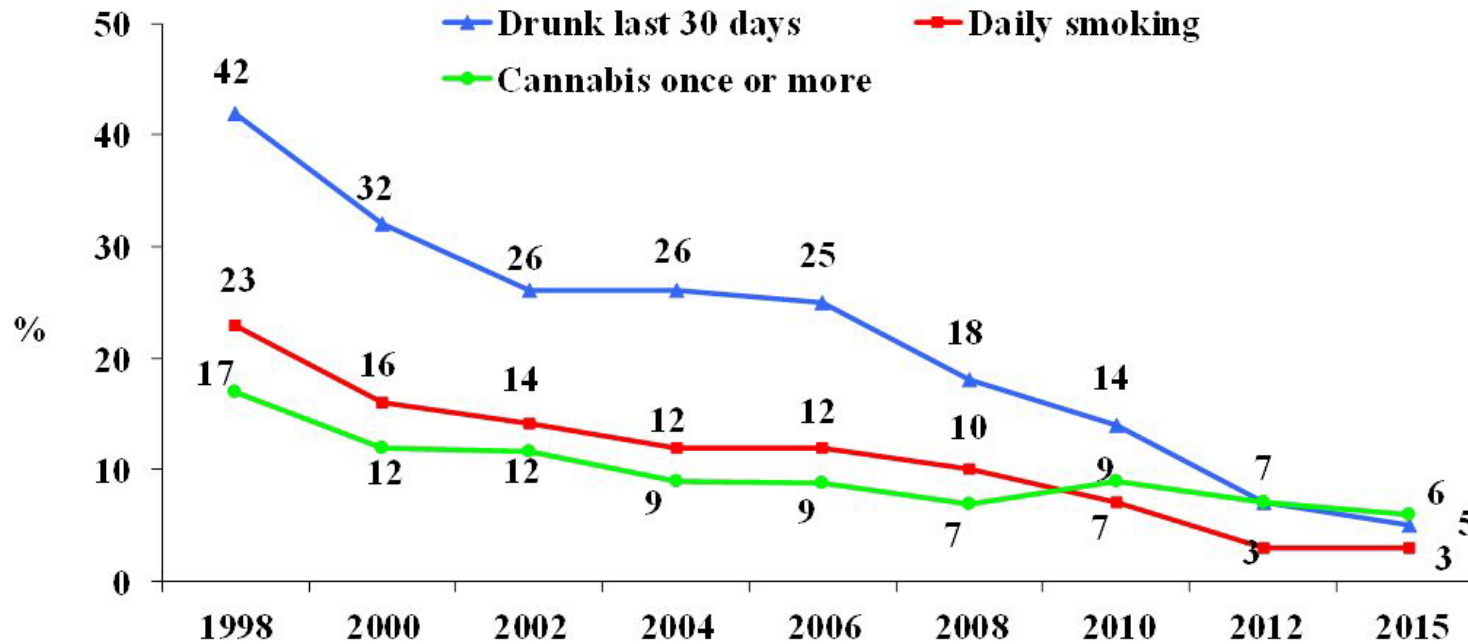


Our Future is in Prevention-Across the Lifespan

- ❑ Messaging campaigns and education to raise awareness, address stigma.
- ❑ Evidence-based nurse practitioner home visiting models – ACEs reduction.
- ❑ Afterschool curricula and activities for adolescents – the “third space”.
- ❑ Iceland model – community activation, parental investment, youth voice.
- ❑ School-based primary prevention programs.
- ❑ Community mobilization – developing and expanding community coalitions.

The Iceland Model

Substance use decrease amongst 15-16 year old adolescents



Source: StyleKristjansson, A. L., Mann, M. J., Sigfusson, J., Thorisdottir, I. E., Allegrante, J. P., & Sigfusdottir, I. D. (2019). Development and Guiding Principles of the Icelandic Model for Preventing Adolescent Substance Use. *Health Promotion Practice*.

Addressing Social Determinants...

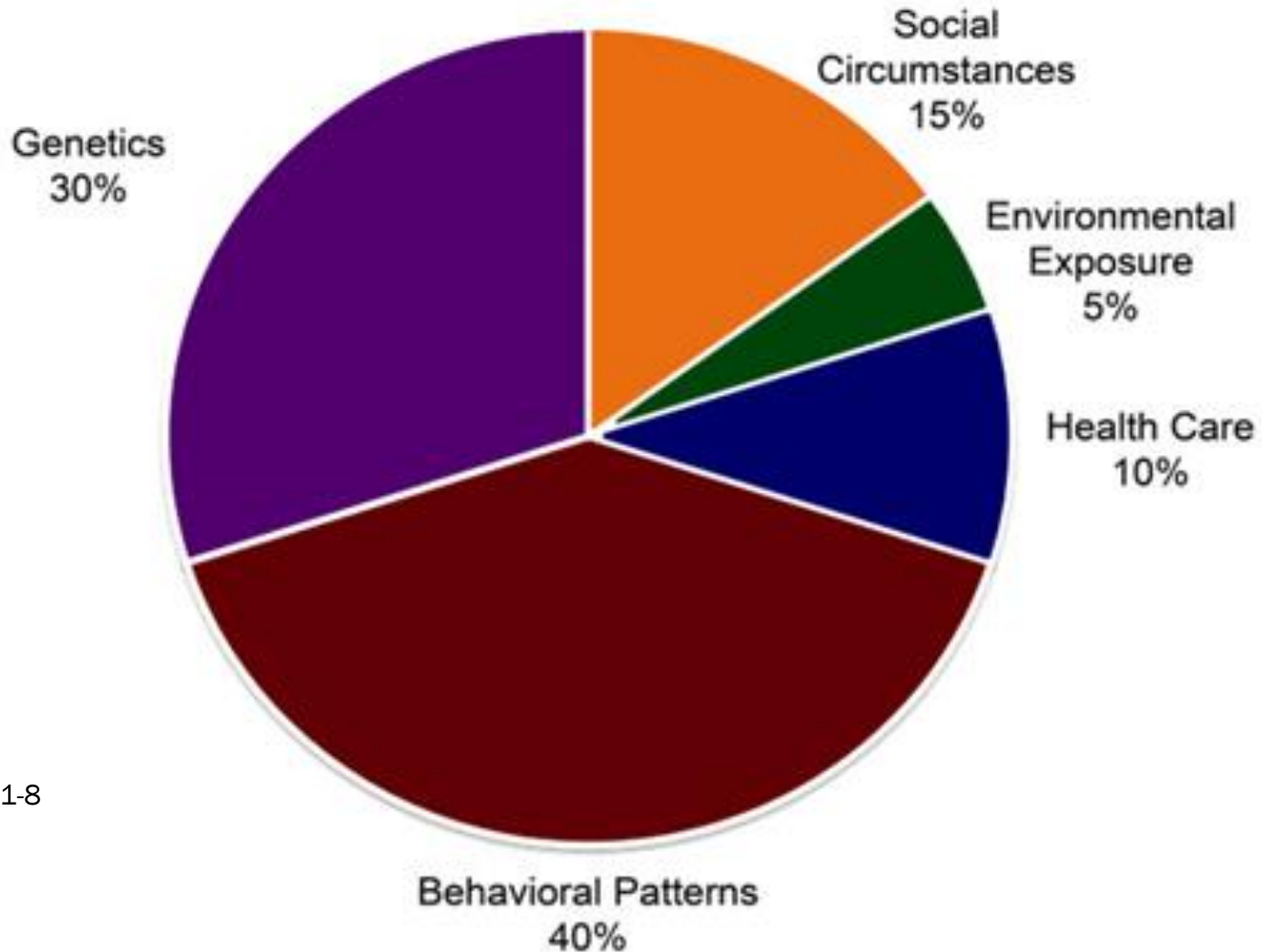
Annals of Internal Medicine

POSITION PAPER

Addressing Social Determinants to Improve Patient Care and Promote Health Equity: An American College of Physicians Position Paper

Hilary Daniel, BS; Sue S. Bornstein, MD; and Gregory C. Kane, MD; for the Health and Public Policy Committee of the American College of Physicians*

Factors that determine health



N Engl J Med 2007;357:1221-8

Factors that Affect Health

**Smallest
Impact**



**Largest
Impact**



Examples

Condoms, eat healthy
be physically active

Rx for high blood
pressure, high
cholesterol

Immunizations, brief
intervention, cessation
treatment, colonoscopy

Fluoridation, 0g trans
fat, iodization, smoke-
free laws, tobacco tax

Poverty, education,
housing, inequality

Which populations are most affected?

Disparities: Statistical differences in health that occur among populations defined by specific characteristics (e.g. age, sex) Could be from any cause.

Inequity: Differences in health outcomes that are avoidable, unfair, and shaped by condition of people's lives related to the distribution of money, power and resources.

Often associated with social categories of race, gender, ethnicity, social position, sexual orientation and disability.

Health Equity

Health equity exists when all people have a **fair and just** opportunity to be healthy, especially those who have experienced socioeconomic disadvantage, historical injustice and other **avoidable inequalities** that are often associated with social categories of race, gender, ethnicity, social position, sexual orientation and disability.

What is Health Equity?

EQUALITY VERSUS EQUITY



In the first image, it is assumed that everyone will benefit from the same supports. They are being treated equally.



In the second image, individuals are given different supports to make it possible for them to have equal access to the game. They are being treated equitably.



In the third image, all three can see the game without any supports or accommodations because the cause of the inequity was addressed. The systemic barrier has been removed.

In five years, if we have successfully worked towards achieving health equity, what would we have accomplished?

Vision: All people in Vermont have a fair and just opportunity to be healthy and live in healthy communities

Everyone feels respected, valued, included, and safe to pursue healthy and meaningful lives;

All ages, all abilities, and all Vermonters have equitable access to the conditions that create health;

Investments are focused on prevention and the conditions that create positive health outcomes; and

Services are available, accessible, affordable, coordinated, culturally and linguistically appropriate and offered with cultural humility.

Core Values: Equity • Affordability • Access



Affordable, Healthy, Local Food



Health and Prevention Services



Recreation, Parks and Natural Resources



Safe and Efficient Transportation



Safe, Quality Housing



Safe and Supported Community
Early Childhood Development



Economic Prosperity, Equitable
Law and Justice System



Family Wage Jobs and
Job Opportunities



Clean and Sustainable
Natural Environments



Quality Education



Strong, Vibrant Communities



Civic Engagement and
Community Connections

Priorities from the State Health Assessment

Health Conditions/Outcomes

- Child Development (*chD*)
- Chronic Disease (*CD*)
- Mental Health (*MH*)
- Oral Health (*OH*)
- Substance Use Disorder (*SU*)

Social Conditions (*SDOH*)

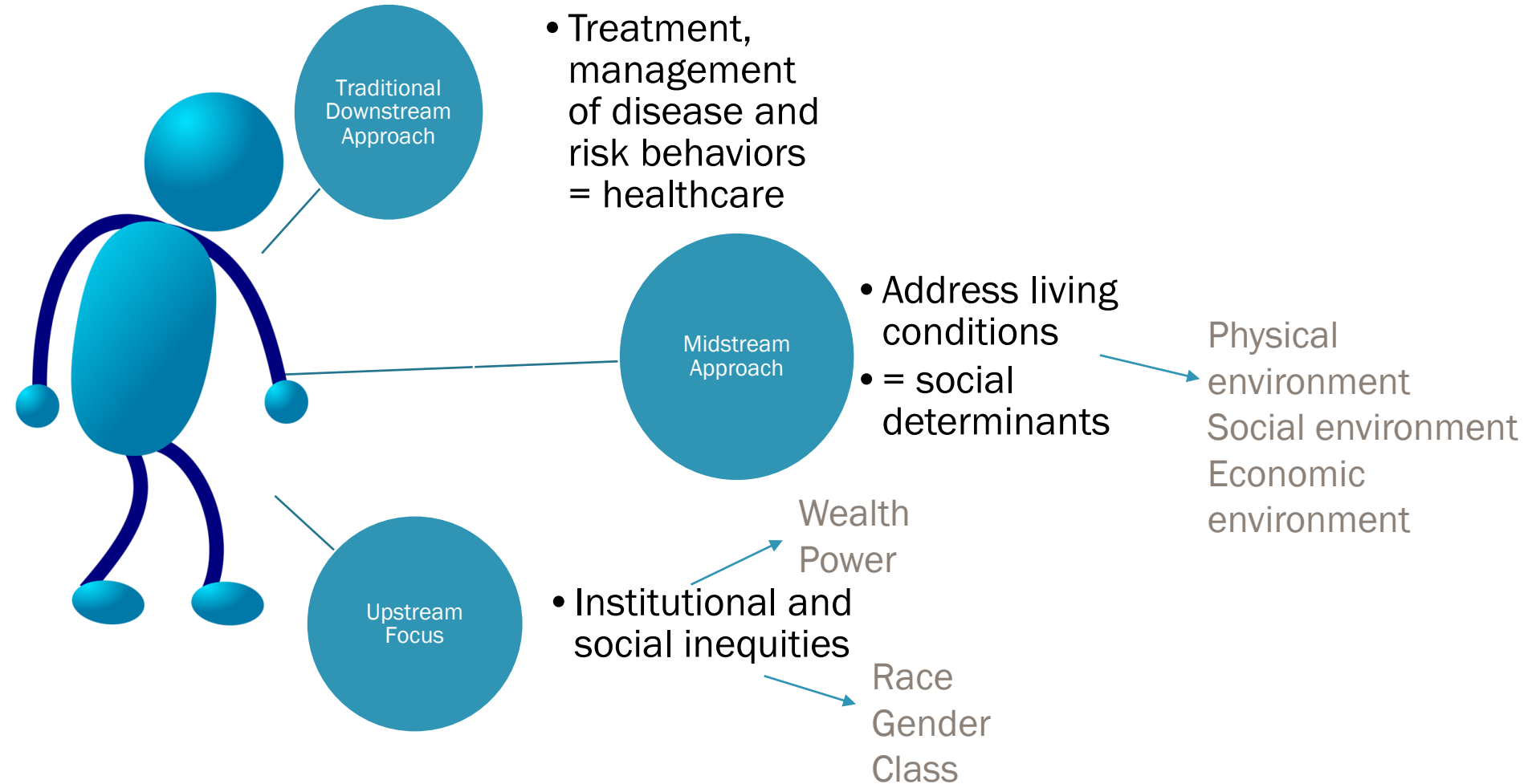
- Housing
- Transportation
- Food
- Income/Economic Stability

<http://www.healthvermont.gov/about/reports/state-health-assessment-2018>

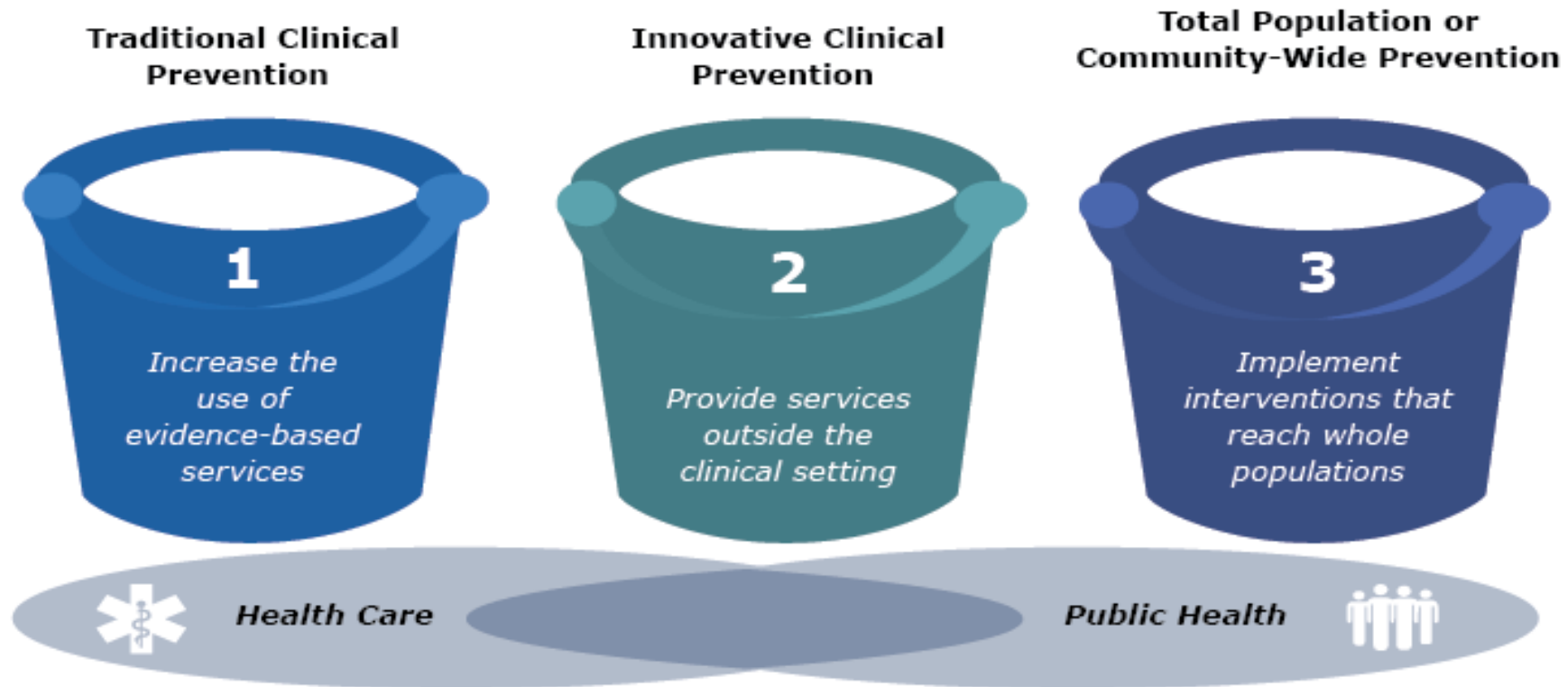
Populations in Focus

- Race, Ethnicity and Culture
- LGBTQ Identity
- People Living with Disabilities
- Social Class and Socioeconomic Status
- Rurality

Public Health Framework for Reducing Health Inequities



Framework for Strategies with Health Care Partners



To read more: <http://journal.lww.com/jphmp/toc/publishahead>



Each strategy is designed to improve one or more priority health and social conditions (color key below) –

State Health Improvement Strategies

Invest in policies and infrastructure that create healthy communities - page 6.

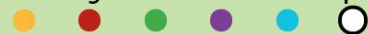
Implement policies and promote norms that encourage physical activity and healthy eating, and discourage tobacco, alcohol, drug use/misuse.



Use health care reform and regulatory levers to support access to food, housing, transportation.



Expand housing and weatherization programs.



Form partnerships and shared investments to expand transportation services.



Expand community water fluoridation.



Invest in programs that promote resilience, connection and belonging - page 8.

Expand access to home visiting programs.



Promote the *Strengthening Families* system.



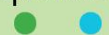
Expand opportunities such as mentoring, peer support and after-school programs for youth.



Implement strong school health and wellness plans, policies and programs.



Create community supports for people in recovery.



Implement *Zero Suicide* in health care systems.



Expand access to integrated person-centered care - page 10.

Integrate oral health, mental health, substance use disorder prevention into primary care.



Create a universal system for developmental screening and referrals for children and families.



Implement SBINS* for health behaviors, housing, transportation, food and economic security.



Integrate oral health into health care practice and other settings (nursing homes, schools, etc.).



Promote practice improvements and professional development for early care and learning providers.



* Screening, Brief Intervention & Navigation to Services

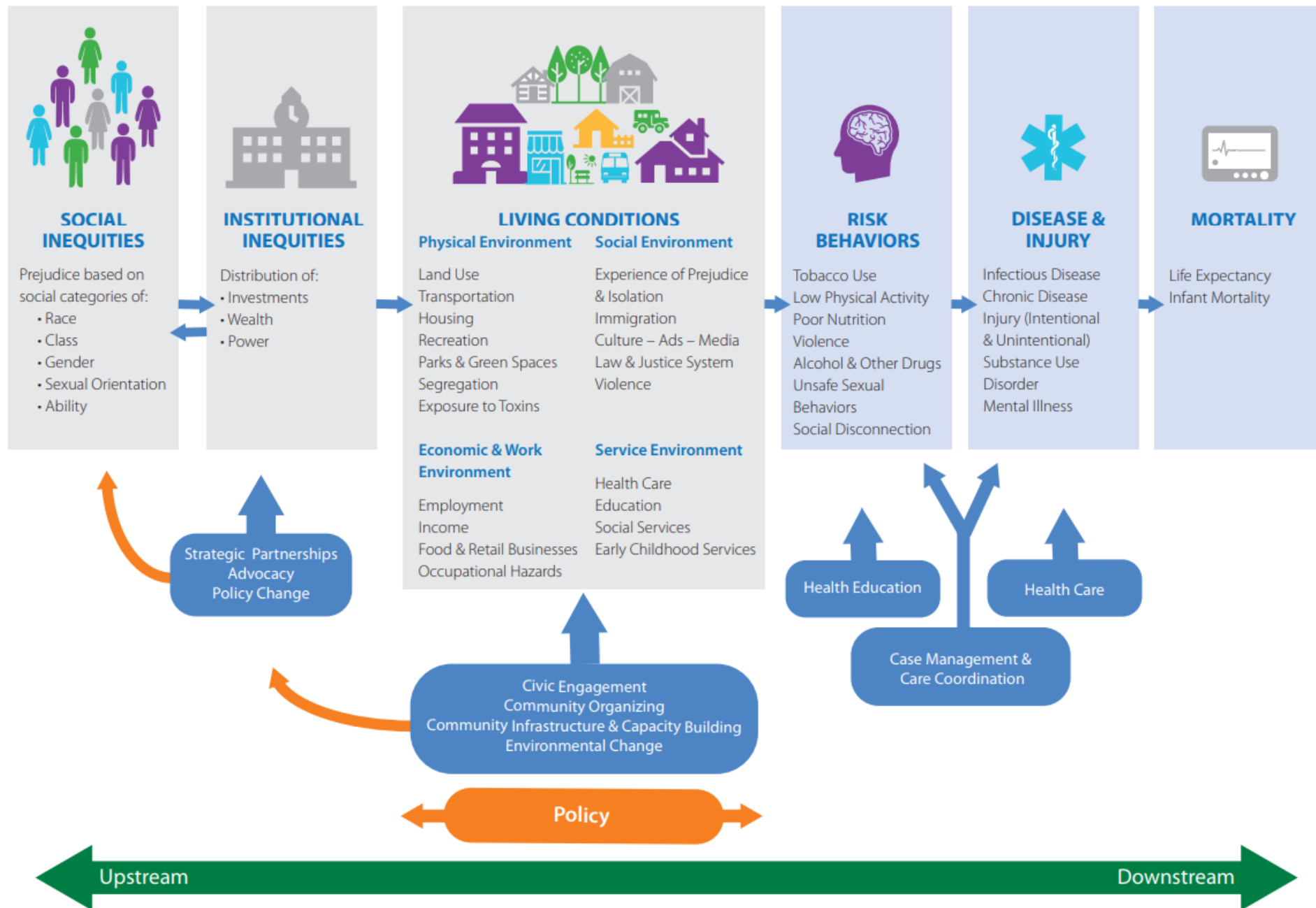
Adopt organizational and institutional practices that advance equity - page 12.

Meaningful community engagement • Equitable programs, policies and budgets • Respectful care and services • Informed actions and decisions



KEY – Child Development Chronic Disease Prevention Mental Health Oral Health Substance Use Prevention Housing, Transportation, Food & Economic Security

A Public Health Framework for Reducing Health Inequities



How IM Fits in, Per ACP

- Screen for SDoH and collect data to aid in health impact assessment and support evidence-driven decision making.
- Advocate for patients through advocacy for public policies that reduce socioeconomic inequities that have a negative impact on health.
- Support a robust medical education and research agenda.
- Support a health in all policies approach that integrates health considerations into community planning and development decisions.
- Use EHR systems as a tool to improve individual and population health.

Importantly:

- Understand the context of our patient's health, the person with the disease.
- Avoid increasing the complexity of patient care: documentation, quality, payment rules.
- Don't "medicalize" the SDoH and don't overwhelm the social services system.
- Instead of expecting health care to address and solve SDoH, we should strengthen our partners in social systems.

Ultimately, in an Environment that Values Health Equity in NH

- Everyone feels respected, valued, included, and safe to pursue healthy and meaningful lives;
- All ages, all abilities, and all citizens have equitable access to the conditions that create health;
- Investments are focused on prevention and the conditions that create positive health outcomes; and
- Services are available, accessible, affordable, coordinated, culturally and linguistically appropriate and offered with cultural humility.

Firearm-Related Injury and Death...

Annals of Internal Medicine

SPECIAL ARTICLE

Firearm-Related Injury and Death in the United States: A Call to Action From the Nation's Leading Physician and Public Health Professional Organizations

**Robert M. McLean, MD; Patrice Harris, MD; John Cullen, MD; Ronald V. Maier, MD; Kyle E. Yasuda, MD; Bruce J. Schwartz, MD;
and Georges C. Benjamin, MD**

US deaths by firearms

- A public health epidemic.
- 38,000 deaths per year nationwide.
- 85,000 nonfatal gun injuries

Vermont Data (2017)

- Age-adjusted rate of firearm deaths 11.5/100,000 (similar to US rate).
- Suicide death rate 17.3/100,00 : 52% by firearms.
- Most firearm deaths are due to suicide = 88% (9% homicides).
- Deaths/100,000 : male 20 female 31
- Injuries/100,000 : male 12 female .07

Firearm Safety Policy in Vermont, February, 2018

Jolted!

Results = 3 bills passed and signed

- Act 94 Background checks including private sales, purchase age 21 (with exceptions), bans on large capacity ammunition feeding devices (>10 rounds) and bump stocks.
- Act 92 Allows removal of firearms from person cited or arrested for domestic assault.
- Act 97 Allows certain prosecutors to act to temporarily (up to 6 months) disarm dangerous people using an Extreme Risk Protection Order.

Other Actions

- Strengthen school security (grants, media campaigns, shield laws).
- More focus placed on safe and healthy community legislation.
- Formed Violence Prevention Task Force.

Scientific Evidence: RAND Gun Policy in America initiative 2018

- What science tells us about the effects of gun policies on unintentional injuries and deaths, homicides and suicides.
- Only one policy had "supportive evidence" = child access prevention laws (safe storage laws).
- "Moderate evidence" for background checks, mental illness prohibition.
- "Minimal evidence" for age 21.
- Conclusion: very limited base of rigorous scientific evidence on effects of many commonly discussed policies.

Public Health Strategy

- Take the focus off of gun ownership commonsense regulations that lead to conflict.
- Conduct surveillance.
- Identify risk factors and protective factors.

Public Health Strategy

Broaden the PH perspective to behavior change to reduce gun violence:

- Apply media, education and taxation strategies like for tobacco.
- Apply safety lessons from strategies to decrease unintentional poisoning.
- Apply motor vehicle safety lessons (inspection, passive and active protections, licensing and age requirements) to gun violence.
- Establish resources for school and community-based prevention (access to mental health services, programs to address bullying).
- Investment in gun safety technology.

A Call to Action from Eight Health Professional Organizations and the Bar

Original Recommendations:

- Background checks for firearm purchases (dealers and private).
- Oppose physician gag law mandates.
- Improve access to mental health care and limit firearm access to those who might harm themselves or others.
- Restrict manufacture and sale of assault weapons and large capacity magazines.
- Fund research to support strategies to reduce injuries and deaths.

Additional Recommendations:

- Focus on intimate partner violence
- Safe storage essentials

Source: Ann Intern Med 2015; 162:513-516. Doi:10.7326/M15-0337

Goals

- Focus on the nexus of Public Health, Primary Care and ACP positions and policies:
 - Describe the elements of a comprehensive public health approach to the opioid epidemic, and successes in prevention, harm reduction, and treatment amidst ongoing challenges.
 - Explain health equity and address state and healthcare system approaches to the “social determinants”.
 - Discuss a public health approach to firearm-related injury and death.
 - Provide up to date information on the dual epidemics of ENDS use and EVALI.

Why Am I So Concerned About These Devices?

- Prevalence of use.
- Lack of perception of harm by youth.
- The power of flavors.
- The risk of nicotine addiction and lack of understanding by youth.
- Potential harms including chemicals, contaminants, metals.
- Ease of access for youth.
- Risk of co-addiction.
- Attractive price and lack of regulatory framework.

Potential Harms Unrelated to Nicotine

- Some known, many unknown
 - Vapors and aerosols – “volatile organic compounds”
 - Propylene glycol, formaldehyde, acetaldehyde
- Less harmful than cigarette smoke doesn't mean harmless
- Flavors
- Contaminants
- Metals
- Ultra-fine particles and lung health
- Burns, explosive injuries, respiratory symptoms

What's in E-Cig Aerosol?

<ul style="list-style-type: none"> • Propylene glycol • Glycerin • Flavorings (many) • Nicotine • NNN • NNK • NAB • NAT • Ethylbenzene • Benzene • Xylene • Toluene • Acetaldehyde • Formaldehyde • Naphthalene • Styrene • Benzo(b)fluoranthene 	<ul style="list-style-type: none"> • Chlorobenzene • Crotonaldehyde • Propionaldehyde • Benzaldehyde • Valeric acid • Hexanal • Fluorine • Anthracene • Pyrene • Acenaphthylene • Acenaphthene • Fluoranthene • Benz(a)anthracene • Chrysene • Retene • Benzo(a)pyrene • Indeno(1,2,3-cd)pyrene 	<ul style="list-style-type: none"> • Benzo(ghi)perylene • Acetone • Acrolein • Silver • Nickel • Tin • Sodium • Strontium • Barium • Aluminum • Chromium • Boron • Copper • Selenium • Arsenic • Nitrosamines, • Polycyclic aromatic hydrocarbons 	<ul style="list-style-type: none"> • Cadmium • Silicon • Lithium • Lead • Magnesium • Manganese • Potassium • Titanium • Zinc • Zirconium • Calcium • Iron • Sulfur • Vanadium • Cobalt • Rubidium
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Prevention in the IM Office

- Screen – specifically question vaping – SBIRT
- Appropriate messaging about use of ENDS as tobacco dependence treatment product.
- 5A's: Ask, Advise, Assess, Assist, Arrange Follow UP
- Quitline referrals

Vermont 2019 Legislation

- Extended 92% wholesale tax to products sold as tobacco substitute.
- Restricted internet sales (from licensed retailer only).
- Tobacco 21

The Current Epidemic – Case Definition

- Use of e-cigarette (vaping) in 90 days prior to symptoms.
- Symptoms = cough, dyspnea, chest pain, fatigue, G-I
- Pulmonary infiltrates on CXR, CT.
- Absence of infection on initial work up.
- No alternative plausible diagnosis.
- Currently: competing hypotheses
 - is this one etiology, one disease or multiple pathways
 - 1500 cases, 33 fatalities, youth and THC predominance

The Future – a ban on flavors