Hannon Act Section 204a: Statement of Task

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Director, HSR&D

February 3, 2023

AGENDA

- Overview of Congressional request and VA research (Dr. David Atkins)
- Overview of VA clinical practice and practice changes (Dr. Friedhelm Sandbrink)
- Overview of challenges and considerations (Dr. Jodie Trafton)

- Overview of VA data sources (Dr. Jodie Trafton)

Background- VA Process

Briefing by NASEM on "An Approach to Evaluate the Effects of Concomitant Prescribing of Opioids and Benzodiazepines on Veteran Deaths and Suicides"

September 2019

VA Technical Workgroup Reviewed protocol and prepared response ; VA leadership brief Congressional staff expressing concerns about feasibility of proposed design

October 2019 –February 2020

Continued discussion between Congressional staff, NASEM, VA subject matter experts. Hannon Act passed

February 2020 – October 2020

Discussions with NASEM and Hill staff. VA contracting. VA contract finalized September 2022.

Hannon Act Section 204a requirement with the National Academy of Science for Opioid and Benzodiazepine Mortality Assessment

Section 204 of the Commander John Scott Hannon Veterans Mental Health Care Improvement Act, which reads:

The Secretary of Veterans Affairs shall seek to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine under which the Secretary shall collaborate and coordinate with the National Academies on a **revised study design to fulfill the goals of the 2019 study design of the National Academies** described in the explanatory statement accompanying the Further Consolidated Appropriations Act, 2020 (Public Law 116-94), as part of current and additional research priorities of the Department of Veterans Affairs, **to evaluate the effects of opioids and benzodiazepine on all-cause mortality of veterans, including suicide, regardless of whether information relating to such deaths has been reported by the Centers for Disease Control and Prevention**.

VA Research: What we know and don't know about risks in Veterans

- Risk of overdose is higher among patients receiving higher doses of prescribed opioids
- Risk of suicide is higher among patients receiving higher prescribed opioid doses
- Risk of overdose is higher in patients receiving co-prescription of benzodiazepines
- Majority of deaths are in patients with co-morbid SUD and MH diagnoses
- Opioid prescribing and high-risk prescribing has fallen dramatically in VA but has not been accompanied by fall in overdoses
- A declining portion of overdose/suicide deaths have been in patients with a VA opioid prescription in last 12 months (< 50%)

What Makes Research Challenging for Outcomes in Patients on Opioids

- Policy changes in VA have significantly altered prescribing practices over time period in question – opioid prescribing peaked in 2012
- Patients often get prescribed opioids outside VA which may not be fully captured in VA records (visible in state Prescription Drug Monitoring Programs).
- Patients currently receiving concurrent opioids and benzodiazepines are a much more select group of patients than one decade ago.
- Different patients may be seen by different prescribers
  - Primary care vs. mental health

Background

- In response to previous Congressional direction, **NASEM prepared a protocol in September 2019** for examining harms associated with initiation and discontinuation of opioids in the presence of benzodiazepine treatment.
- That protocol suggested a **trial emulation design** where the target population consisted of patients newly initiating pain treatment, with comparisons between those starting opioids to those treated with nonopioid alternatives.
- The **exclusion criteria proposed in that protocol were at odds with VA stepped care practice** where opioids are prescribed only after other pain therapies (NSAIDs, etc.) have been tried.
- Calculations based on VA data indicated that **VA had only a fraction of the patients needed** to conduct meaningful analyses with the proposed study design.

Background: VA Considerations

- The VHA implemented the **Opioid Safety Initiative in 2013**, and prescribing practices changed as a result (to be reviewed by Dr. Sandbrink).
- The association of opioid or benzodiazepine receipt with adverse outcomes may be different after 2013. We suggest the analysis examine differential effects in different time periods. Given that change occurred gradually, the exact before/after time periods will need to be discussed and considered as part of the protocol.
- The VHA transitioned from using **ICD-9cm codes to ICD-10cm** codes in 2015, which increased the number of patients classified as having a chronic pain condition. But, neither ICD-9 or ICD-10 have a taxonomy for chronic pain. The criteria shall need to be discussed and considered as part of the protocol.

Background: VA Considerations

- To have sufficient sample sizes for analysis, a **relatively short "opioid free" or "benzodiazepine free" period** is recommended for defining new use of these medications, e.g., 3 months.
- Given that opioids are not a first-line pain treatment, we also recommend using **comparator treatments** that also represent an intensification of pain treatment after first-line treatments have been tried (e.g., gabapentinoids, SNRIs), and not excluding patients receiving first-line pain treatments.
- Relying only on VHA medical record data may be insufficient to identify all potential confounders that are associated with both receipt of opioids/benzodiazepines and risk of suicide, death, and other outcomes. The protocol prepared by NASEM includes approaches to improve over traditional methods.

Background: VA Considerations

- It is important to recognize the **role of different prescribers** in contributing to co-prescribing and the distinct patient populations that may be part of the population taking opioids and benzodiazepines.
- Specifically, patients who receive benzodiazepine prescriptions in specialty mental health care for anxiety disorders may subsequently get prescribed opioids for pain condition in primary or specialty medical care. They may differ in important ways, especially with respect to suicide risk, from patients with a chronic pain condition who are subsequently prescribed benzodiazepines in primary care.
- **Service location** is likely an important marker for mental health condition severity and consequently baseline suicide risk, and it should be taken account of in the design and analysis.

Scope

- Congress requested that the study quantify the effects of opioid and benzodiazepine prescribing on risk of death among Veterans who received care from the Veterans Health Administration between 2007 - 2019.
- Within the question posed by Congress, the treatment patterns of greatest clinical importance are: (a) the effect of co-prescribing a benzodiazepine among patients already receiving opioids, relative to alternative treatments for anxiety and other indications for benzodiazepines, (b) the effect of initiating opioids among patients already taking benzodiazepines, (c) the effect of tapering/discontinuing an opioid and/or benzodiazepine prescription in patients receiving the medications chronically.

VHA's Opioid Safety Initiative

NASEM Committee on Evaluating the Effects of Opioids and Benzodiazepines on All-Cause Mortality in Veterans
Feb 3, 2023

Friedhelm Sandbrink, MD

Executive Director, Pain Management, Opioid Safety, and Prescription Drug Monitoring Program (PMOP)
Specialty Care Program Office, Veterans Health Administration

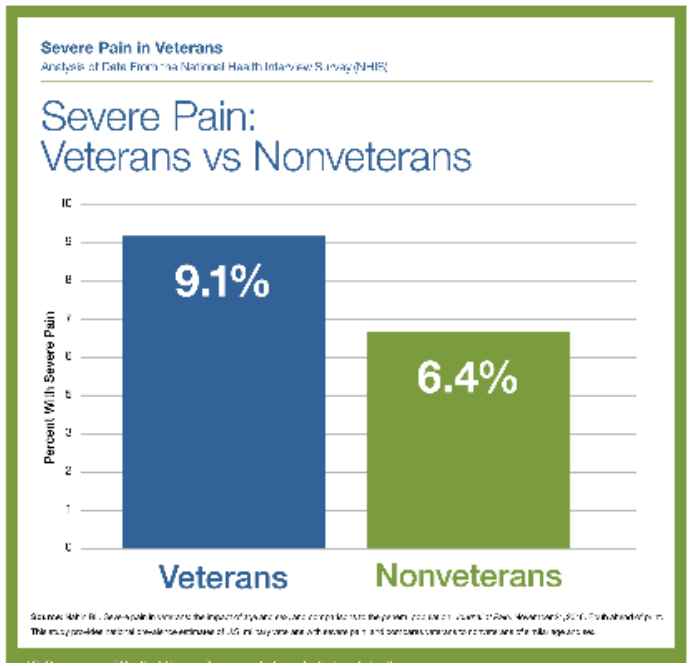
Director, Pain Management Program, Washington DC VA Medical Center

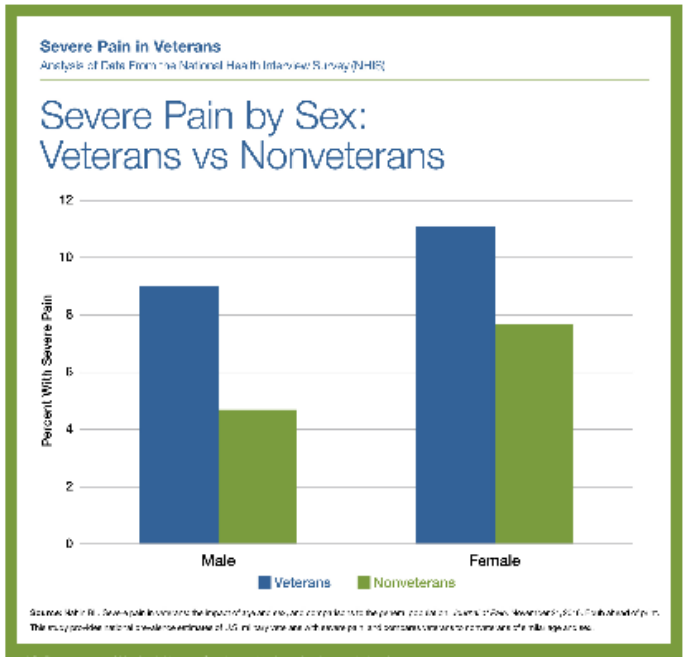
Prevalence of Pain Among Veterans in the US

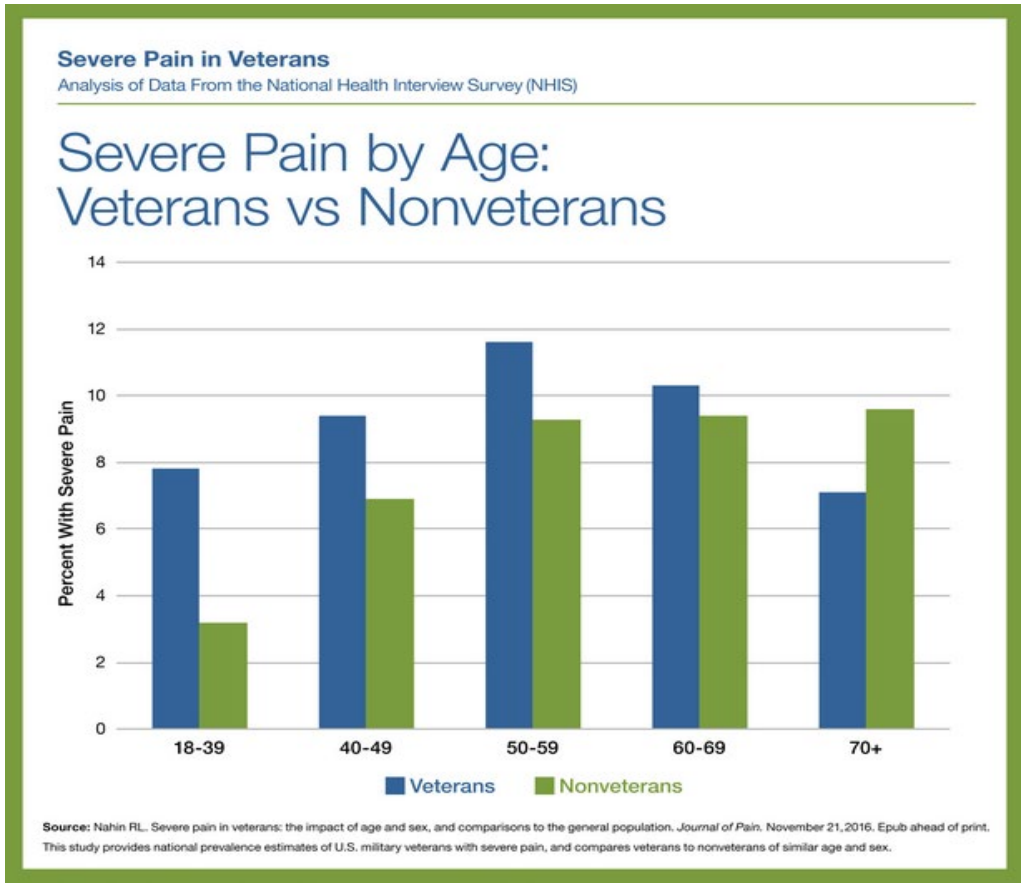
National Health Interview Survey 2016

- **Severe pain was reported by 9.1% of Veterans**, and thus was 40% more common than in non-veterans
  - pain that occurs “most days” or “every day” and bothers the individual “a lot”
- Musculoskeletal pain is the most common type reported (joint 44%, back 33%).

Chronic pain in Veterans is more often severe.

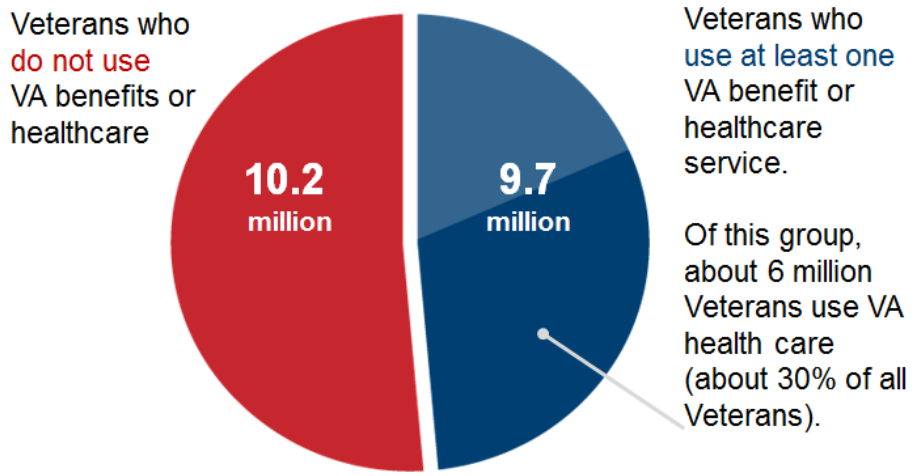






Pain Management and Opioid Safety in VHA Veterans

Pain in Veterans (in VHA):
1 in 3 with chronic pain diagnosis
1 in 5 with persistent pain
1 in 10 with severe persistent pain



- 6 Mil Veterans in in Primary Care
- 2 Mil with at least one pain diagnosis
- About 120,000 Veterans had at least one visit in a pain specialty clinic
  - 5.8% of Veterans with pain condition attended a pain clinic in VHA (2012 data)
  - **Pain clinic users** had higher rates of muscle spasms, neuralgia, neuritis, radiculitis, and fibromyalgia, as well as major depression and personality disorders
  - Patients attending pain specialty clinics have more difficult-to-treat pain conditions and comorbid psychiatric disorders, use more outpatient services, and receive more opioids.
  - ➔ **Inclusion of mental health care** in the specialized treatment of chronic pain

Increased Nonopioid Chronic Pain Treatment in VHA

2,095,938 Veterans incident chronic pain

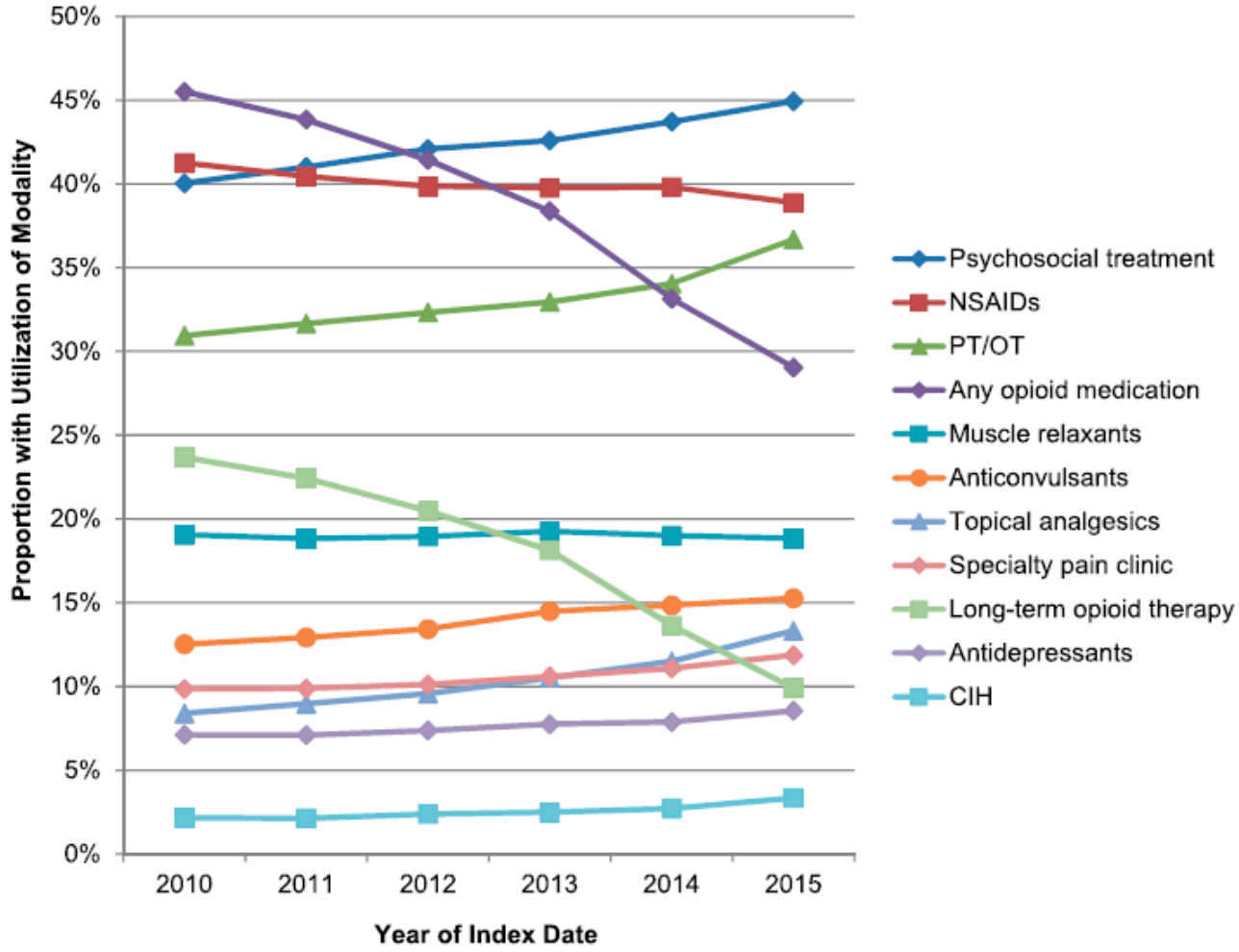
Pain diagnoses

- **Back pain** 27%
- **Neck** or other **joint pain** 34%
- **Migraine** 5%
- Neuropathy 3%
- Fibromyalgia 1%

MH and SUD diagnoses

- **Depression** 19%
- **Anxiety** 10%
- **PTSD** 14%
- Bipolar disorder 2%

- **Alcohol use disorder** 8%
- **Opioid use disorder** 1%
- Other SUD 5%



Frank et al. Pain Med. 2019 May 1;20(5):869-877

Pain Management and Opioid Safety in VHA Veterans

- **Mortality rate for opioid overdose is 1.5 x greater in VHA Veterans** than in the general US adult population.

  →***In 2016, there were 1,271 deaths of VHA Veterans from opioid overdose, or 3.5 per day.***

[1]Lin LA et al.. *Am J Prev Med. June 2019*

- **Suicide rate is about 1.5 x greater in VHA Veterans** than in the general US adult population.

  →***Pain is a common factor among Veterans who die by suicide;***

  → *there is a* ***close correlation between pain intensity, suicide risk and death rates.***

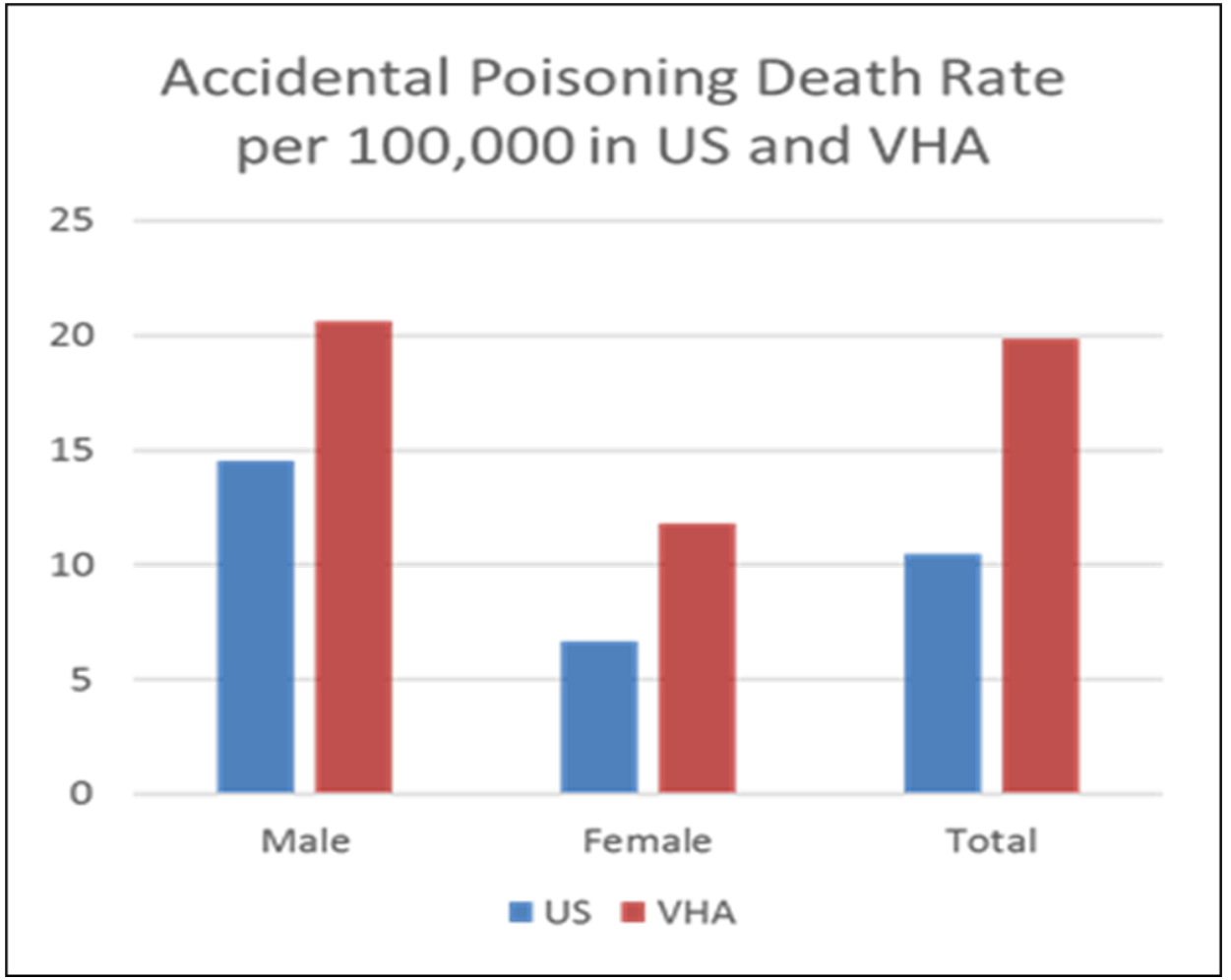
VHA Behavioral Health Autopsy Report

Ashrafioun et al., J Pain. 2019

VHA Opioid Safety Initiative (OSI)

"After accounting for gender and age distribution, **VHA patients had nearly twice the rate of fatal accidental poisoning compared with adults in the general US population**"

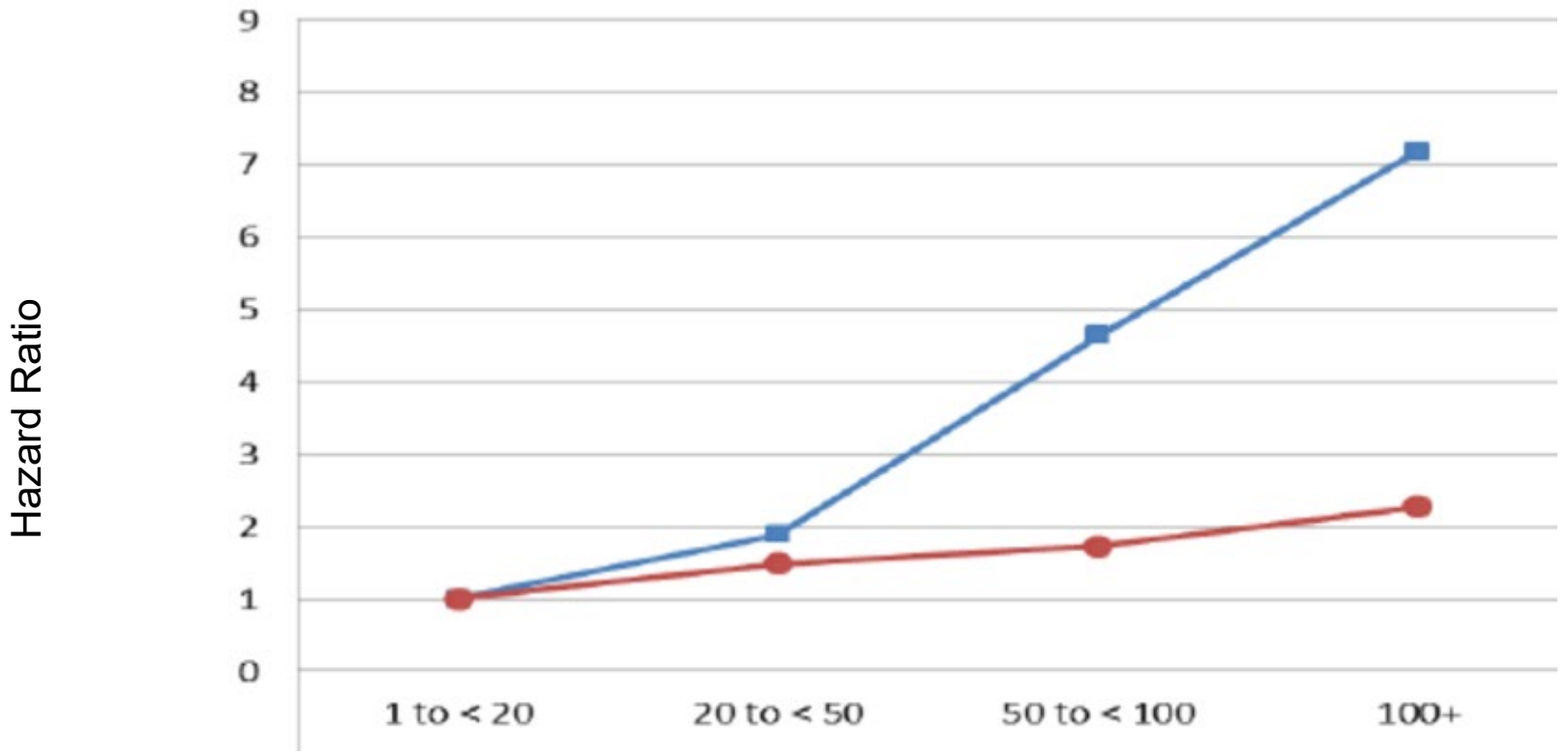
"Conclusions: The present work indicates that a substantial need exists for interventions to reduce the risk of accidental poisoning among VHA patients."



Bohnert et al, Medical Care 2011
Analysis of 2005 VHA data

Dosage and Risk of Overdose and Suicide from Opioids

Opioid Dose and Risk of Death (Patients with Chronic Pain)



Unintentional Overdose

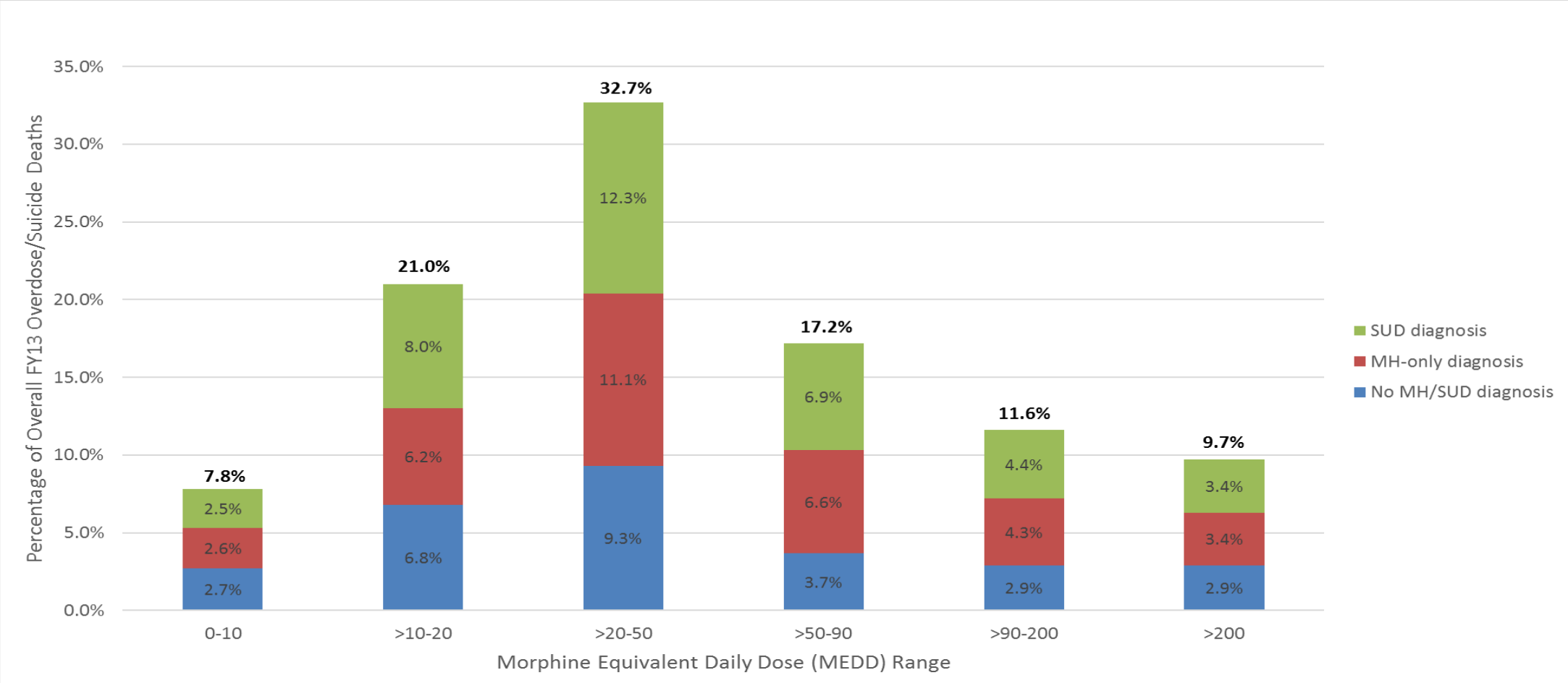
Suicide

Patients with prescribed opioids in FY 2004 or 2005

Followed until end of 2008 (unintentional OD) or 2009 (suicide).
Nested case control design

Bohnert AS et al. Association between opioid prescribing patterns and opioid overdose-related deaths. *JAMA*. 2011.
Ilgen MA et al. Opioid Dose and Risk of Suicide. Pain. 2016;157(5):1079-1084

FY2013/14 Overdose/Suicide Mortality - VHA



- Almost 4 out of every 5 patients who died from overdose/suicide were prescribed doses < 90 MEDD
- Almost 3 out of every 4 overdose/suicide deaths were among patients with MH/SUD diagnoses
- More than 1 out of every 2 deaths were among patients with MH/SUD diagnoses prescribed < 90 MEDD

Opioid Risk Factors for Overdose Death

Risk factors are related to:

- Opioid prescribing
- Interaction with other medication/drugs
- Medical comorbidities
- Mental health comorbidities

Prescribing

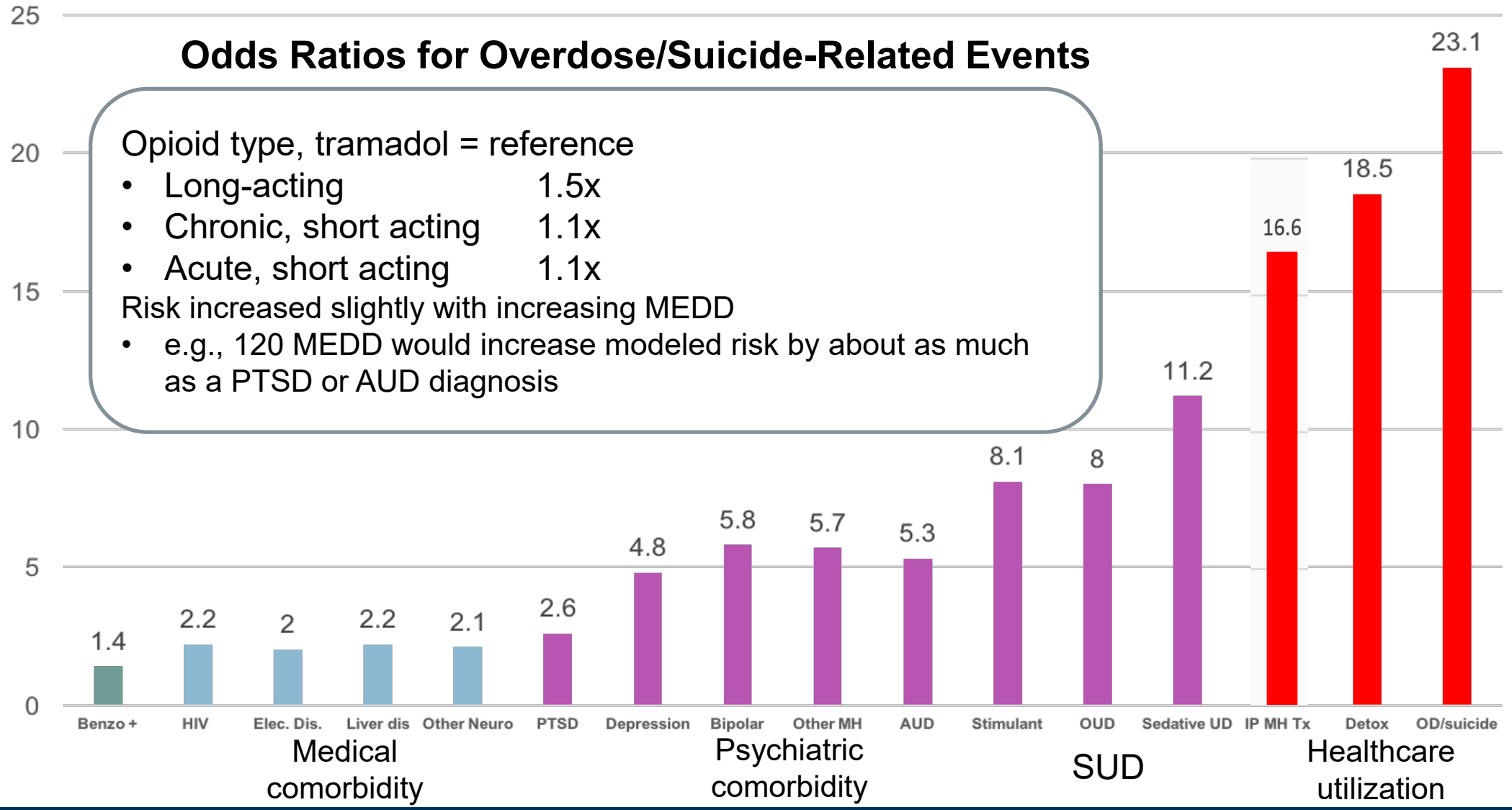
Patient factors

"**Opioid dosage** was the factor most consistently analyzed and also associated with increased risk of overdose. Other risk factors include **concurrent use of sedative hypnotics**, use of **extended-release/long-acting opioids**, and the presence of **substance use and other mental health disorder comorbidities**."

Park et al. J Addict Med 2016

Review of 15 articles published between 2007 and 2015 that examined risk factors for fatal and nonfatal overdose in patients receiving opioid analgesics.

Veterans: Risk Factors for Overdose/Suicide



STORM Analysis: Oliva et. al. Psych. Services 2017

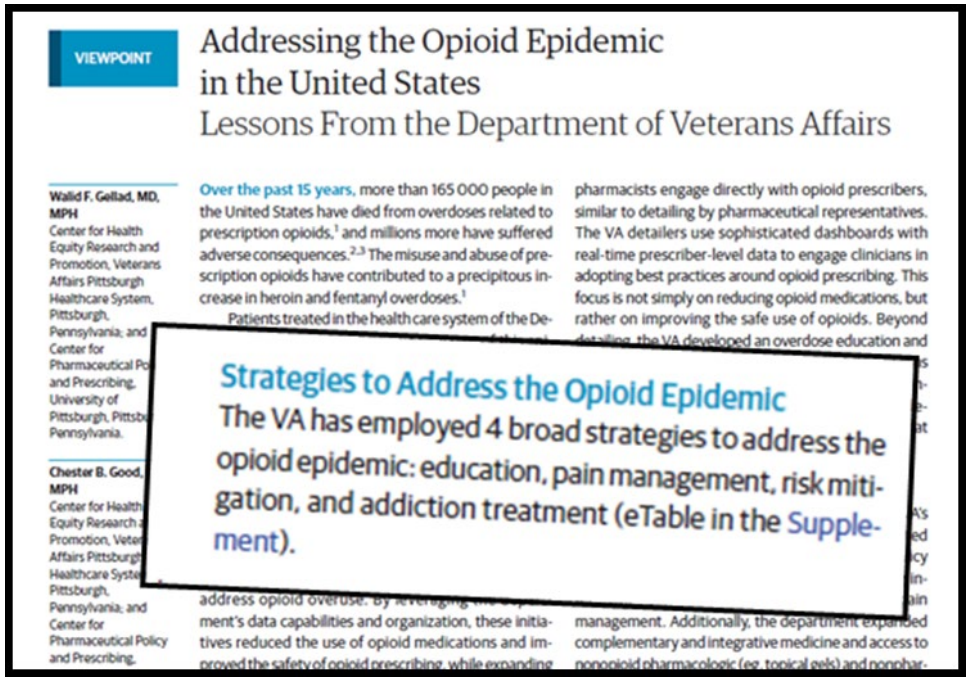
VHA Opioid Safety Initiative (OSI)

OSI was piloted in 2012 and implemented nationally in FY 2013

- **OSI Aims**
  - Safe and effective use of opioid therapy in alignment with evidence-based standards and when clinically indicated

- Comprehensive OSI strategy including
  - **Provider education; Academic Detailing**
  - **Access to non-pharmacological modalities**, incl. behavioral and CIH modalities

- **OSI Dashboard**
  - Totality of opioid use visible within VA
  - Provides feedback to stakeholders at VA facilities regarding key opioid parameters


VIEWPOINT

Addressing the Opioid Epidemic in the United States
Lessons From the Department of Veterans Affairs

Walid F. Gellad, MD, MPH
Center for Health Equity Research and Promotion, Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, Pennsylvania; and Center for Pharmaceutical Policy and Prescribing, University of Pittsburgh, Pittsburgh, Pennsylvania.

Chester B. Good, MPH
Center for Health Equity Research and Promotion, Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, Pennsylvania; and Center for Pharmaceutical Policy and Prescribing,

Over the past 15 years, more than 165 000 people in the United States have died from overdoses related to prescription opioids,[1] and millions more have suffered adverse consequences.[2,3] The misuse and abuse of prescription opioids have contributed to a precipitous increase in heroin and fentanyl overdoses.[1]

Patients treated in the health care system of the De-

Strategies to Address the Opioid Epidemic
The VA has employed 4 broad strategies to address the opioid epidemic: education, pain management, risk mitigation, and addiction treatment (eTable in the Supplement).

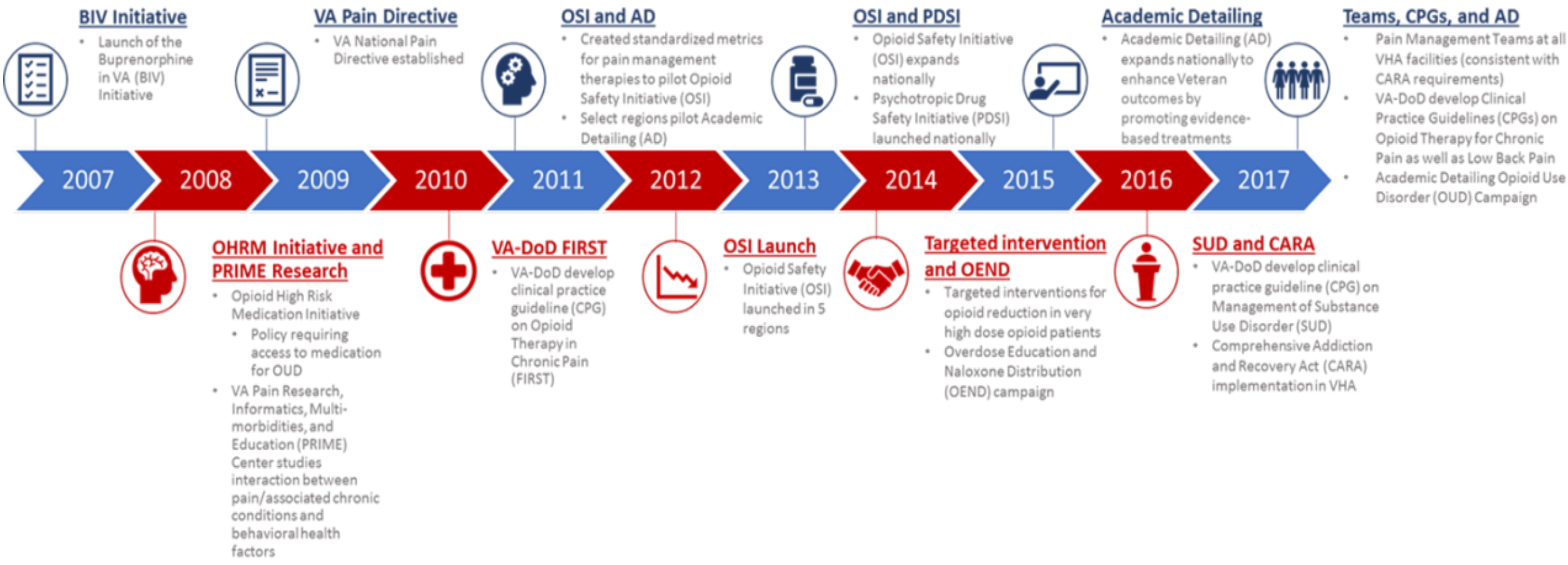
address opioid overuse. By leveraging the [redacted] ment's data capabilities and organization, these initiatives reduced the use of opioid medications and improved the safety of opioid prescribing, while expanding

pharmacists engage directly with opioid prescribers, similar to detailing by pharmaceutical representatives. The VA detailers use sophisticated dashboards with real-time prescriber-level data to engage clinicians in adopting best practices around opioid prescribing. This focus is not simply on reducing opioid medications, but rather on improving the safe use of opioids. Beyond detailing, the VA developed an overdose education and

management. Additionally, the department expanded complementary and integrative medicine and access to nonopioid pharmacologic (eg, topical gels) and nonphar-

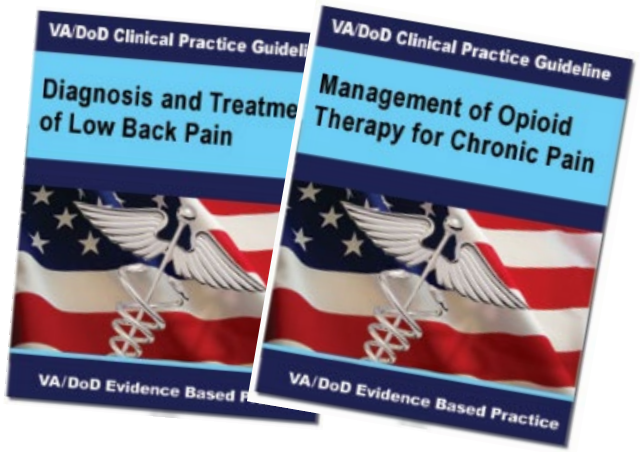
Gellad, Good CB, and Shulkin.
JAMA Intern Med. 2017 May 1;177:611-2

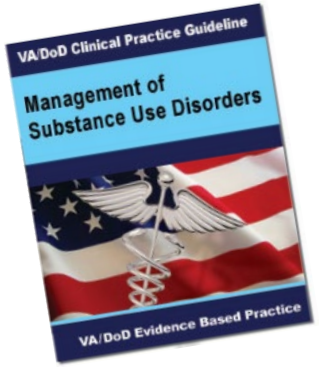
VHA Opioid Safety Initiative (OSI)



Clinical Practice Guidelines and Academic Detailing

VA/DoD Clinical Practice Guidelines: VA Office of Health Integrity collaborates with the Department of Defense, VA and DoD clinicians and clinical researchers, and experts in systematic review of the literature to create evidence-based guidance for common medical problems.





Use of Opioids in the Management of Chronic Pain
Lower Back Pain (LBP)
Headache ***
Assessment and Management of Patients at Risk for Suicide
Major Depressive Disorder (MDD)
Posttraumatic Stress Disorder (PTSD) ***
Substance Use Disorder (SUD)

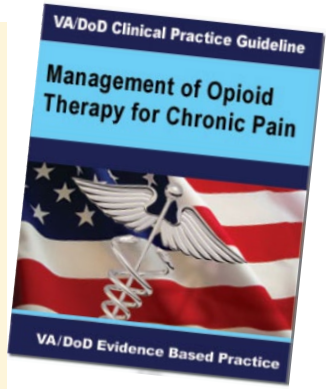
*** Update of CPG in Progress

Academic Detailing of VA Employed Health Care Professionals: VA has implemented a system-wide program to educate clinicians on topics such as safe opioid prescribing and evidence-based practice. Academic detailers review prescribing patterns and can provide targeted education for health care professionals to improve knowledge and quality of care delivered.

VA/DoD Clinical Practice Guideline: Opioid Therapy (2022)

– VA/DoD CPG includes 20 recommendations, organized in 4 topic areas

- Initiation and Continuation of Opioids



* 1. We **recommend against the initiation of opioid therapy for the management of chronic non-cancer pain.**

2. We recommend **against long-term opioid therapy, particularly for younger age groups**, as age is inversely associated with the risk of opioid use disorder and overdose.

3. We recommend **against long-term opioid therapy, particularly for patients with chronic pain who have a substance use disorder.**

4. For patients receiving medication for opioid use disorder, there is **insufficient evidence to recommend for or against the selection of any one of the following medications over the other for the management of their co-occurring chronic pain: methadone, buprenorphine, or extended-release naltrexone injection**. Treat the opioid use disorder according to the VA/DoD CPG for SUD.

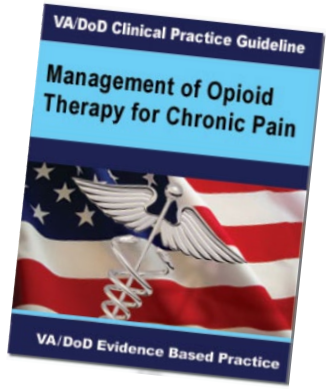
* 5. For patients receiving daily opioids for the treatment of chronic pain, we suggest the use of **buprenorphine instead of full agonist opioids** due to lower risk of overdose and misuse.

* 6. We recommend **against the concurrent use of benzodiazepines and opioids** for chronic pain (refer to Recommendation 10 in the VA/DoD CPG for SUD for guidance related to tapering).

VA/DoD Clinical Practice Guideline: Opioid Therapy (2022)

- Dose, Duration, and Taper of Opioids

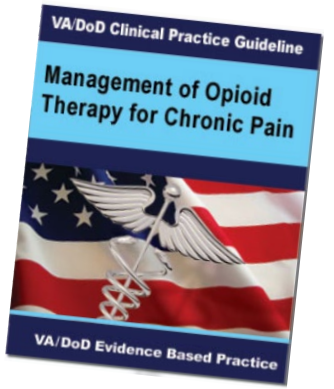
7. If prescribing opioids, we recommend using the **lowest dose** of opioids as indicated by patient-specific risks and benefits.
8. If considering an increase in opioid dosage, we recommend **reevaluation of patient-specific risks and benefits** and monitoring for adverse events including opioid use disorder and risk of overdose with increasing dosage.
9. When prescribing opioids, we recommend the **shortest duration** as indicated.
10. * After **initiating opioid therapy, we recommend reevaluation at 30 days or fewer and frequent follow-up visits**, if opioids are to be continued.
11. We recommend against prescribing long-acting opioids: · For acute pain · As an as-needed medication
12. * We suggest a **collaborative, patient-centered approach to opioid tapering.**
13. There is insufficient evidence to recommend for or against any specific tapering strategies.



VA/DoD Clinical Practice Guideline: Opioid Therapy (2022)

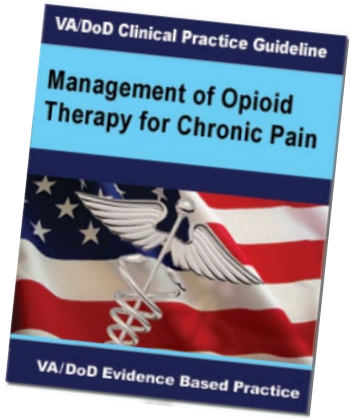
- Screening, Assessment, and Evaluation

14. We recommend **assessing risk of suicide and self-directed violence** when initiating, continuing, changing, or discontinuing long-term opioid therapy (refer to the VA/DoD CPG for Suicide).
15. For patients with chronic pain, we recommend **assessing for behavioral health conditions, history of traumatic brain injury, and psychological factors** (e.g., negative affect, pain catastrophizing) when considering long-term opioid therapy, as these conditions are associated with a higher risk of harm.
16. For patients with acute pain when opioids are being considered, we suggest screening for **pain catastrophizing and co-occurring behavioral health conditions** to identify those at higher risk for negative outcomes.
17. For patients on opioids, we suggest **ongoing reevaluation of the benefits and harms of continued opioid prescribing** based on individual patient risk characteristics.



VA/DoD Clinical Practice Guideline: Opioid Therapy (2022)

- Risk Mitigation



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18. We suggest **urine drug testing** for patients on long-term opioids.
19. We suggest **interdisciplinary care** that addresses pain and/or behavioral health problems, including substance use disorders, for patients presenting with high risk and/or aberrant behavior.
20. We suggest providing patients with **pre-operative opioid and pain management education** to decrease the risk of prolonged opioid use for post-surgical pain.

VHA Opioid Safety Initiative: OSI Parameters and Policies (selected)

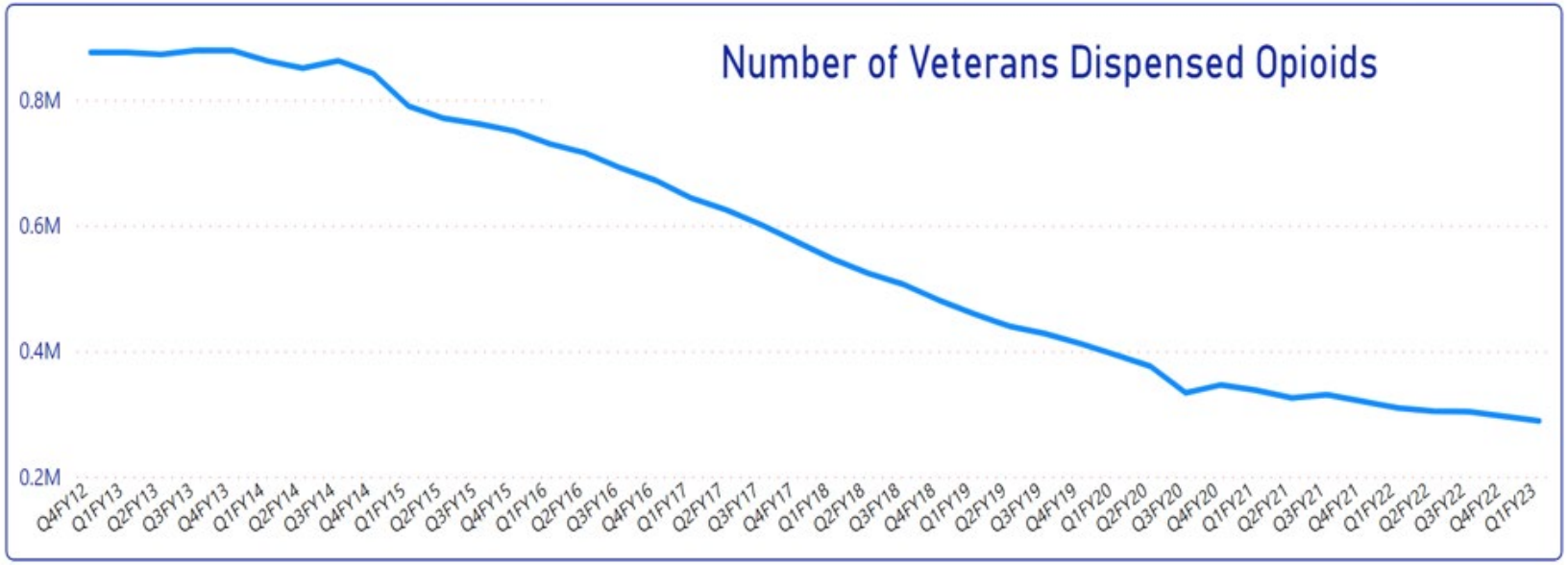
OSI Dashboard

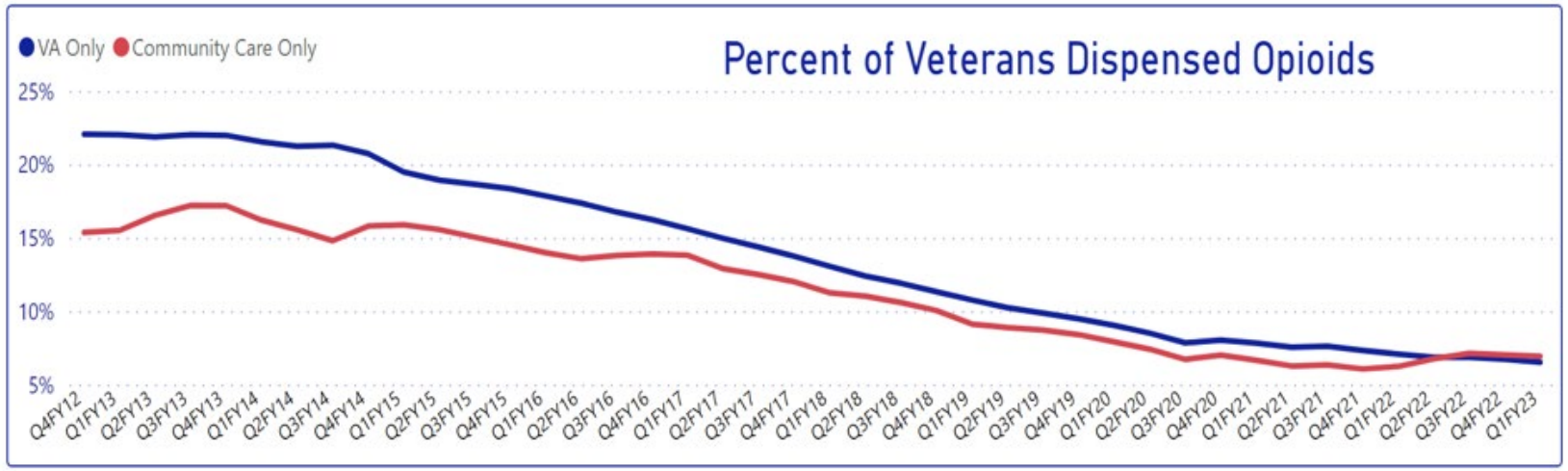
1. **Opioid use overall**, and long-term opioid use
2. **Opioid and Benzo co-prescribing**
3. **High dose ≥ 90 MEDD**
4. **New starts for Long-Term Opioid Therapy (LTOT, i.e., ≥ 90 days)**
5. **Urine Drug Testing (for LTOT)** at least annually and more often, if clinically indicated

Other OSI parameters/risk mitigation strategies (implementation/guidance year):

- **Informed consent** (2014) for pts on LTOT (90 d)
- **PDMP checks** (2016) at initiation and at least annually for all controlled medications if > 5 d supply
- **Overdose Education and Naloxone Distribution** (2014) broad inclusion, no cost to Veterans
- **Timely f/u** within 1-4 weeks after dosage change, and at least q3 months to review care (2017)
- **OSI Risk Reviews based on STORM** (2018) optimize care of pts with very high risk for OD/suicide, and assess risk prior to initiation of opioid therapy

Opioid Prescribing in VHA: All Opioids





Change

586,368

(Decrease)

Percent Change

67 %

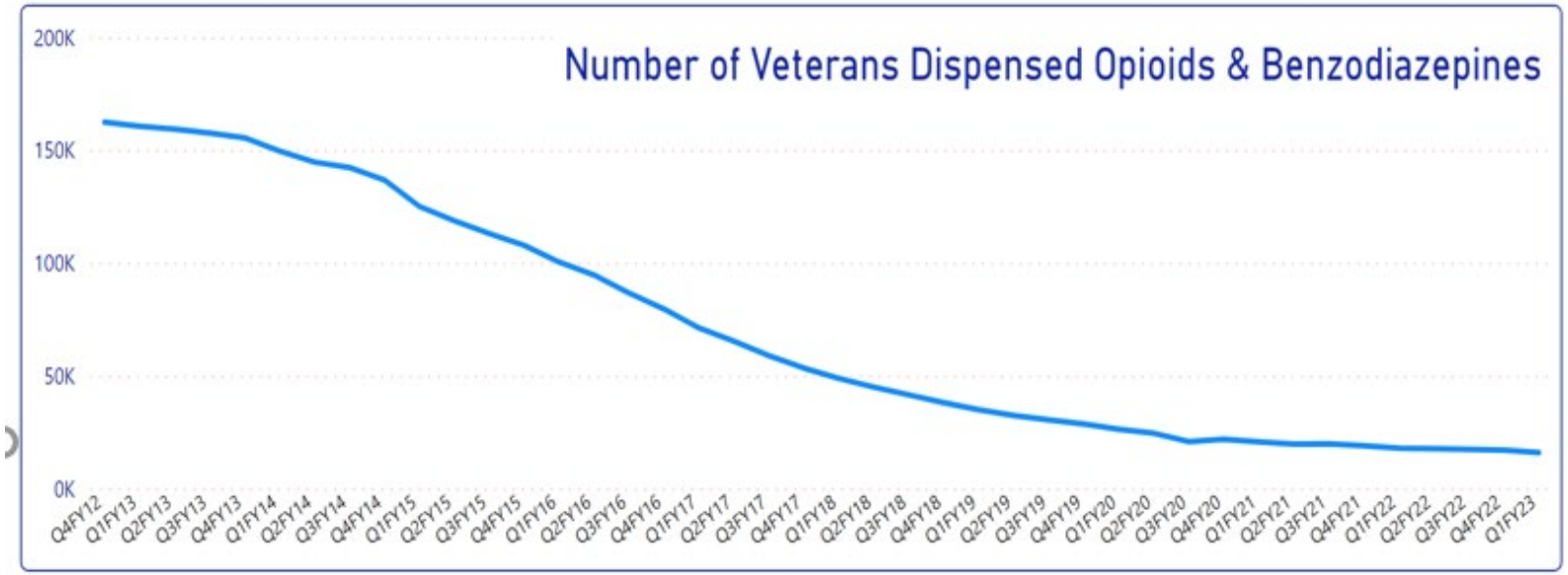
(Decrease)

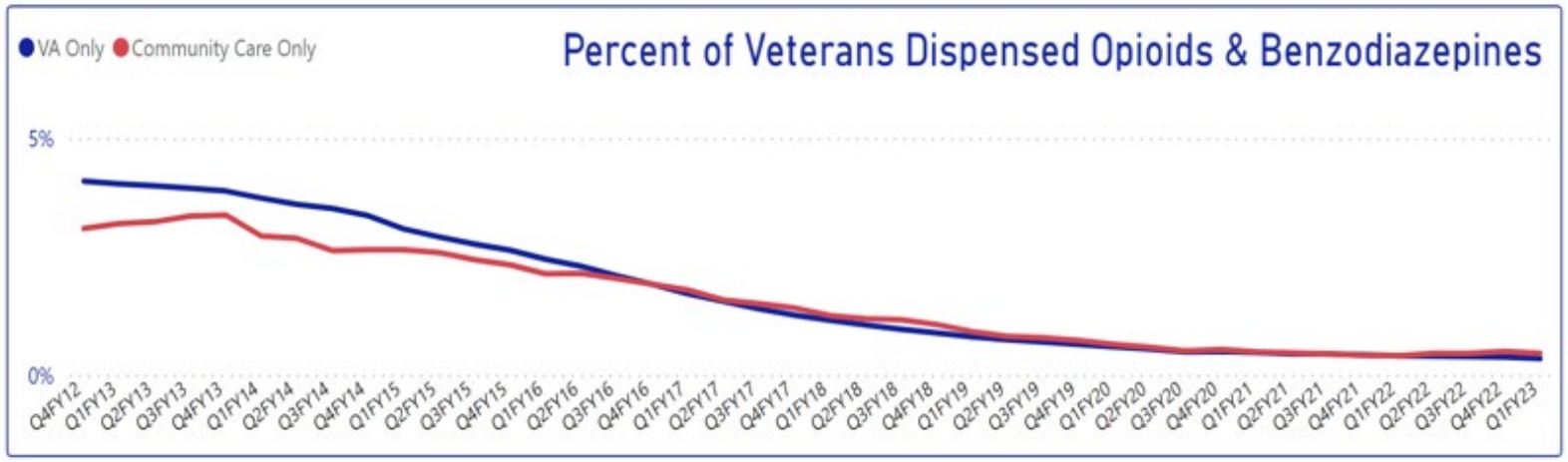
Fiscal Quarter	Total	Percent
Q4FY12	874,897	22.10%
Q1FY23	288,529	6.99%

*Starting with Q1FY21 data for VA medical facilities utilizing Cerner are incomplete. At this time, VISN 10 and 20 sites in Columbus, Spokane, Walla Walla, Roseburg and White City are impacted.

Source: Pharmacy Benefits Management (PBM) Services

Opioid & Benzodiazepine Use in VHA





Change
146,522
(Decrease)

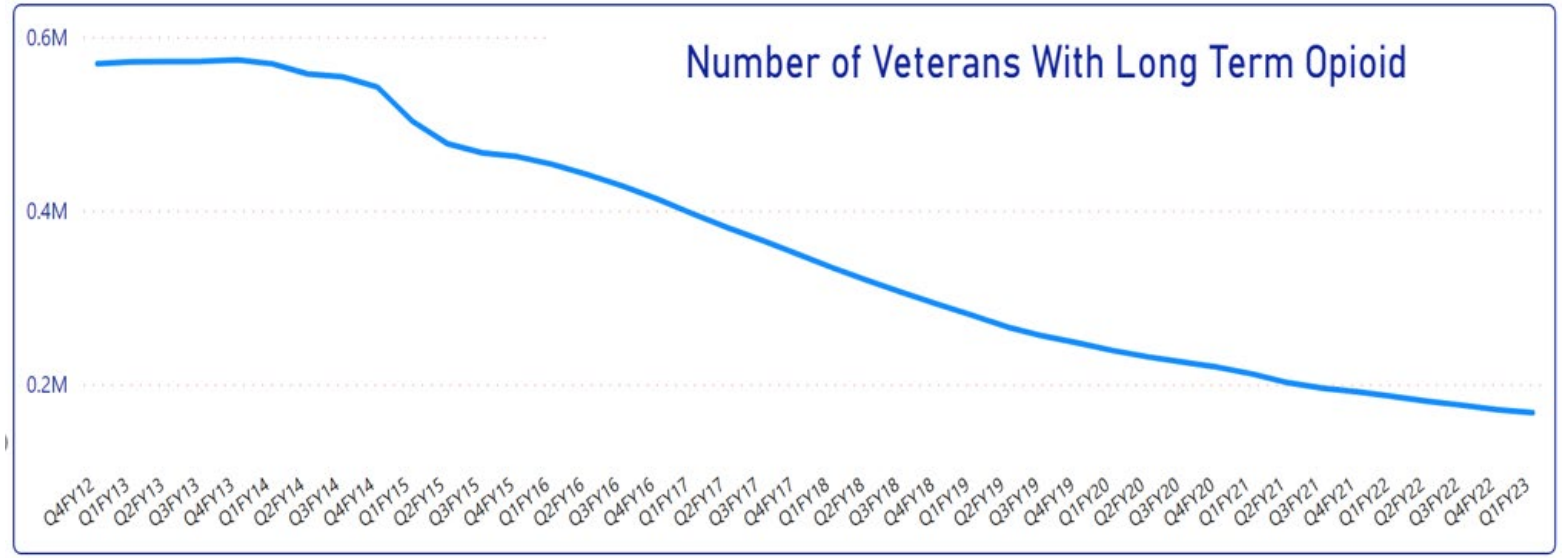
Percent Change
90 %
(Decrease)

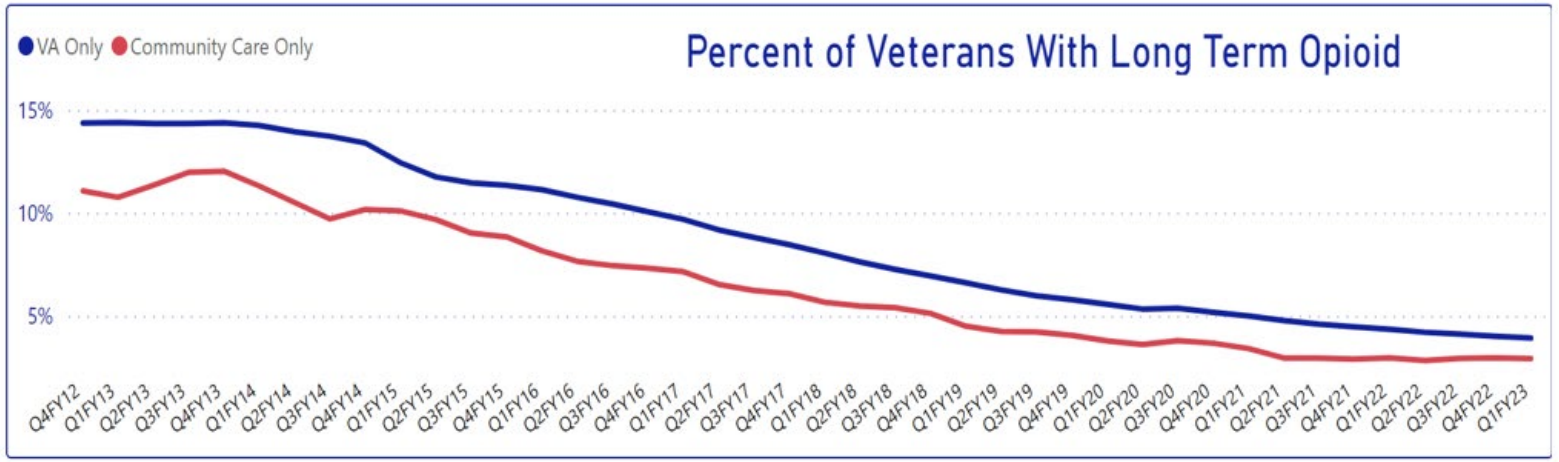
Fiscal Quarter	Total	Percent
Q4FY12	162,444	4.10%
Q1FY23	15,922	0.39%

*Starting with Q1FY21 data for VA medical facilities utilizing Cerner are incomplete. At this time, VISN 10 and 20 sites in Columbus, Spokane, Walla Walla, Roseburg and White City are impacted.

Source: Pharmacy Benefits Management (PBM) Services

Opioid Prescribing in VHA: Long Term Opioid Therapy (LTOT)





Change
401,704
(Decrease)

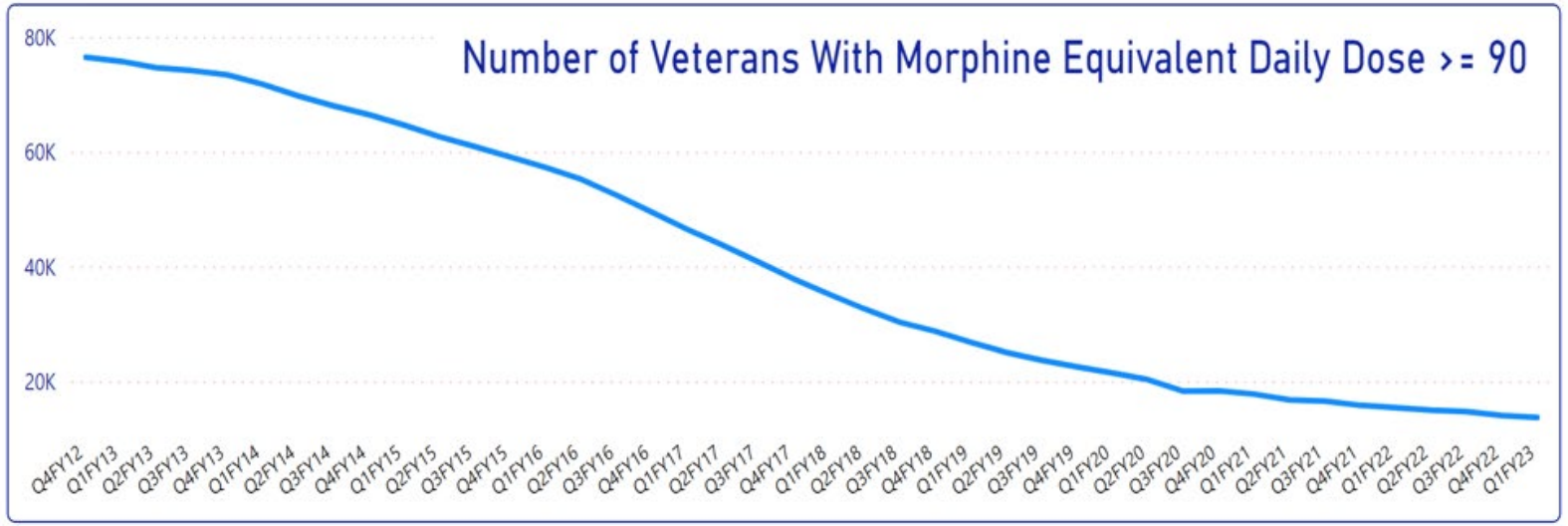
Percent Change
71 %
(Decrease)

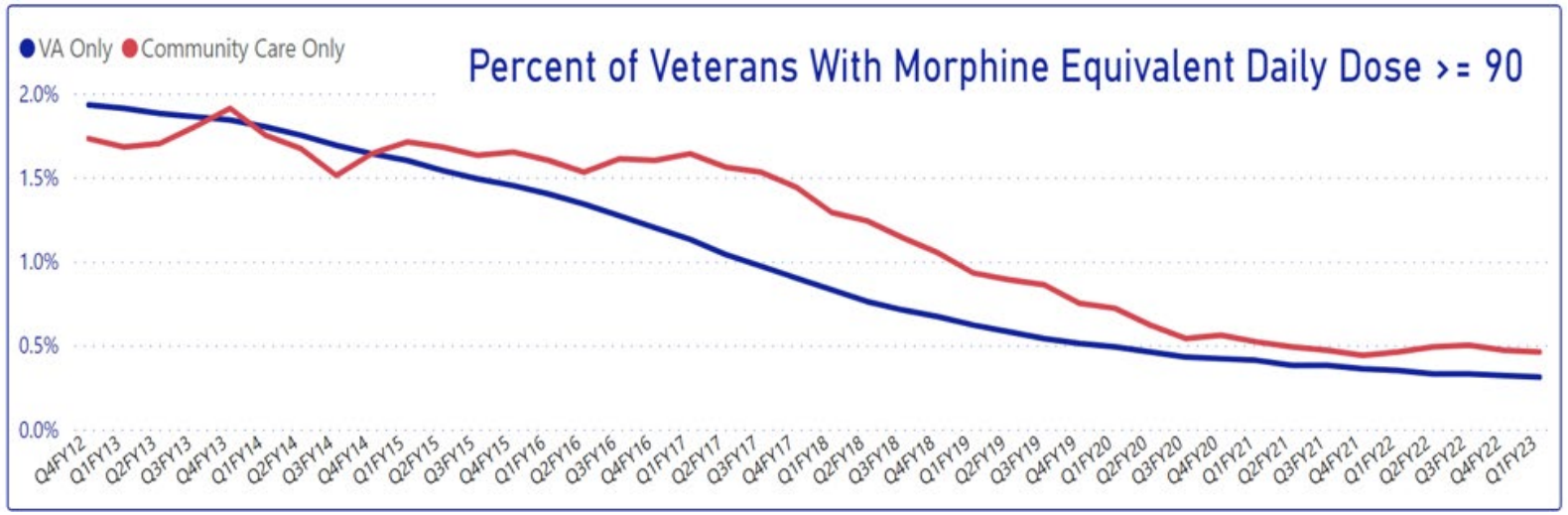
Fiscal Quarter	Total	Percent
Q4FY12	569,027	14.37%
Q1FY23	167,323	4.05%

*Starting with Q1FY21 data for VA medical facilities utilizing Cerner are incomplete. At this time, VISN 10 and 20 sites in Columbus, Spokane, Walla Walla, Roseburg and White City are impacted.

Source: Pharmacy Benefits Management (PBM) Services

Opioid Prescribing in VHA: High Dose Opioid Therapy (≥90 mg MEDD)





Change

62,780

(Decrease)

Percent Change

82 %

(Decrease)

Fiscal Quarter	Total	Percent
Q4FY12	76,466	1.93%
Q1FY23	13,686	0.33%

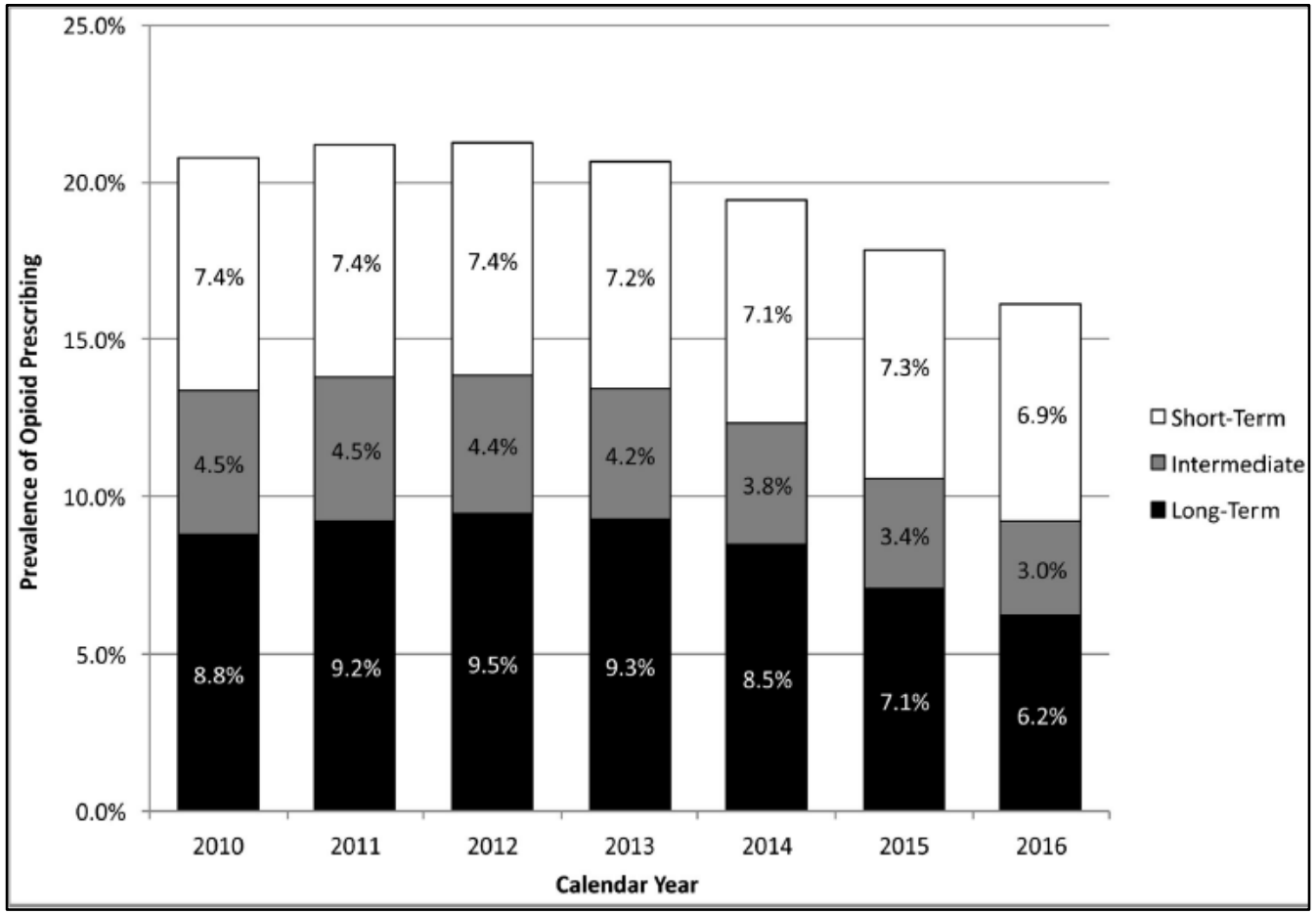
*Starting with Q1FY21 data for VA medical facilities utilizing Cerner are incomplete. At this time, VISN 10 and 20 sites in Columbus, Spokane, Walla Walla, Roseburg and White City are impacted.

Source: Pharmacy Benefits Management (PBM) Services

Reduction in Opioid Prescribing in VHA

Decline in Prescription Opioids Attributable to Decreases in Long-Term Use: A Retrospective Study in the Veterans Health Administration 2010–2016

Hadlandsmyth et al,
J Gen Intern Med 2018



83% of decline in opioid scripts due to decreases in long-term opioid therapy (LTOT).

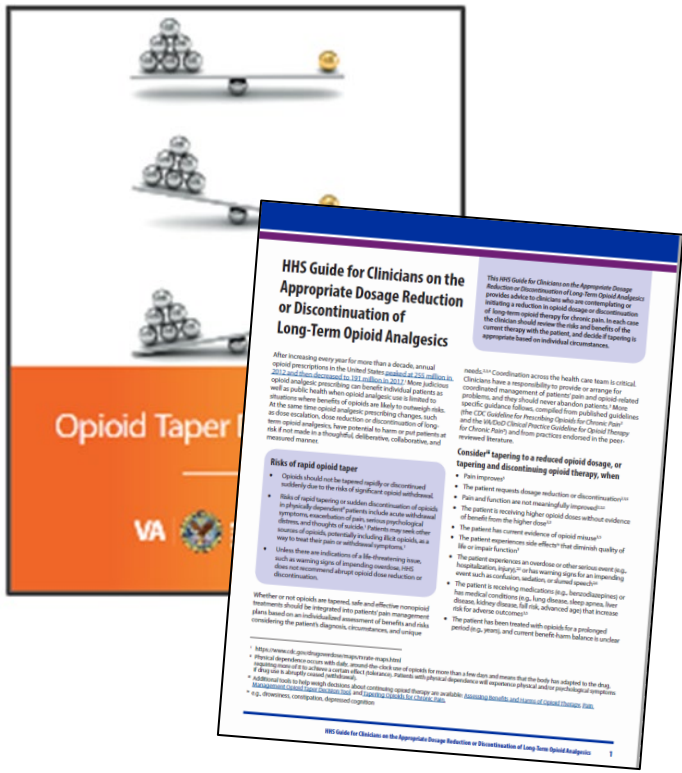
- 90% of reduction from fewer new LTOT prescription fills.
- < 10% from increases in cessation of existing LTOT users

Approaching Opioid Tapering

- **Integrated Approach With Patient Buy-In and Active Participation**

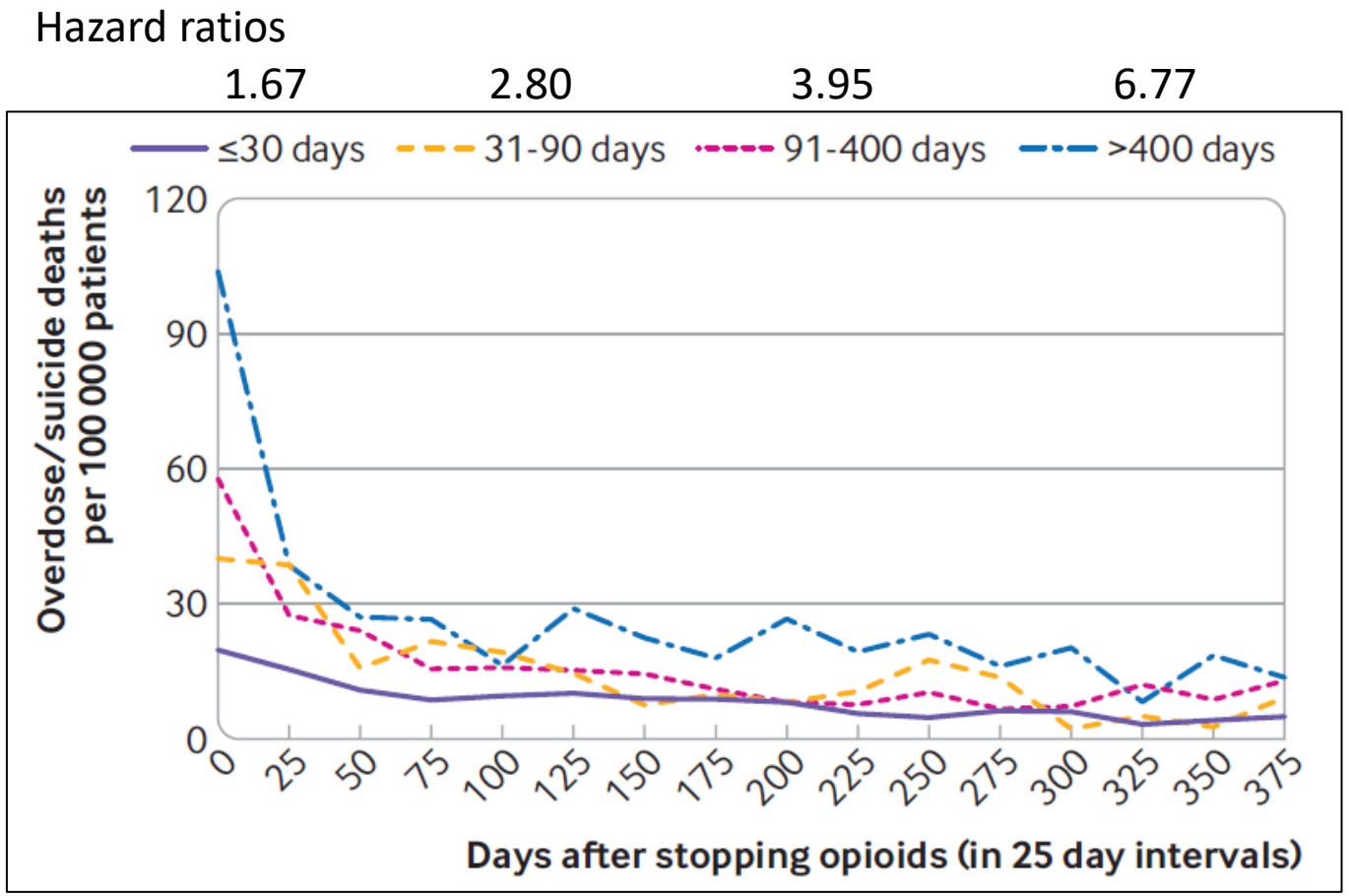
- When tapering is clinically indicated due to risks outweighing benefits, providers should **seek patients' active buy-in** by providing **education** and by **using motivational interviewing**.
- **Assess patient needs and address patient concerns incl. psychological factors**.
- Goal is to **improve function** and long-term outcomes.
- Slower, **more gradual tapers** (e.g., ≤ 10% per month) are often better tolerated than more rapid tapers, with pauses as needed.
- **Sudden interruption** of opioid prescribing (rapid tapers or discontinuations) **should be avoided,** with few safety exceptions.
- **<u>VHA Opioid Taper Decision Tool issued (2016)</u>** Most commonly, tapering will involve dose reduction of 5-20% every 4 weeks.
- F/u is recommended within 1 to 4 weeks after dosage adjustment

Academic Detailing: Opioid Taper Decision Tool (2016)



<u>HHS Tapering Guide</u> (2019)

Safety of Opioids, Tapering/Discontinuations in Veterans



Probability of death from overdose or suicide in patients treated with opioids in FY 2013 after stopping opioid treatment (n=799 668)

OPEN ACCESS

Check for updates

Associations between stopping prescriptions for opioids, length of opioid treatment, and overdose or suicide deaths in US veterans: observational evaluation

Elizabeth M Oliva,[1,2] Thomas Bowe[1,2] Ajay Manhapra,[3,4,5,6] Stefan Kertesz,[7,8] Jennifer M Hah,[9] Patricia Henderson,[1] Amy Robinson,[10] Meenah Paik,[1] Friedhelm Sandbrink[11,12,13] Adam J Gordon,[14,15,16] Jodie A Trafton[1,2,17]

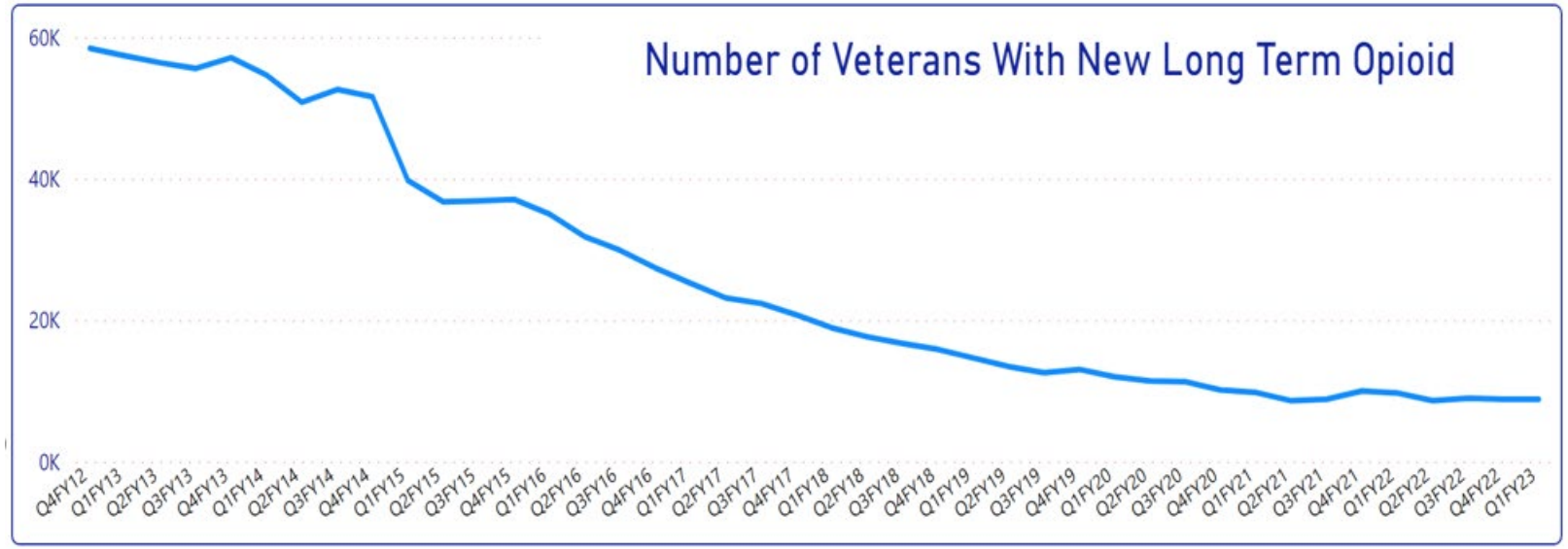
WHAT THIS STUDY ADDS

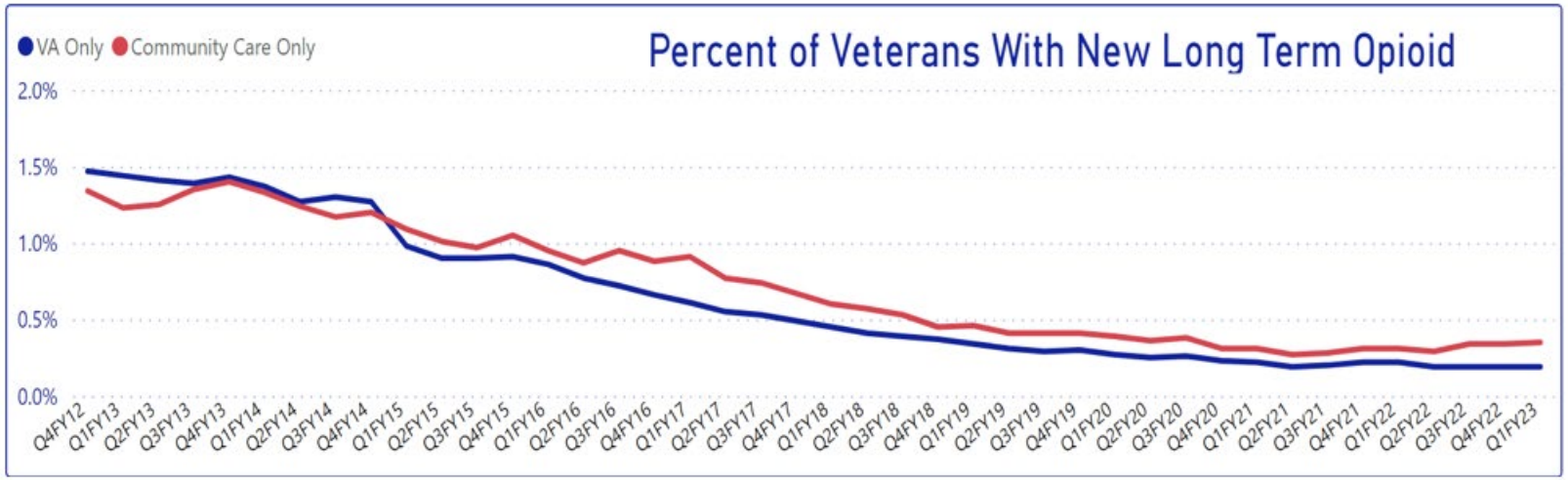
In patients prescribed opioids in the VHA, **stopping treatment with opioids at any time had an increased risk of death** from overdose or suicide, with the **risk increasing the longer patients were treated.**

Efforts to mitigate the risk should be intensified for at least 3 months after starting or stopping opioids.

Observational study.
Circumstances that triggered the decision to stop prescribing an opioid might drive the increased risk.

Opioid Prescribing in VHA: Newly Prescribed LTOT





Change
49,614
(Decrease)

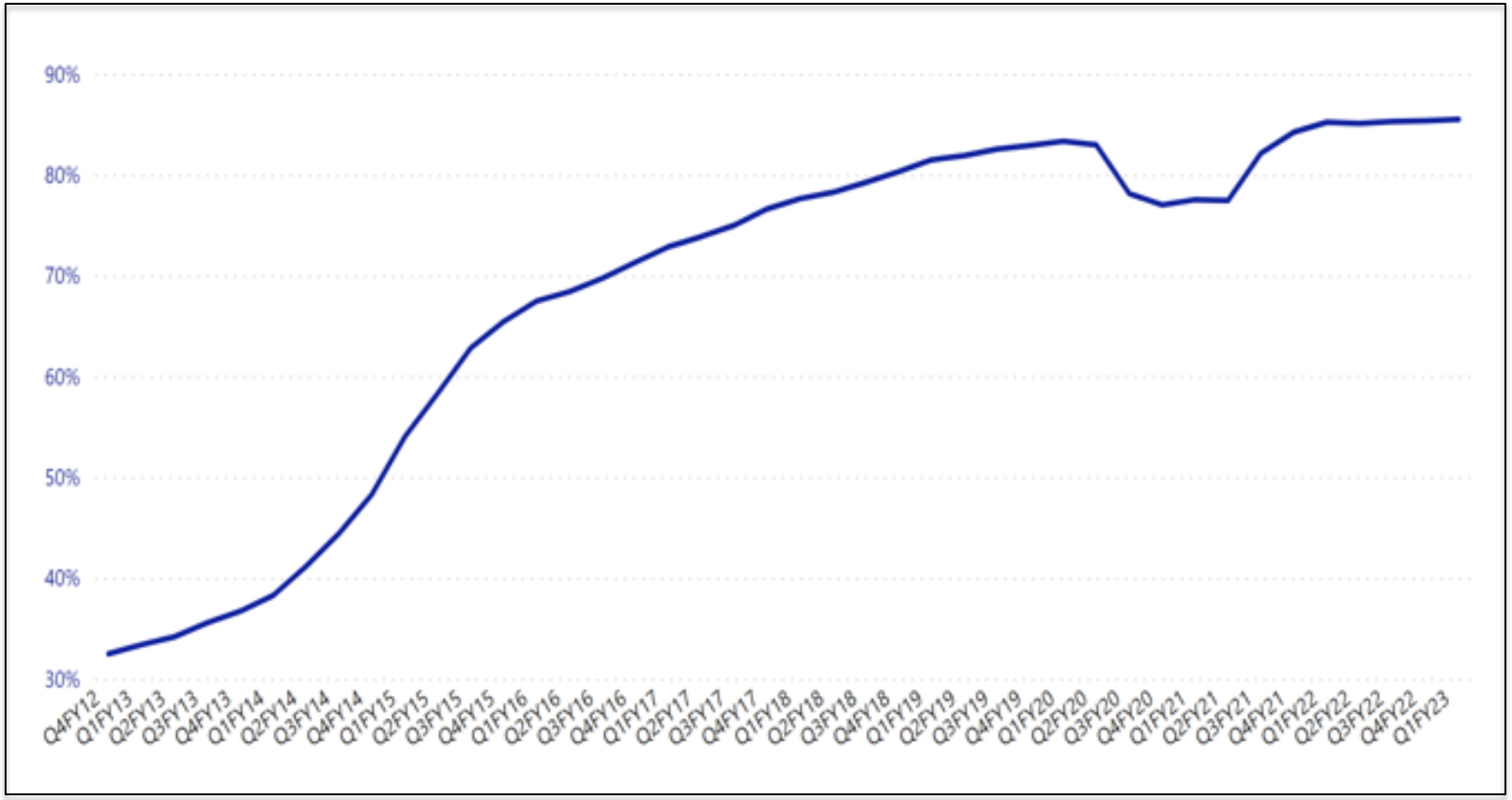
Percent Change
85 %
(Decrease)

Fiscal Quarter	Total	Percent
Q4FY12	58,417	1.48%
Q1FY23	8,803	0.21%

*Starting with Q1FY21 data for VA medical facilities utilizing Cerner are incomplete. At this time, VISN 10 and 20 sites in Columbus, Spokane, Walla Walla, Roseburg and White City are impacted.

Source: Pharmacy Benefits Management (PBM) Services

Urine Drug Testing in VHA Veterans on LTOT



Percent Change

53 %

(Increase)

Fiscal Quarter	Percent
Q4FY12	32.46%
Q1FY23	85.49%

Comparisons are not available for community care providers as only the prescriptions are filled by VA medical facilities' pharmacies. The Urine Drug Screen (UDS) ordered and completed at non-VA laboratories are not available.

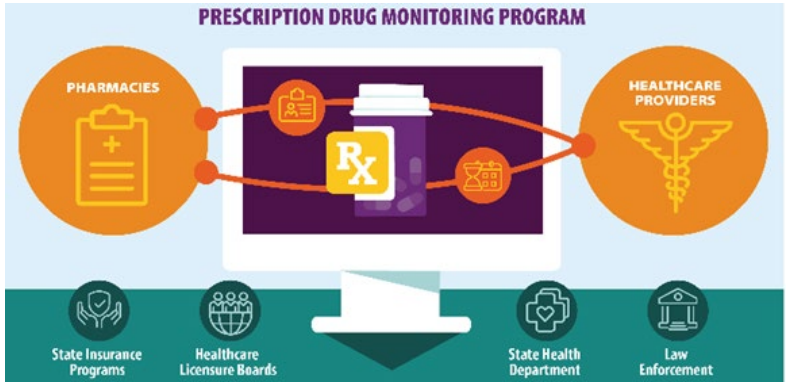
Starting with the Quarter 4, Fiscal Year 2020 reporting period, all metrics were recalculated from Quarter 4, Fiscal Year 2012 to present to harmonize the OSI metrics with the U.S. Department of Health and Human Services (HHS) Center for Disease Control (CDC) and Prevention *Annual Surveillance Report of Drug-Related Risk and Outcomes* definitions. For this metric, tramadol has been added.

Source: Pharmacy Benefits Management (PBM) Services

Prescription Drug Monitoring Program (PDMP)

VHA policy:

- PDMP queried for **all controlled substances** on annual basis at a minimum.
- PDMP check prior to initiating therapy with a controlled substance.
- When clinical indications and patient safety concerns warrant more frequently, at the discretion of the prescriber.
- **Prescribers must conform to the policies of the state of their licensure**.
- **Exclusions**
  - Controlled substance prescription for ≤ 5-day supply without refills
  - Any patient enrolled in Hospice care



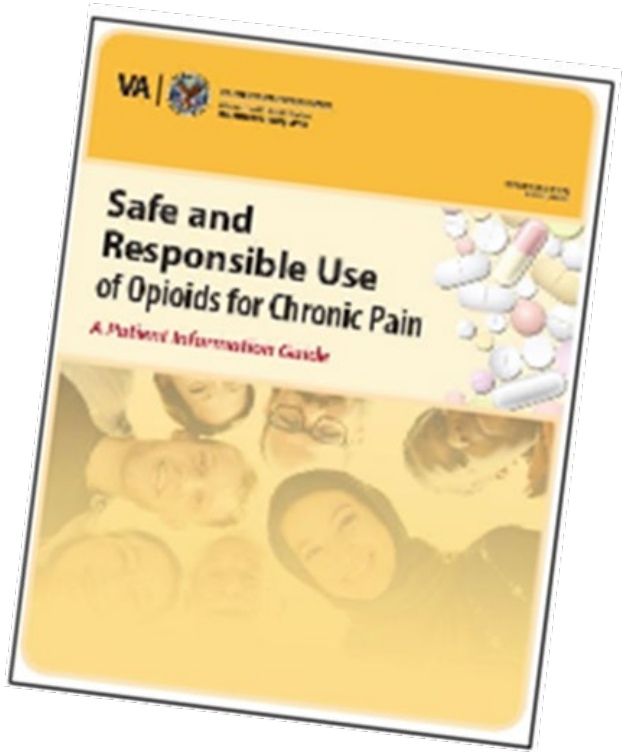
- **VHA launched a national IT solution in November 2020** for querying PDMPs that **integrates within VHA's electronic health record (CPRS).**

Only two states are not participating with the national integrated solution. California is expected to join in 2023. Nebraska does not have an anticipated date.

Informed Consent for Long-Term Opioid Therapy

- **VHA Policy: Informed consent (via I-Med) is required for all patients on Long-term Opioid Therapy (LOT)**, defined as > 90 days
- **Excluded are:** patients enrolled in hospice, on opioids for cancer pain → oral consent

- **Opportunity to discuss risks of and alternatives to long-term opioid therapy with the veteran.**
- **Provides some protection to provider and facility in case of harm to the patient related to opioid therapy**.
- Updated in 2018, expanded are
  - Opioid risks, Opioid dosage reduction/tapering, and
  - Non-pharmacological strategies for pain care
- After education of patient and family and obtaining the signature informed consent, a copy of the signed document including the brochure “Taking Opioids Responsibly” is given to the patient.



Opioid and Controlled Substance Risk Mitigation

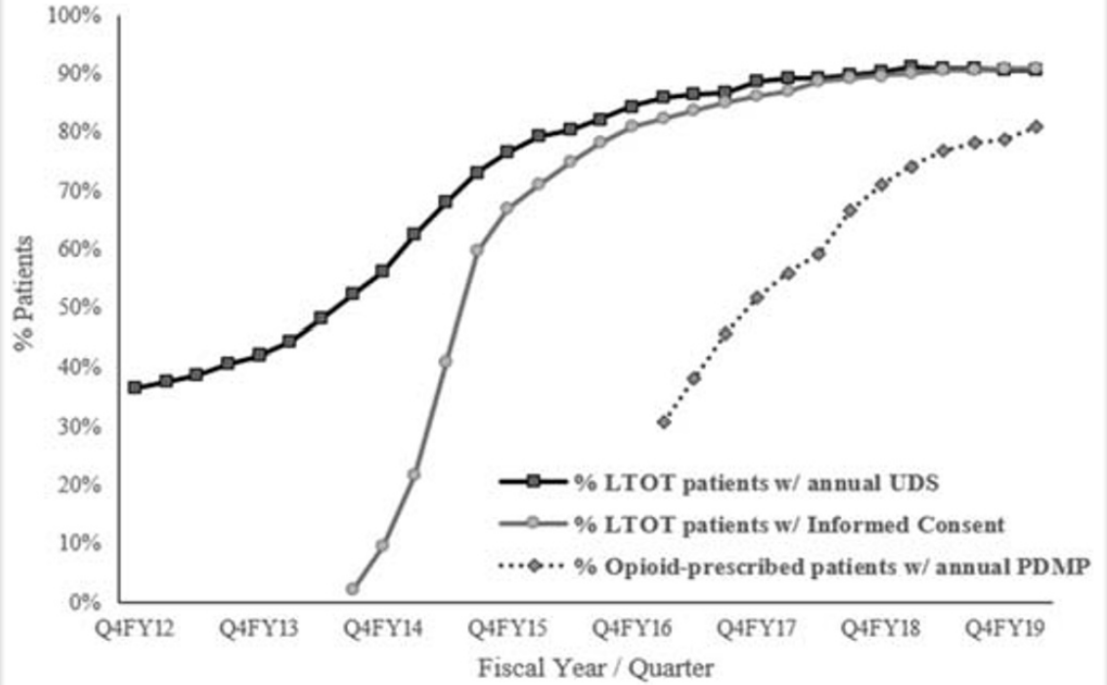
Facility and prescriber monitoring to monitor use of risk mitigation strategies*

- Key quality metric data include completion of:
  - State Prescription Drug Monitoring Program (PDMP) query as of Jan. 31, 2023:

	Annual	New Starts
All Controlled	97.6	86.8
Opioids	98.4	84.4
Benzos	98.2	88.6

  - Written consent from patients on LTOT on the use of opioids: 92.6% in Q1 FY23

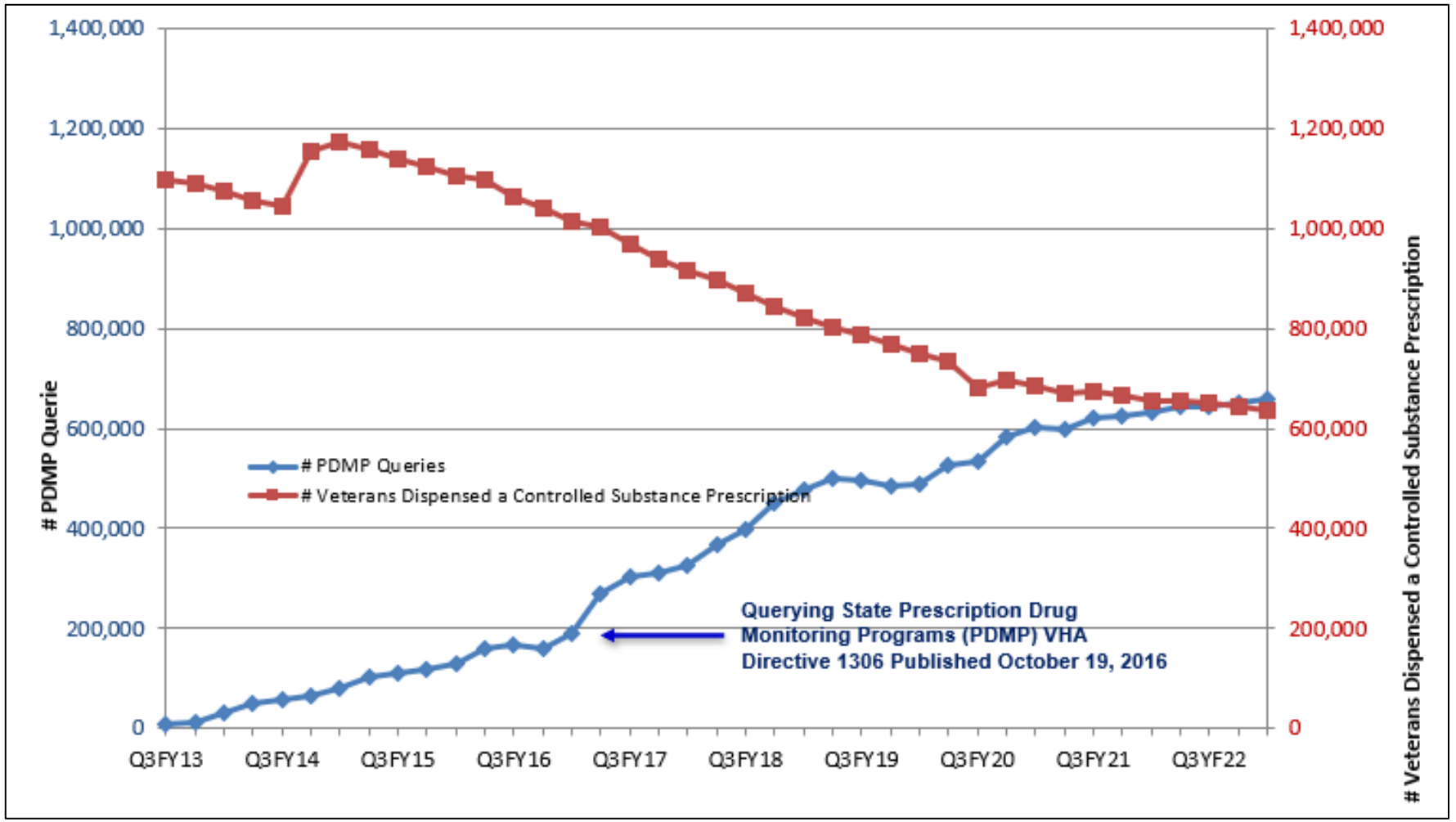
*Includes patients receiving prescriptions from community care prescribers and filled at VHA.



Quarterly opioid risk mitigation data showing the percentage of VHA patients receiving long-term opioid therapy with a urine drug screen (UDS) in the past year, the percentage of VHA patients receiving long-term opioid therapy with informed consent, and the percentage of VHA patients dispensed opioids with an annual Prescription Drug Monitoring Program check.

From <https://pubmed.ncbi.nlm.nih.gov/33196968/>

National: State Prescription Drug Monitoring Program (PDMP) Queries and the Number of Veterans Dispensed a Controlled Substance Prescription*



*Queries are underestimated because documentation was not standardized system-wide prior to publication of VHA Directive 1306

Source: Pharmacy Benefits Management (PBM) Services

Urine Drug Testing in VHA Veterans on LTOT

- **Interdisciplinary Care Reviews for High-Risk Veterans**
  - VA mandates that all Veterans have their care reviewed by an interdisciplinary team of health care professionals with expertise spanning pain, mental health, addiction, pharmacy and rehabilitation when the Veteran:
    - Is prescribed or has recently discontinued use of opioid analgesic medications and is identified as very high risk for *overdose events, suicide events, or death* through the VA's Stratification Tool for Opioid Risk Mitigation (STORM).
    - Has recently suffered from a non-fatal overdose (*new requirement*)

    NOTE: *STORM estimates risk of overdose or suicide events or death for all patients and has been incorporated in a decision support tool to support population management and individual patient risk review.*
  - **In a randomized program evaluation, this mandate was associated with a 22 percent reduction in all-cause mortality in the next 4 months among the very high-risk Veterans targeted by this prevention program.***

"Among VHA patients prescribed opioid analgesics, identifying high risk patients and mandating they receive an interdisciplinary case review was associated with a decrease in all-cause mortality. Results suggest that providers can leverage predictive analytic-targeted population health approaches and interdisciplinary collaboration to improve patient outcomes."

**https://pubmed.ncbi.nlm.nih.gov/35501628/>*

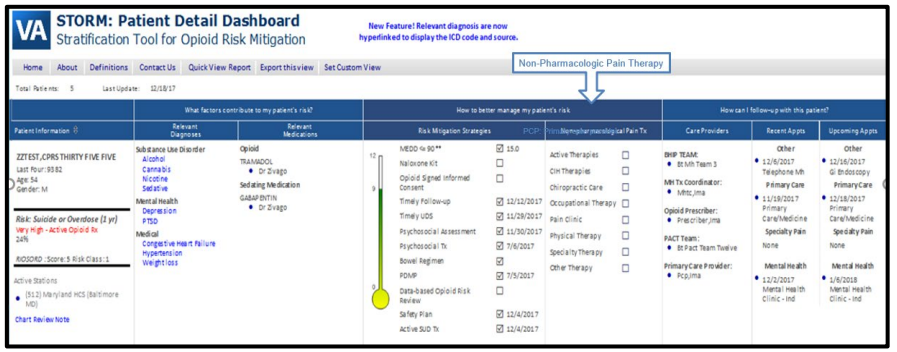
*Strombotne KL, Legler A, Minegishi T, Trafton JA, Oliva EM, Lewis ET, Sohoni P, Garrido MM, Pizer SD, Frakt AB. Effect of a Predictive Analytics-Targeted Program in Patients on Opioids: a Stepped-Wedge Cluster Randomized Controlled Trial. J Gen Intern Med. 2022 May 2:1–7. doi: 10.1007/s11606-022-07617-y. Epub ahead of print. PMID: 35501628; PMCID: PMC9060407.

Opioid Safety Risk Review Teams

Systematic review of the clinical care of patients at high risk for overdose or suicide

- **Data-based risk reviews of opioid-exposed Veterans**
- **Interdisciplinary membership**
- Include Primary Care, Pain specialty, MH, SUD programs
- 20-30% of patients with opioid overdoses are estimated to be intentional/suicidal
- STORM dashboard identifies Veterans at very high risk
- Other high risk: dosage, opioid/benzo combination, etc.
- Care coordination across services
- Care recommendations entered into the EHR

Stratification Tool for Opioid Risk Mitigation (STORM)



- **Model for interdisciplinary case review forums** for patients with complex pain conditions

Oliva et al. Psychol Serv. 2017;14:34-49

Overdose Education and Naloxone Distribution - OEND

National program launched in 2014

- **Overdose Education (OE):** *Prevent, recognize, and respond* to an overdose
- **Naloxone Distribution (ND):** *Dispense and train* patient and caregiver/family
- OEND provides opportunity to discuss risk of opioids
- No cost to at-risk patients (no copays for naloxone or training)

https://www.youtube.com/watch?v=0w-us7fQE3s

- **Naloxone to be offered widely, low threshold for prescribing**
  - Factors that increase risk for opioid overdose include h/o overdose, h/o SUD, higher opioid dosages (≥50 MMED), or concurrent benzodiazepine use
  - Offer to patients with recent opioid discontinuations or during tapering of opioids
  - Patients with Substance Use Disorder (SUD), in particular stimulant use (adulteration with fentanyl)
- VHA Rapid Naloxone Initiative (3 elements):
  1. **OEND to VHA patients at-risk for opioid overdose**
     - Over 422,600 Veterans dispensed naloxone (over 3,500 opioid overdose reversals)
  2. **VA Police Naloxone**
     - 3,552 VA police officers with naloxone (136 opioid overdose reversals)
  3. **Select Automated External Defibrillator (AED) Cabinet Naloxone**
     - 1,095 AED Cabinets with naloxone (10 opioid overdose reversals)

VHA's OEND as recipient of the 2020 John M. Eisenberg National Level Innovation in Patient Safety and Quality Award

Controlled Substance Safety and Oversight

- **Post Overdose Assessment and Care Planning**
  - VHA has mandated use of a national medical record note template for documenting accidental and severe adverse effects of overdoses as a component of suicide prevention efforts.
    - Standardizes and streamline the process of overdose reporting across VHA,
    - Enhances the visibility of accidental overdoses within the Veteran's medical record
    - Facilitates real-time tracking of overdose event data for use in clinical decision support tools and local/national aggregate reports.
  - Related, VHA mandated that facilities complete interdisciplinary care reviews of overdose events, with a focus on engaging patients in treatment.

- **The Psychotropic Drug Safety Initiative (PDSI)**
  - The PDSI is a system-wide program guiding improvement initiatives focused on psychotropic medication prescribing at all 140 VA facilities. PDSI, a key partnership between VA's Office of Mental Health and Suicide Prevention and Academic Detailing Services, improves prescribing practices by defining improvement goals through quarterly metrics, identifying facility champions, supplying clinical decision support tools, and providing technical assistance as well as provider education. PDSI's current Stimulant Safety Initiative launched in January 2022.

Stepped Care for OUD Train the Trainer

- **Medication for Opioid Use Disorder (MOUD)**
  - Buprenorphine/naloxone
  - Methadone
  - Naltrexone (including injection)

- **Stepped Care for Opioid Use Disorder Train the Trainer (SCOUTT) Initiative**

- VA has championed efforts in its integrated system to increase the percentage of Veterans with Opioid Use Disorder (OUD) who receive evidence-based pharmacotherapy.
- The SCOUTT initiative launched in August 2018 to support OUD treatment system-wide.
- At the end of FY 2021 **45.8% of Veterans with OUD were receiving evidence-based pharmacotherapy**, exceeding treatments levels outside the VA system.
-

Medication Disposal

- **Medication Disposal Envelopes**
  - Mailable free of charge.
  - Can also be dropped off in receptacles present in approx. 195 on-site receptables or community sites.

- As of December 31, 2022, Veterans have returned over 334 tons of unwanted/unneeded medication.

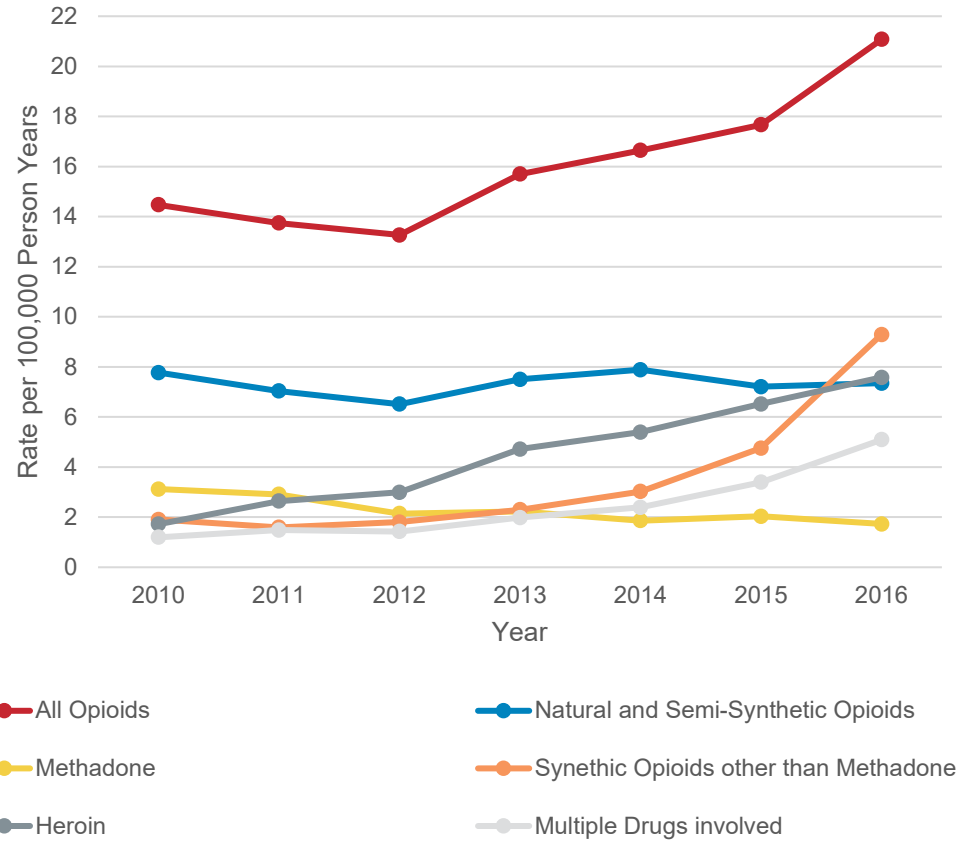
Figure 9. Common options to safely dispose of medications

If none of these options are available, the FDA recommends flushing opioid medications down the toilet.[49]

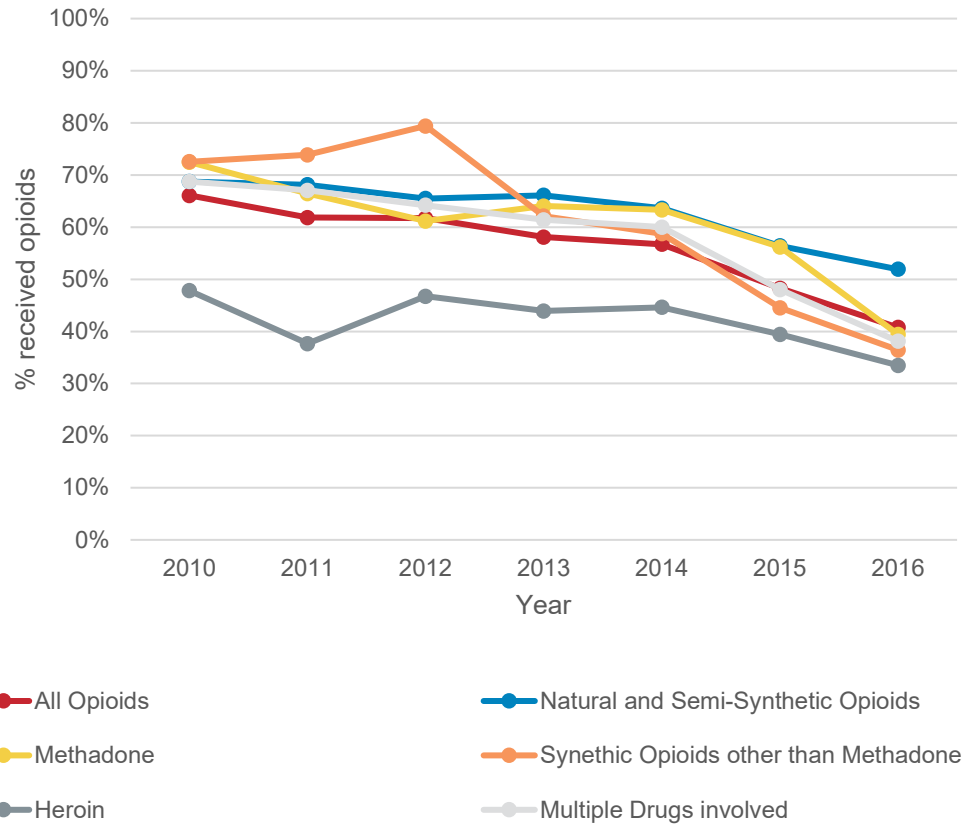
*Controlled and non-controlled medications may be co-mingled in the envelope; however, illicit drugs may not be placed in the envelope. The filled envelopes are sent to a facility where they are destroyed in an environmentally responsible manner.

Opioid Overdose Deaths and Prescription Opioid Receipt among Veterans

Overdose Mortality Rate (per 100,000 person years) among Recent Veteran VHA users by Opioid subtype, 2010 - 2016



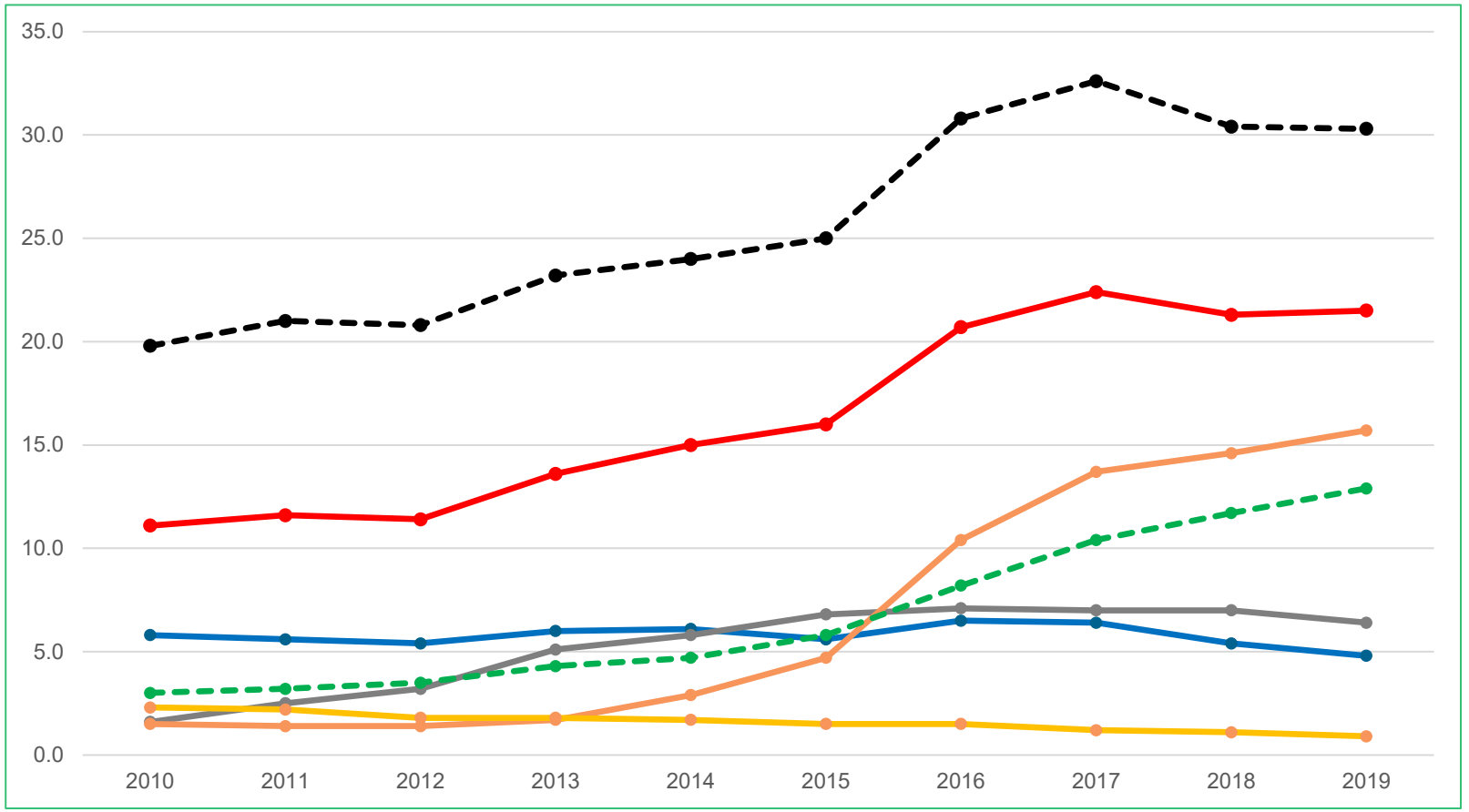
Percent of Opioid Overdose Decedents with an Opioid Prescription fill in the 12 Months Prior to Death, by opioid overdose subcategory, 2010 - 2016



[1]Lin LA, Peltzman T, McCarthy JF, Oliva EM, Trafton JA, Bohert AS. *Am J Prev Med. June 2019*

Veteran Drug Overdose Mortality: 2010 - 2019

From 2010–2019, age-adjusted overdose mortality rates increased 53.2% among Veterans and 79.0% among non-Veterans.



Begley MR et al. Drug and Alcohol Dependence, 2022-04-01

Ongoing Clinical Strategies

- Expand access to evidence-based multimodal and integrated pain care that is Veteran-centered.
  - Full implementation of the Stepped Care Model for Pain Management
  - Interdisciplinary Pain Management Teams (PMTs) at all VHA facilities.
  - Targeted initiatives for PMT expansion include medication management, pain rehabilitation treatment units, complementary and integrative health (CIH), and Whole Health.
- Improve identification of patients at risk for suicide and overdose
- Integrate suicide prevention and assessment/treatment for Opioid Use Disorder into all PMTs
- Utilize dashboards to help with intensifying care efforts where and when most needed, and to support consistent use of risk mitigation strategies.
- Improve care coordination, care engagement, and treatment alliance through interdisciplinary teams.

Key Questions Regarding Opioid and Benzodiazepine Co-Prescribing Practice

Jodie Trafton , PhD
Director, VA Program Evaluation and Resource Center
Office of Mental Health and Suicide Prevention

Risk Associated With Opioid and Benzodiazepine Prescriptions

- It is well established that patients prescribed opioid and benzodiazepine medications are at elevated risk of overdose and other adverse events
- But it is not known whether the risk is due to:
  - the ***indications*** for opioid and benzodiazepine prescribing,
  - the ***prescriptions*** themselves, AND/OR
  - ***addiction, dependence, or other conditions*** that may develop from chronic opioid and/or benzodiazepine use in a subset of patients

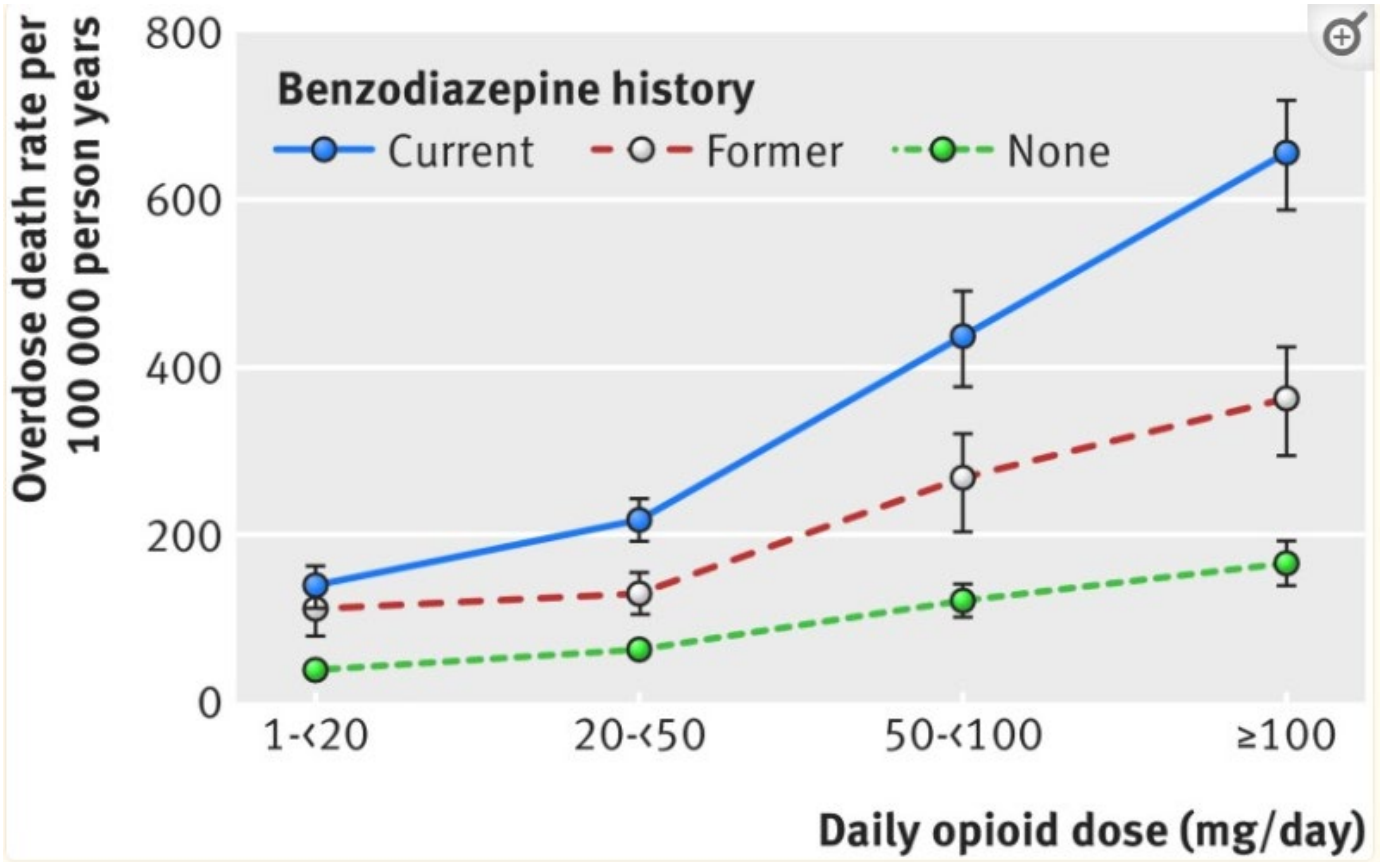
Each of These Different Expalantions for Risk Suggest Different Strategies to Reduce risk

- ***Indications*** for opioid and benzodiazepine prescribing, such as unmanaged chronic pain and anxiety disorders, are independent risk factors for opioid overdose and suicide
  - Ensure identification and effective chronic management of pain and anxiety disorders
- ***Adding benzodiazepines*** lowers the dose of opioids needed to produce fatal respiratory depression
  - Minimize doses of co-prescribed medications, monitor for side-effects, and provide overdose education and naloxone
- ***Both opioids and benzodiazepines*** can produce physical dependence with chronic use and a minority of chronic users will develop addiction (i.e., opioid use disorder and/or sedative use disorder)
  - Monitor closely for misuse of medications and development of opioid or sedative use disorders. Provide effective substance use disorder prevention and treatment services.

VA Has Undertaken Initiatives To Address All Three Possibilities Plus Efforts To Increase Safe Prescribing And Risk Mitigation Practices

- ***Expansion of non-opioid/non-benzodiazepine treatment options*** for chronic pain and mental health conditions
- ***National overdose education and naloxone distribution program and Opioid Safety Initiative*** focus on patients at high-risk for overdose including high dose and opioid-benzodiazepine co-prescribed populations
- National efforts to ***expand Substance Use Disorder (SUD) treatment***, with a focus on access to evidence-based treatments for opioid use disorder
- ***Increased monitoring for adverse effects*** (e.g., urine drug screening, prescription drug monitoring program review, regular appointments), pre-initiation review and planning around risk factors, informed consent, maintaining treatment engagement
- One strategy specifically addressed opioid-benzodiazepine co-prescribing
  - VA implemented a ***national Clinical Reminder Order Check (CROC)*** to warn providers of existing opioid or benzodiazepine prescriptions when they attempt to initiate an opioid-benzodiazepine co-prescription

Documented Associations in VA data



Unadjusted death rates for drug overdose by benzodiazepine prescription history and daily opioid dose. Error bars represent 95% confidence intervals. Unadjusted overdose death rates are estimates for entire source population

Is the dose response due to:

(1) More severe/treatment resistant patients receiving higher doses?

(2) Interactions between consumed medications, with patient use of benzos presumed to be greatest for those with active Rx, then those with prior Rx, and then those without Rx?

(3) Greater dose escalation among patients with substance use disorders or other mental health comorbidities?

Park TW, Saitz R, Ganoczy D, Ilgen MA, Bohnert AS. Benzodiazepine prescribing patterns and deaths from drug overdose among US veterans receiving opioid analgesics: case-cohort study. BMJ. 2015 Jun 10;350:h2698. doi: 10.1136/bmj.h2698. PMID: 26063215; PMCID: PMC4462713

VA Interventions That Encouraged Use Of Risk Mitigation And Safer Prescribing Practices Reduced Rates Of Adverse Outcomes

- These focused on ***a balanced approach to optimizing treatment*** for patients and were ***multi-component interventions***
- **Example 1:** Patients receiving opioid analgesic prescriptions were targeted for case review based on having a high estimated risk of overdose or suicide events per the VA Stratification Tool for Opioid Risk Mitigation (STORM) predictive model
- ***Targeted interdisciplinary team reviews*** that focused on optimizing treatment plans across providers and ensuring use of risk mitigation strategies ***reduced all-cause mortality in the next 4 months by 22% in targeted patients (~180 lives saved within 13 months)***
  - Based on a stepped-wedge cluster randomized program evaluation implemented nationally

- Strombotne KL, Legler A, Minegishi T, Trafton JA, Oliva EM, Lewis ET, Sohoni P, Garrido MM, Pizer SD, Frakt AB. Effect of a Predictive Analytics-Targeted Program in Patients on Opioids: a Stepped-Wedge Cluster Randomized Controlled Trial. J Gen Intern Med. 2022 May 2:1–7. doi: 10.1007/s11606-022-07617-y. Epub ahead of print. PMID: 35501628; PMCID: PMC9060407.

Example 2: Academic Detailing on Opioid Safety Topics

- **Produced lasting clinical practice changes** in primary care providers who received detailing
  - After detailing visits providers:
    - **Increased naloxone prescriptions by 300%**
    - **Decreased opioid prescribing rates by 10%**
    - **Increased prescription drug monitoring program queries by 19%**
    - **Decreased opioid and benzodiazepine co-prescription by 10%**
      - **Changes were on top of overall VA practice trajectories which were in the same direction**
      - **PACT patients saw no change in average reported pain severity**
- **Reduced adverse events** in the primary care patient panels of detailed providers
  - Reduced rates of serious adverse events in emergency departments or hospitals **by 3.4%, preventing over 4,150 adverse events** in the PACT patient panels of detailed providers between 2015 and 2019.
    - **No evidence of an increase in suicide attempts associated with ADS detailing**
- Note: Based on a generalized difference-in-differences design using staggered adoption models, studying all VA primary care teams between 2015-2019

Two Separate Clinical Questions

- **When is it appropriate to consider initiating an opioid-benzodiazepine combination?**
  - What are the risks and benefits of opioid and benzodiazepine initiation?

- **When and how should a patient be tapered off of opioids and/or benzodiazepines when they have been on the combination for a long period of time?**
  - What are the risks and benefits of discontinuing opioids or benzodiazepines or reducing opioid or benzodiazepine doses in patients chronically co-prescribed opioids and benzodiazepines?

Data Suggest More Conservative Opioid Prescribing Minimizes Adverse Outcomes In Assigned Patient Populations

- VA Primary Care
  - Patients on Primary Care teams with a high rate of opioid prescribing (at the 90%ile):
    - Receive 15.5% more opioid medication in the next 3 years
    - Are 4% more likely to be diagnosed with an opioid use disorder within 3 years (up 0.035% from 0.91%)
    - But have no difference in opioid overdose or all cause mortality risk
    - Compared to patients on primary care teams with a low rate of opioid prescribing (at the 10%ile)

- Eichmeyer S, Zhang J. (2022) Primary care providers influence on opioid use and its adverse consequences. Journal of Public Economics. 217: 104784.

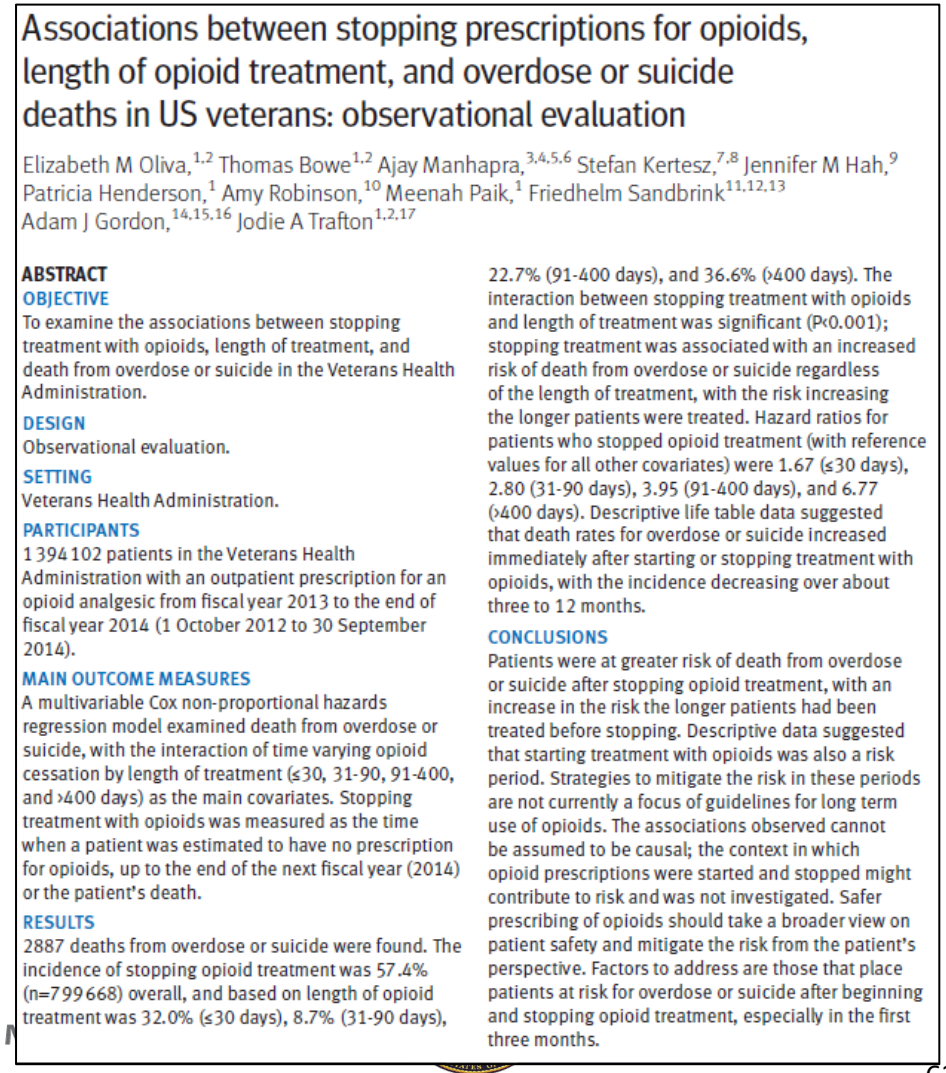
Data Suggest More Conservative Opioid Prescribing Minimizes Adverse Outcomes In Assigned Patient Populations

- VA Emergency Department
  - Examined effects of receiving an opioid prescription in the ED, among patients for whom there is variation in ED physician prescribing practice
    - Instrumental variable analysis based on differential tendencies to prescribe opioids by ED physicians, and quasi-random assignment of patients to ED physician
    - **Patients prescribed an opioid due to seeing a more liberal opioid prescriber in the ED:**
      - **Increased long-term opioid use by 20% (up 1.17% from 5.8%**
      - **Were 10% more likely to develop an OUD within 3 years (up 0.24% from 3.27%)**
      - **Were 45% more likely to die of an opioid overdose within 3 years (up 0.075% from 0.167%)**

- Eichmeyer and Zhang (2022) Pathways into Opioid Dependence: Evidence from Practice Variation in Emergency Departments. American Economic Journal: Applied Economics 14(4): 271-300.

VA Data Suggest That The Period After Opioid Discontinuation Is High Risk For Overdose And Suicide

- Hazard ratios for death from overdose or suicide for patients who stopped opioid treatment
  - **1.67 (≤30 days supply of opioids)**
  - **2.80 (31-90 days)**
  - **3.95 (91-400 days)**
  - **6.77 (>400 days)**
- Note, this is consistent with research around opioid medication discontinuation for patients in treatment for opioid use disorder



Associations between stopping prescriptions for opioids, length of opioid treatment, and overdose or suicide deaths in US veterans: observational evaluation

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ABSTRACT

OBJECTIVE
To examine the associations between stopping treatment with opioids, length of treatment, and death from overdose or suicide in the Veterans Health Administration.

DESIGN
Observational evaluation.

SETTING
Veterans Health Administration.

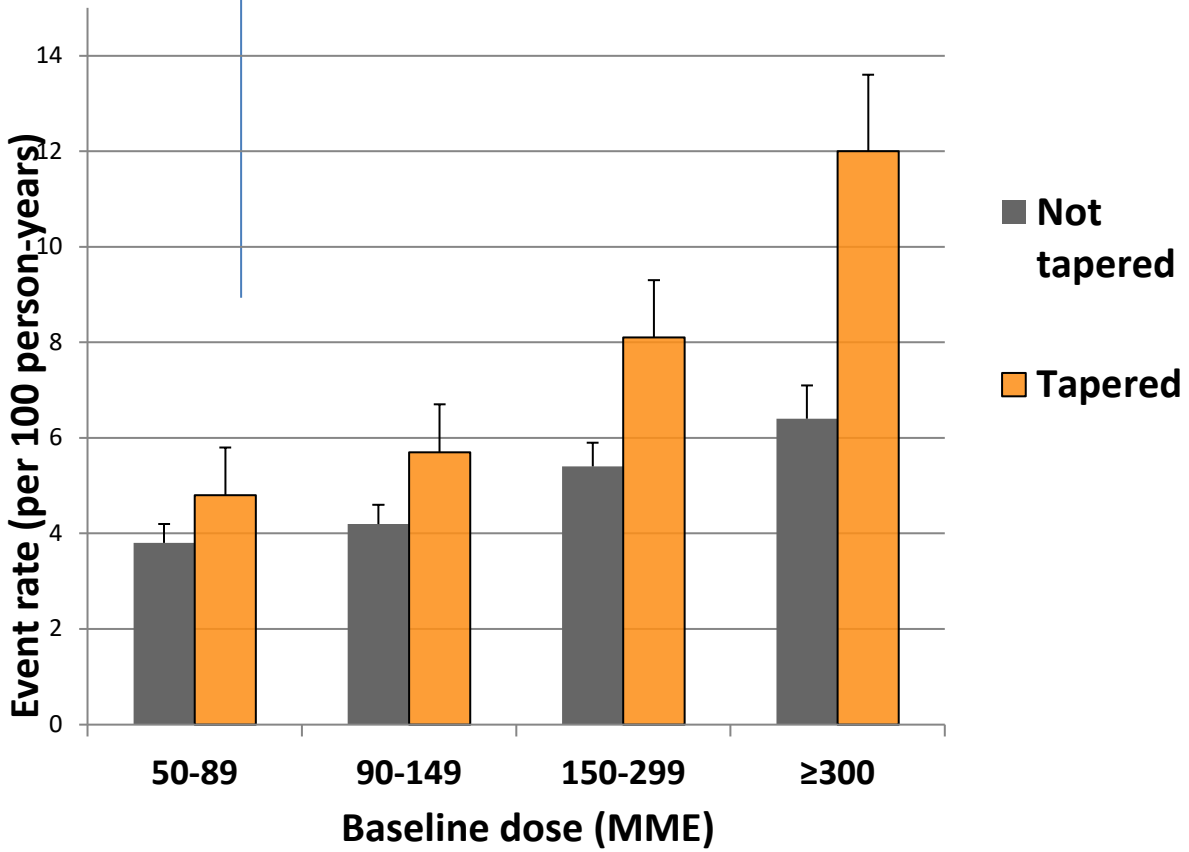
PARTICIPANTS
1 394 102 patients in the Veterans Health Administration with an outpatient prescription for an opioid analgesic from fiscal year 2013 to the end of fiscal year 2014 (1 October 2012 to 30 September 2014).

MAIN OUTCOME MEASURES
A multivariable Cox non-proportional hazards regression model examined death from overdose or suicide, with the interaction of time varying opioid cessation by length of treatment (≤30, 31-90, 91-400, and >400 days) as the main covariates. Stopping treatment with opioids was measured as the time when a patient was estimated to have no prescription for opioids, up to the end of the next fiscal year (2014) or the patient's death.

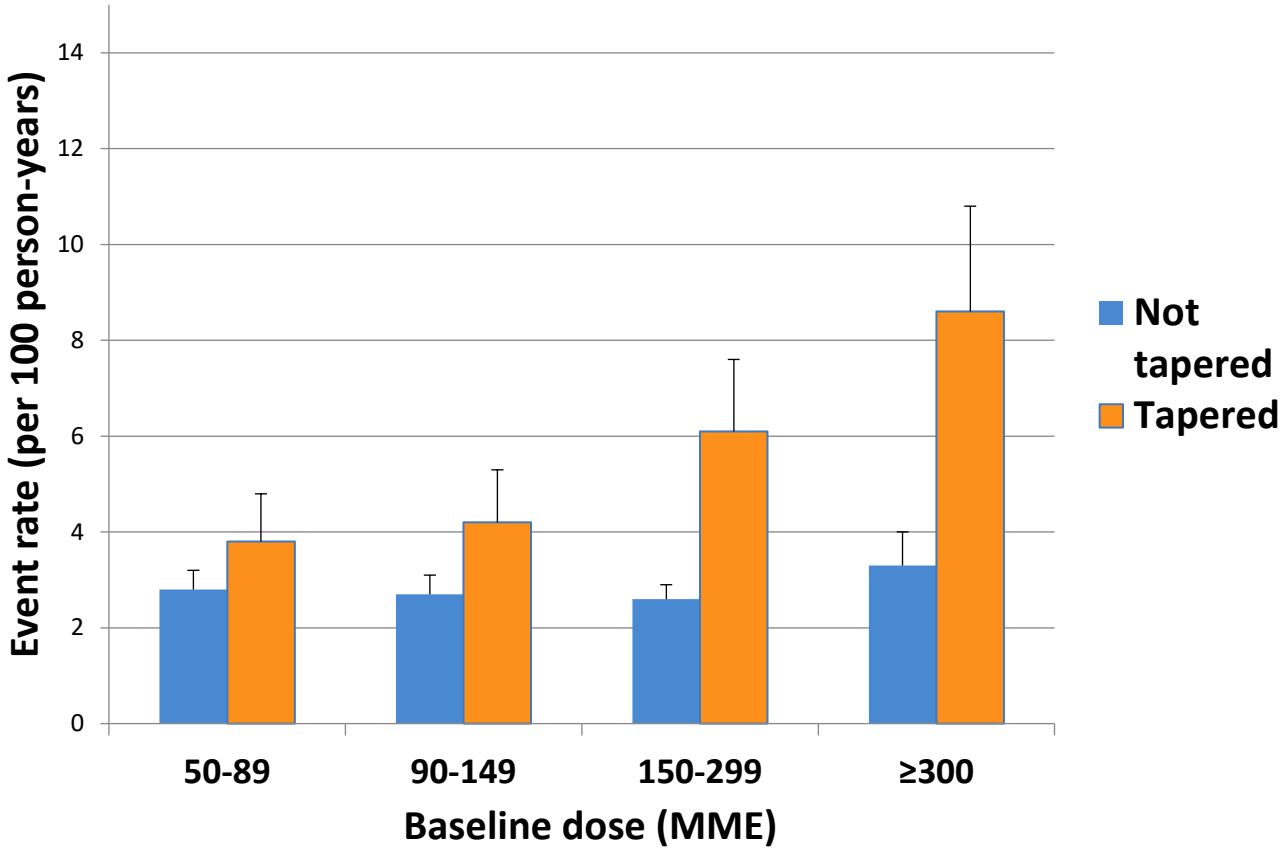
RESULTS
2887 deaths from overdose or suicide were found. The incidence of stopping opioid treatment was 57.4% (n=799 668) overall, and based on length of opioid treatment was 32.0% (≤30 days), 8.7% (31-90 days), 22.7% (91-400 days), and 36.6% (>400 days). The interaction between stopping treatment with opioids and length of treatment was significant (P<0.001); stopping treatment was associated with an increased risk of death from overdose or suicide regardless of the length of treatment, with the risk increasing the longer patients were treated. Hazard ratios for patients who stopped opioid treatment (with reference values for all other covariates) were 1.67 (≤30 days), 2.80 (31-90 days), 3.95 (91-400 days), and 6.77 (>400 days). Descriptive life table data suggested that death rates for overdose or suicide increased immediately after starting or stopping treatment with opioids, with the incidence decreasing over about three to 12 months.

CONCLUSIONS
Patients were at greater risk of death from overdose or suicide after stopping opioid treatment, with an increase in the risk the longer patients had been treated before stopping. Descriptive data suggested that starting treatment with opioids was also a risk period. Strategies to mitigate the risk in these periods are not currently a focus of guidelines for long term use of opioids. The associations observed cannot be assumed to be causal; the context in which opioid prescriptions were started and stopped might contribute to risk and was not investigated. Safer prescribing of opioids should take a broader view on patient safety and mitigate the risk from the patient's perspective. Factors to address are those that place patients at risk for overdose or suicide after beginning and stopping opioid treatment, especially in the first three months.

Non-VA data (Optum 2008-2019) also suggest increased risk of overdose and mental health crisis in patients tapering from opioids (Agnoli et al., 2021)



Overdose Event Rates by Baseline Dose



Mental Health Crisis Event Rates by Baseline Dose

Is Discontinuing Opioid Therapy Protective In Lower Risk Populations?

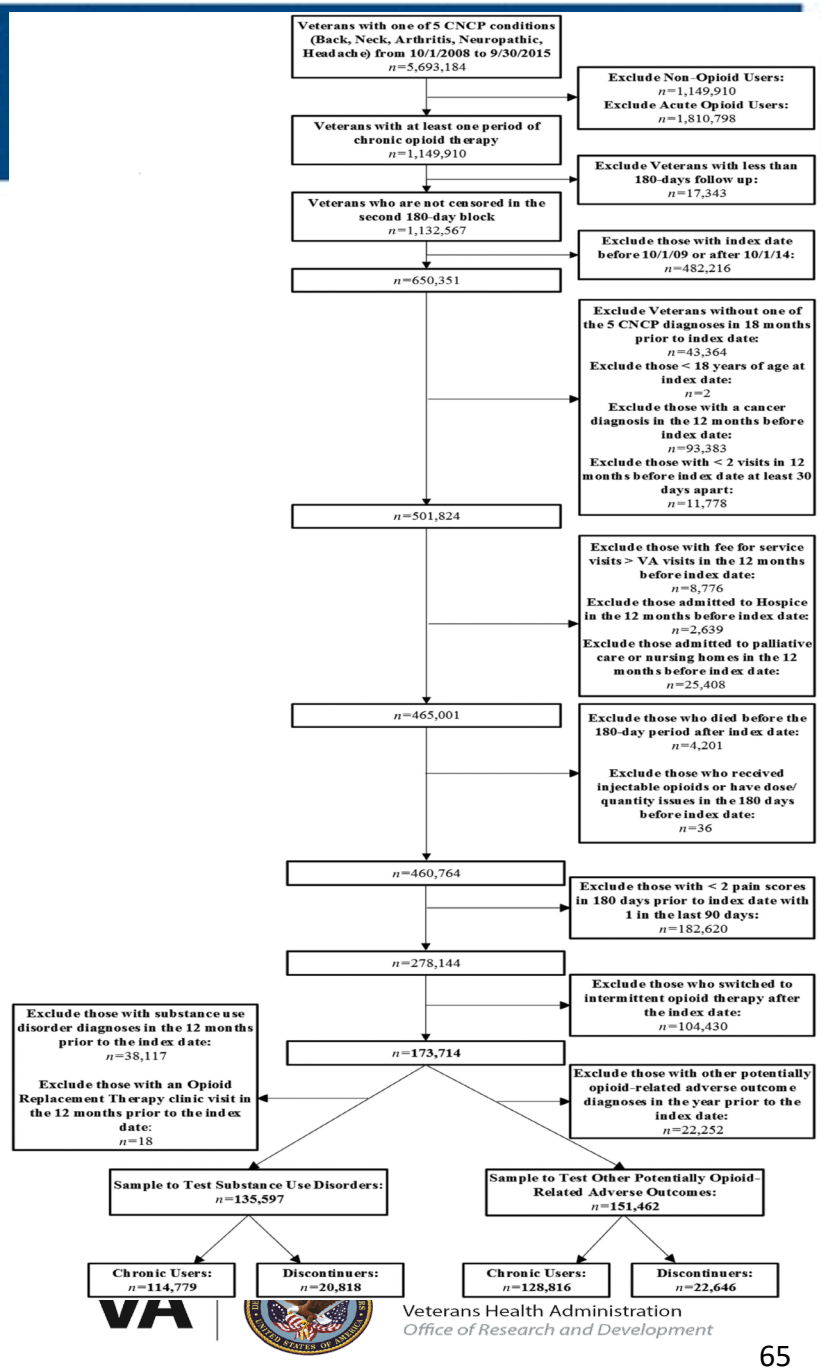
Does discontinuing opioid therapy alter risk of substance use disorders and adverse outcomes in chronic non-cancer pain patients receiving new chronic opioid therapy (at least 90 days of opioid therapy over 6 months), if they are well engaged in care, and lacking history of prior SUD or adverse events?

Three analytic approaches were used:

(1) Propensity Score Matching
- No difference in risk of developing SUD overall
- Odds of drug use disorder lower in discontinuers
- Odds of adverse events lower in discontinuers

- Stabilized Inverse Probability of Treatment Weighting
  - Odds of SUD lower in discontinuers
  - Odds of adverse events lower in discontinuers
- Instrumental Variable Models
  - Increased risk of new SUD with discontinuation
  - Decreased risk of adverse events with discontinuation

- Findings suggest that discontinuing opioid therapy may protect against development of SUD and adverse events in a highly selected, well-engaged subpopulation of patients, but findings are sensitive to analytic approach.



Policy Assumptions Based on Studies to Date Include:

- Conservative prescribing of controlled substances increases patient safety and minimizes risk of development of substance use disorders
- Substance Use Disorders increase risk of premature mortality
- Consistent clinical implementation of risk mitigation strategies minimizes adverse events and mortality associated with controlled substance prescription
- Decisions to taper or discontinue opioid or benzodiazepine prescriptions in patients who have been on these medications long-term should involve a shared decision-making process between patients and providers. Generally tapering should be conducted slowly, with close monitoring and support, and with regular reconsideration of tapering decisions based on patient response.
- Effective and safe treatments that do not involve controlled substances should be readily available and used preferentially.

VA Data Sources

- VA Corporate Data Warehouse
  - Nightly updated data extracted from VA VISTA and Cerner medical record instances
    - Including inpatient and outpatient encounters, procedures, diagnoses, prescriptions and fills within VA pharmacies (including from prescriptions from community providers providing VA authorized services), structured clinical assessments and screeners, labs and lab results, medical record notes, etc. Data is available for both VA and Cerner medical records, though they are differently structured and collected. Medical record notes from Cerner are not included in CDW currently.
    - Prescription Drug Monitoring queries are documented in the VA record when conducted, but PDMP findings are not shared with VHA. VHA has recently implemented note templates that identify whether findings were unexpected or not, and clinicians are instructed to document newly identified prescriptions in "non-VA medications" within the medical record.
- National Death Index data for VHA patients up to CY20. Use is restricted under a strict sharing agreement with CDC. Outcomes of greatest interest are suicide, unintentional overdose/poisoning and all-cause mortality.
- Medicare claims data for VHA patients who are dually enrolled (on 6 month lag)
- Select data from DOD Medical records/data warehouse for VHA patients, per DAVINCI and J-VPN project.
- Data on Veterans Benefits is available separately under management of VBA.
- Note that VA data is extensive and nuanced. Most data is collected as part of hospital operations, and thus administrative and clinical procedures, access and documentation practices have a substantial effect on what is identified and documented in medical record and other VHA data collection systems.

Numerous On-going VA Operations Efforts May Facilitate NASEM Efforts

- For example, collaborations with Department of Energy teams based at OakRidge National Labs include:
  - Evaluating effects of primary care variability in prescription drug monitoring program query frequency and response to unexpected findings.
  - Examining relationships between medication prescribing history and suicide and overdose outcomes.
  - Developing models to predict future rates of overdose in U.S. communities.
  - Updating suicide and overdose predictive models within VA patient populations to account for community social and environmental determinants of health.