

Characteristics of Pediatric Patients with Persistent Opioid Medication Use After Hospital Discharge

Kyungha Kim, MHA¹ and Douglas L. Leslie, PhD^{1,2}

¹ Department of Public Health Sciences, Penn State College of Medicine

² The Center for Applied Studies in Health Economics (CASHE)

Presenter Disclosures

Kyungha Kim

- (1) I have no relationship with commercial interests relevant to this presentation.

Funding Source

This research is funded by NIDA grant R01DA047396

“Opioid Use Disorders (OUD) in Adolescents:
Predictors of Treatment and Outcomes.”

The opioid epidemic by the numbers

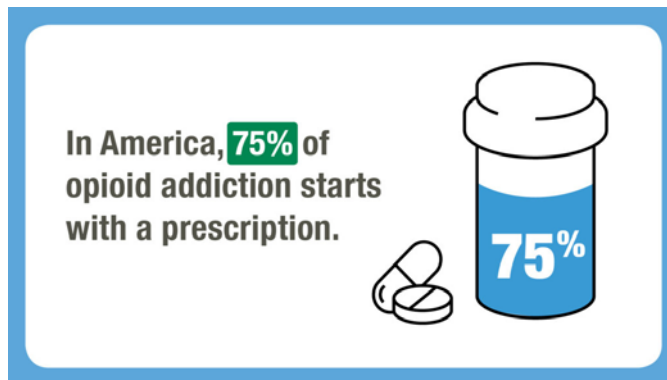


2.1
million
opioid use disorder
(U.S. Department of Health and
Human Services.)



47,600
deaths due to
opioid overdose

(National Institute on Drug Abuse,
National Center for Health Statistics,
CDC WONDER).



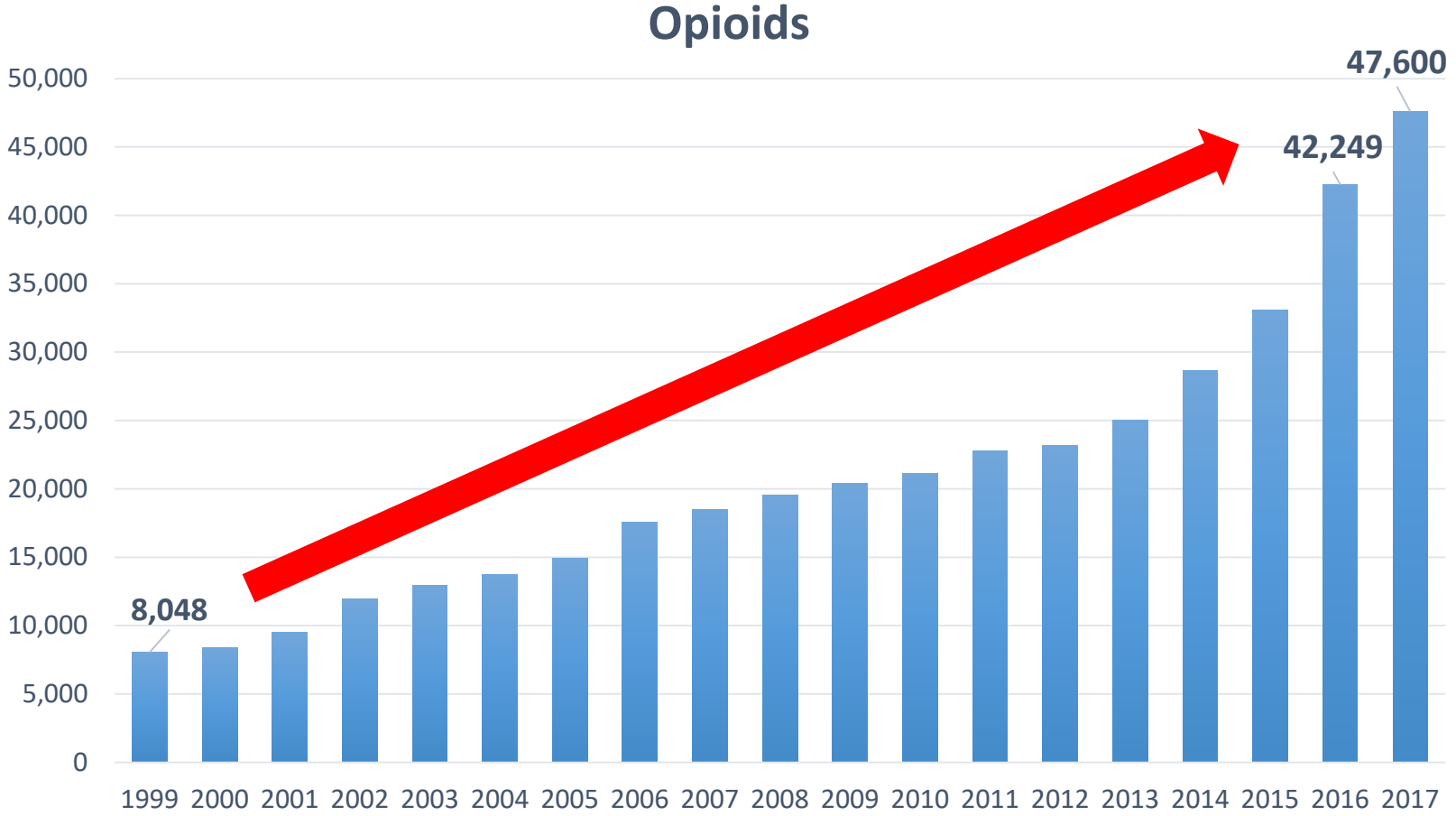
(Cicero, Ellis, Surratt, & Kurtz, 2014)



59%
of opioid-related
death were caused
by abusing
prescription opioids

(Rudd, 2016).

Opioid-involved Overdose Deaths, 1999-2017



Source: National Institute on Drug Abuse, National Center for Health Statistics, CDC WONDER

Prescription opioids and Adolescents



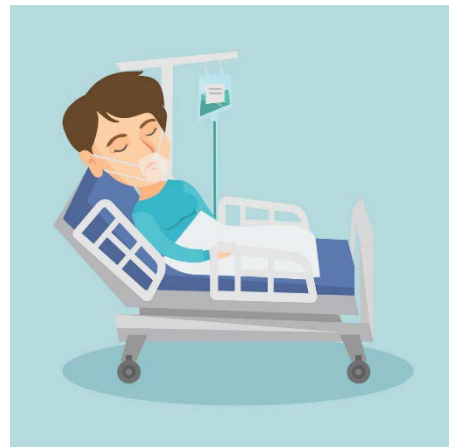
8,986
deaths from prescription
and illicit opioid poisonings
among children and
adolescents

(Gaither, Shabanova, & Leventhal, 2018).



268.2%
Increase in pediatric
mortality rate from
prescription and illicit
opioid poisoning between
1999 and 2016.

(Gaither, Shabanova, & Leventhal, 2018).

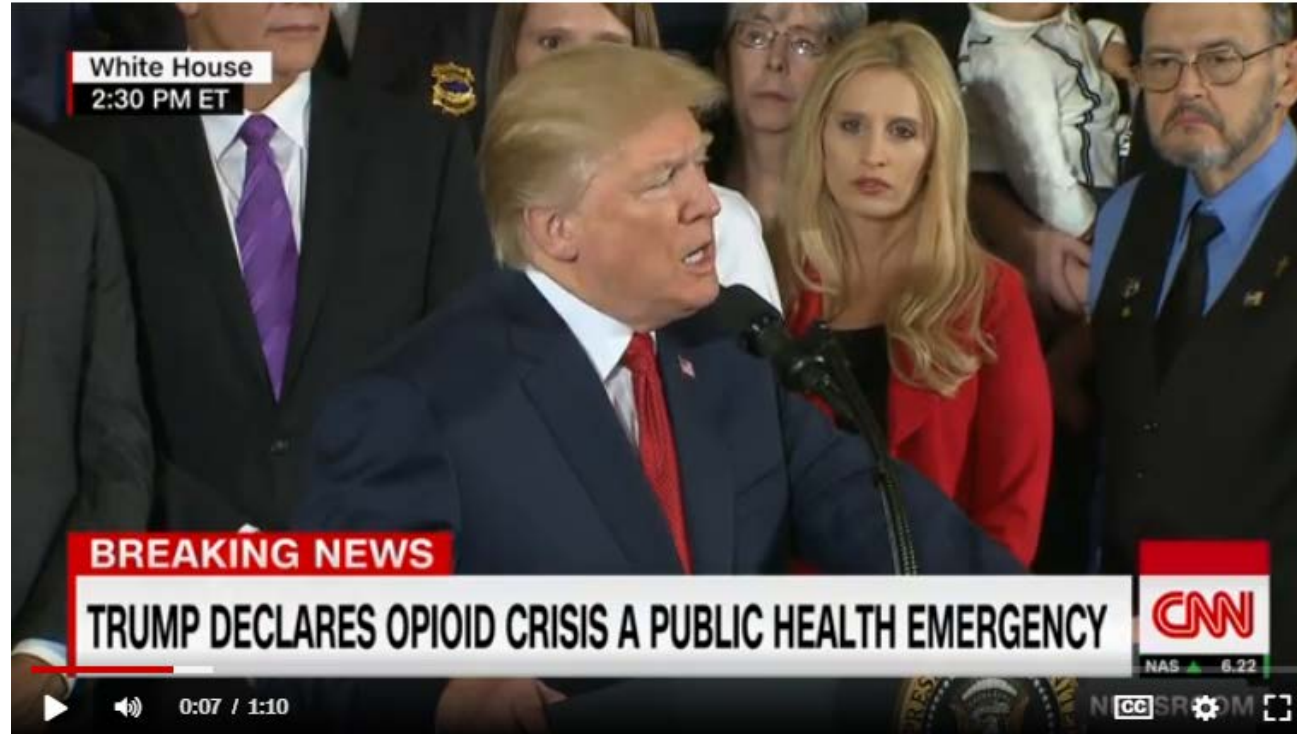


**Opioid prescriptions after
hospital discharge -> ->**

4.9 times more likely
to be chronic opioid users.

(Calcaterra, S. L., et al., 2016).

Public Health Emergency



Source: CNN news

October, 2017, President Trump declared the opioid epidemic a national public health emergency.



Medical Marijuana

ORIGINAL RESEARCH

Open Access

Cannabis as a Substitute for Opioid-Based Pain Medication: Patient Self-Report

Amanda Reiman,^{1*} Mark Welty,² and Perry Solomon³

Abstract

Introduction: Prescription drug overdoses are the leading cause of accidental death in the United States. Alternatives to opioids for the treatment of pain are necessary to address this issue. Cannabis can be an effective treat-



ELSEVIER

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdp



Is cannabis use associated with less opioid use among people who inject drugs?

Alex H. Kral^{a,*}, Lynn Wenger^a, Scott P. Novak^a, Daniel Chu^{c,2}, Karen F. Corsi^{b,1}, Diana Coffa^d, Brad Shapiro^{d,e}, Ricky N. Bluthenthal^{c,2}

^a RTI International, 351 California Street Suite 500, San Francisco, CA 94104, USA

^b Department of Psychiatry, University of Colorado, Denver School of Medicine, 1557 Ogden St., Denver, CO 80218, USA

^c Department of Preventive Medicine, Institute for Prevention Research, Keck School of Medicine, University of Southern California, Soto Street Building, SSB, 2001 N. Soto Street, 3rd Floor, Rm 302R, MC 9239, Los Angeles, CA 90032-3628, USA

^d Department of Family and Community Medicine, University of California, San Francisco, CA, USA

^e Department of Psychiatry, University of California, San Francisco, CA, USA



RESEARCH
EDUCATION
TREATMENT
ADVOCACY



The Journal of Pain, Vol 17, No 6 (June), 2016: pp 739-744
Available online at www.jpain.org and www.sciencedirect.com

Medical Cannabis Use Is Associated With Decreased Opiate Medication Use in a Retrospective Cross-Sectional Survey of Patients With Chronic Pain

Kevin F. Boehnke,^{*} Evangelos Litinas,[†] and Daniel J. Clauw^{‡,§}

^{*}Department of Environmental Health Sciences, School of Public Health, University of Michigan, Ann Arbor, Michigan.

[†]Om of Medicine, Ann Arbor, Michigan.

[‡]Departments of Anesthesiology, Medicine (Rheumatology), and Psychiatry, Medical School, University of Michigan, Ann Arbor, Michigan.

[§]Chronic Pain and Fatigue Research Center, Medical School, University of Michigan, Ann Arbor, Michigan.

Original Investigation

Medical Cannabis Laws and Opioid Analgesic Overdose Mortality in the United States, 1999-2010

Marcus A. Bachhuber, MD; Brendan Saloner, PhD; Chinazo O. Cunningham, MD, MS; Colleen L. Barry, PhD, MPP

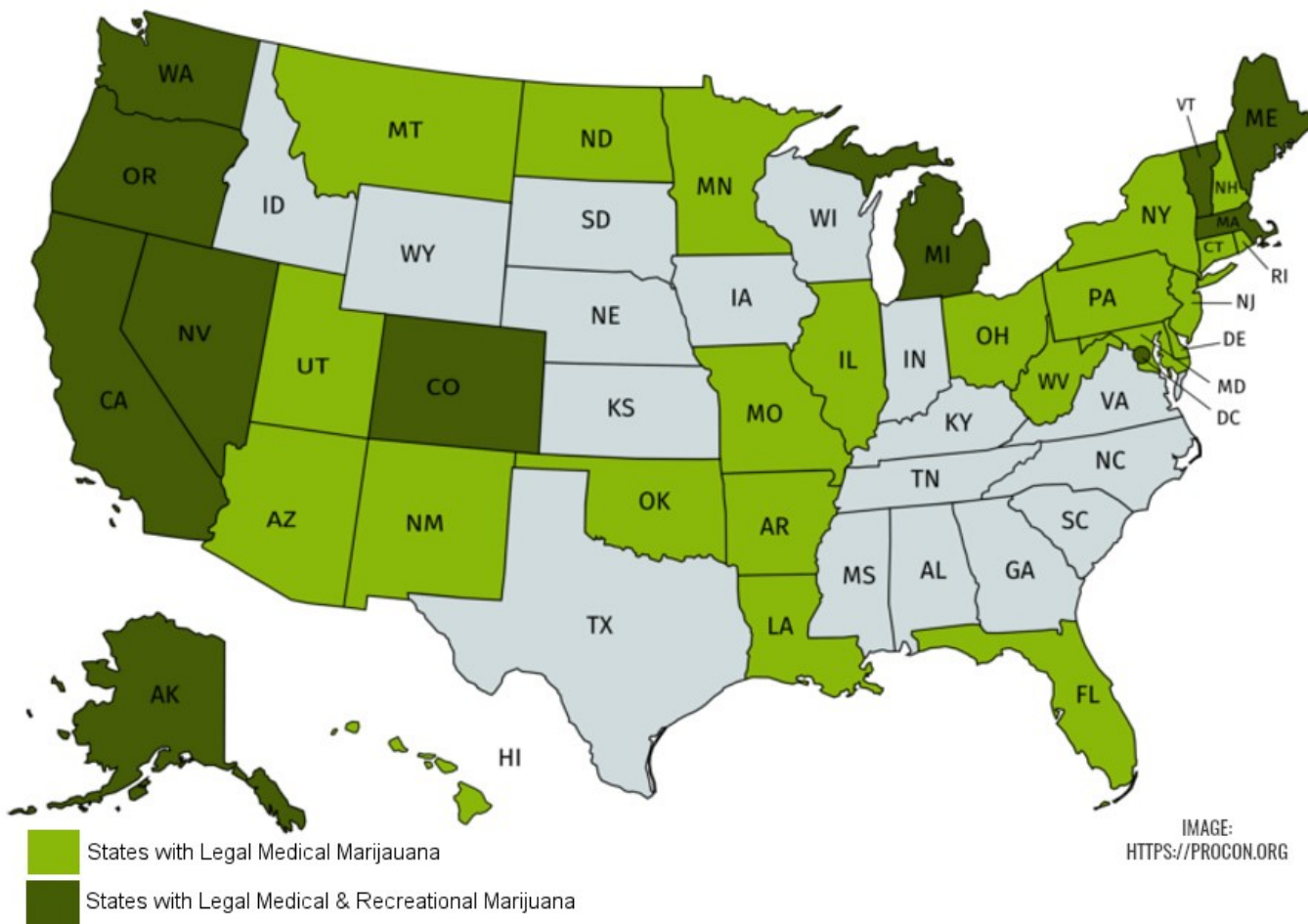
IMPORTANCE Opioid analgesic overdose mortality continues to rise in the United States, driven by increases in prescribing for chronic pain. Because chronic pain is a major indication for medical cannabis, laws that establish access to medical cannabis may change overdose mortality related to opioid analgesics in states that have enacted them.

Invited Commentary
page 1673



PennState
College of Medicine

10 Legal Recreational Marijuana States & DC 33 Legal Medical Marijuana States & DC



Research Questions

- What are characteristics of adolescent patients with persistent opioid medication use after hospital discharge?
- Is legal access to medical marijuana associated with persistent opioid medication use?

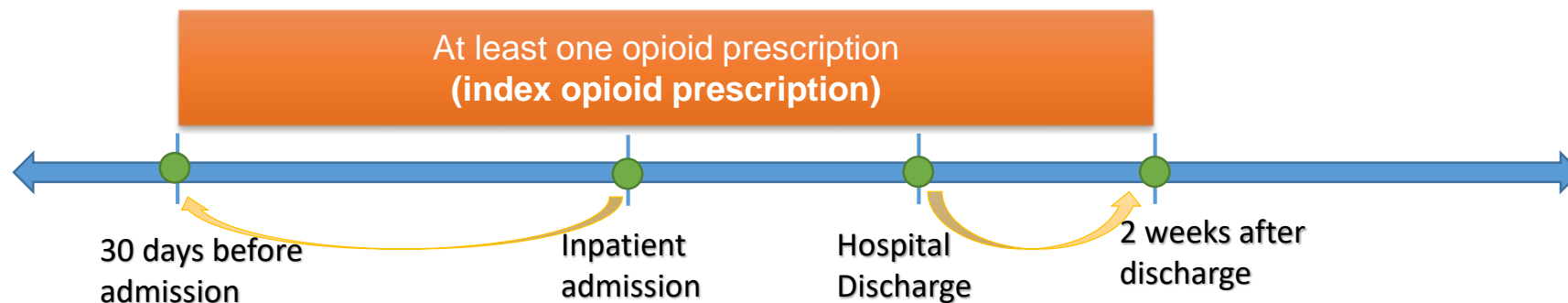
Methods

- **Data Source**

- 2013 and 2014 MarketScan® Database

- **Study sample**

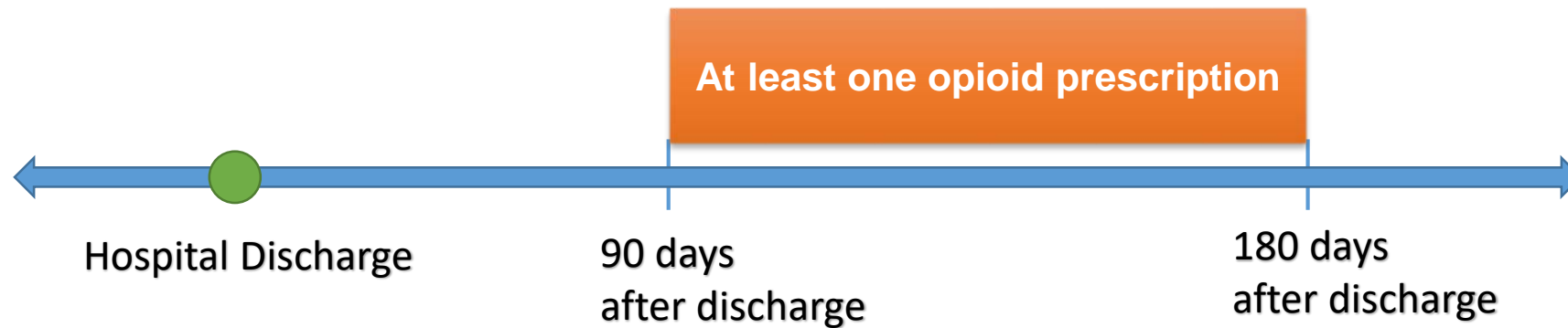
- Adolescents aged 10-18 years old who filled at least one opioid prescription during the period 30 days before through 2 weeks after an inpatient hospitalization (**defined as the index opioid prescription**) in 2013 or 2014.



Measures

- **Outcome measure**

- **Persistent opioid medication use**, which was defined as filling at least one opioid prescription during the period 90 days through 180 days after hospital discharge



Measures

- **Patient characteristics**

- Age, Sex, Geographic Region, Urban vs. Rural residence
- Year of inpatient admission
- Length of index hospital stay
- Number of pills prescribed in the index opioid prescription
- Mental Health comorbidities
 - ✓ Depression
 - ✓ Anxiety
 - ✓ ADD/ADHD (Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder)
 - ✓ Conduct Disorder

- **Whether there was legal access to medical marijuana**

Results



Table 1. Summary Characteristics of Adolescents aged 10-18 Receiving Opioid Medications (n=15,248)

Characteristics		Persistent Opioid Users		Non-Persistent Opioid Users	
		N	%	N	%
Total*		1,104	7.2	14,144	92.8
Female		679	61.5	7,827	55.3
Age	10 to 12	86	7.8	1,595	11.3
	13 to 16	422	38.2	6,429	45.5
	17 to 18	596	54.0	6,120	43.3
Average Length of Hospital Stay		4.2 ± 5.5		3.5 ± 5.4	
Average Number of Pills Prescribed*		66.6 ± 70.1		42.7 ± 36.8	
Geographic Regions*	Northeast	140	6.3	2,108	93.8
	North Central	249	7.0	3,309	93.0
	South	499	7.9	5,836	92.1
	West	216	7.0	2,891	93.0
Rural		188	17.0	2,066	14.6
Mental Health Disorder	Depression	147	13.3	1,030	7.3
	Anxiety	139	12.6	885	6.3
	ADD	76	6.9	828	5.9
	Conduct disorder	19	1.7	233	1.7
Medical Marijuana Dispensary (legal and active)		173	15.7	2,410	17.0

* Row percentages

Bold indicates statistical significance (p<0.05)

Table 2. Risk Factors for Persistent Opioid Medication Use

Characteristics		OR	95% CI	P value
Year 2014		2.36	2.08-2.68	<.0001
Age	10 to 12	1.00	-	-
	13 to 16	1.11	0.87-1.41	0.4159
	17 to 18	1.61	1.27-2.05	<.0001
Female		1.29	1.13-1.47	0.0001
Length of hospital stay		1.01	1.00-1.02	0.1055
Number of pills prescribed		1.01	1.01-1.01	<.0001
Geographic Regions	Northeast	1.00	-	-
	North Central	1.15	0.92-1.43	0.231
	South	1.34	1.09-1.64	0.0047
	West	1.26	0.96-1.65	0.0996
Rural		1.18	0.99-1.40	0.0584
Mental Health Disorder*	Depression	1.53	1.23-1.90	0.0001
	Anxiety	1.59	1.27-1.99	<.0001
	ADD	1.06	0.82-1.37	0.6829
	Conduct Disorder	0.87	0.53-1.43	0.5903
Medical Marijuana Dispensary (legal and active)		1.00	0.77-1.31	0.9757

*Reference groups are absence of diagnosis
 Bold indicates statistical significance (p<0.05)

Table 2. Risk Factors for Persistent Opioid Medication Use

Characteristics		OR	95% CI	P value
Year 2014		2.36	2.08-2.68	<.0001
Age	10 to 12	1.00	-	-
	13 to 16	1.11	0.87-1.41	0.4159
	17 to 18	1.61	1.27-2.05	<.0001
Female		1.29	1.13-1.47	0.0001
Length of hospital stay		1.01	1.00-1.02	0.1055
Number of pills prescribed		1.01	1.01-1.01	<.0001
Geographic Regions	Northeast	1.00	-	-
	North Central	1.15	0.92-1.43	0.231
	South	1.34	1.09-1.64	0.0047
	West	1.26	0.96-1.65	0.0996
Rural		1.18	0.99-1.40	0.0584
Mental Health Disorder*	Depression	1.53	1.23-1.90	0.0001
	Anxiety	1.59	1.27-1.99	<.0001
	ADD	1.06	0.82-1.37	0.6829
	Conduct Disorder	0.87	0.53-1.43	0.5903
Medical Marijuana Dispensary (legal and active)		1.00	0.77-1.31	0.9757

*Reference groups are absence of diagnosis
 Bold indicates statistical significance (p<0.05)

Strengths & Limitations

- Strengths
 - A large, national private health insurance claims database
 - Association of medical marijuana law with persistent opioid use among adolescents
- Limitations
 - No Medicaid data are included
 - Data from 2013/2014 only

Conclusions

- Several patient characteristics including **number of pills prescribed** and **mental disorders** were significantly associated with persistent opioid use among adolescents.
- Access to medical marijuana was not a significant predictor of persistent opioid use among adolescents.
- Clinicians and policymakers should be aware of the risk of long-term and excessive opioid medication use following hospitalization.

