Youth & Opioids: A longitudinal investigation into contributing factors in the development of opioid use disorders

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Introduction

- 61% of recent drug overdose deaths in 15-25 year olds involve some form of opioid.
- Evidence suggests that adolescents, who experience elevated levels of substance exploration, are prone to opioid misuse during this developmental period.
- There is a significant gap in data on the nature of pain medication prescribing and adolescent outcomes in medical settings – where most youth are legitimately introduced to prescription opioids.

- **This study aims to:**

1.) Create the first longitudinal clinical research study to prospectively follow adolescents who receive opioid prescriptions for pain as part of routine outpatient pediatric medical care.

2.) Characterize family, peer, and adolescent risk factors over the course of two years.

Theoretical model of risk and protective factors

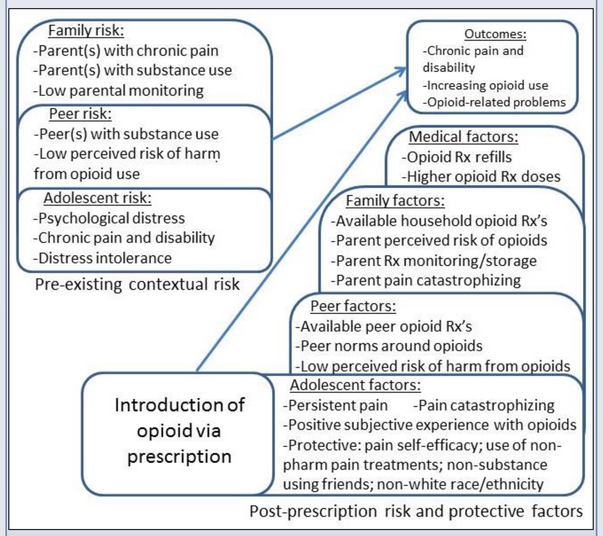

Figure 1 from models of adolescent substance abuse, in addition to intergenerational and family models of pain. Within this purposed model is a unique consideration shows the theoretical model underlying this study. The figure draws for factors relevant to opioid prescriptions and pain. Together, these models posit risk and protective factors at several levels, including bidirectional and interactive effects, which are most accurately tested at multiple time points across development.

- Genetic predisposition for substance abuse increases likelihood to developing addiction, but only with exposure to a substance.
- Peer substance use may create access and a set of social rules and norms around opioid use.
- Adolescents who experience physical and/or emotional pain, including relatively greater distress, and potentially who have less ability to navigate or tolerate distress may experience unexpectedly positive reduction in physical and/or psychological pain in the context of opioid use, and thus, may be at an elevated risk for using medication beyond the need of physical pain.

Materials and Methods

Participants:

- 500 adolescents age 14-18 receiving opioid Rx and a parent/guardian.
- Youth and a parent/guardian complete self-report measures.
- Youth will complete daily diaries.
- Youth and a parent/guardian will be assessed comprehensively at baseline and followed every 6 months for 2 years.

Adolescents and their parent/guardian will be enrolled in the study within 72 hours after prescription.

Youth measures:

Youth phone interview:
- TLFB phone interview

Youth survey:
- Demographics

PROMIS pediatric profile:
- Pain intensity scale
- Pain interference
- Physical function mobility
- Fatigue scale
- Anxiety scale
- Depression scale
- Peer relationships
- Pain catastrophizing scale- PCS-C
- Pain catastrophizing scale- PSEQ-C
- Distress intolerance
- Pain treatment history
- Goal orientation scale GOS
- Puberty development scale PDS
- Multi-group ethnic identity measure MEIM

Parent measures:

Parent phone interview:
- TLFB phone interview
- FHAM
- Parental medication monitoring
- Prescription dispense/refill verification

Parent Survey:
- Demographics

PROMIS measures:
- Pain behavior
- Pain interference
- Anxiety scale
- Anger scale
- Depression scale
- Pain catastrophizing scale- PCS-P
- Pain catastrophizing scale- PCS-C
- CSRI

Inclusion Criteria:	Exclusion Criteria:
14- 18 years old	Current serious comorbid chronic condition in adolescent
Opioid prescription for nonmalignant pain	Parent or adolescent non-English speaking
Pain not related to chronic disease	Parent or adolescent with developmental delay or cognitive impairment
Adolescent living with participating parent (at least 50% of the time in case of joint custody)	Adolescent on recent (past 3 month) chronic opioid therapy
Access to Internet to complete assessments	Past 12-month presence of cancer

Preliminary Study

A preliminary study was conducted using data from OHSU's Research Data Warehouse to determine study feasibility.
In 2014:
- n= 1,016 adolescents were prescribed opioids
- n= 833 youth ≤ 18 years
- The ARPP lab estimates that across a 2.5-3 year enrollment period, there will be n=2,500 potentially eligible adolescents. It's expected the distribution of enrollment across clinical settings to be like the data in Table 1.

Table 1. Initial and subsequent opioid prescriptions

OHSU Clinical setting	Age in years (range 14-19) M (SD)	Opioid Rx's n (%)	% with refill/ subsequent Rx at <1 yr
ED	16.94 (1.76)	376 (37.0%)	28.3%
Day Surgery	16.20 (1.75)	486 (47.8%)	24.9%
Outpatient	15.87 (1.59)	154 (15.2%)	17.1%
Total	16.44 (1.75)	1,016	25.0%

Initial Results

As of 2020: n = 139 14-18-year olds

Variable	Males M (SD)	Females M (SD)	t(df)
Pain frequency[a]	62.5% (38.5)	75.7% (30.5)	t(108)=-1.93
Average diary pain intensity (0-100)	39.09 (18.90)	47.59 (19.78)	t(101)=-2.23*
Opioid use: % diary days with use	10.3% (19.9)	14.2% (22.4)	t(107)=-.96
Pain Catastrophizing Scale	11.19 (10.03)	19.74 (12.01)	t(102)=-3.95***
PROMIS Anxiety	46.77 (10.11)	55.45 (11.58)	t(100)=-4.03***
PROMIS Depression	50.04 (11.83)	56.69 (11.57)	t(101)=-2.85**
Diary negative affect: Mad (0-100)	18.09 (17.54)	22.93 (18.78)	t(108)=-1.39
Diary negative affect: Sad (0-100)	20.15 (19.69)	29.60 (22.38)	t(108)=-2.35*
Diary negative affect: Worried (0-100)	15.38 (18.84)	25.62 (23.63)	t(108)=-2.53**

* $p<.05$, ** $p<.01$, *** $p<.001$; a: percent of diary days reporting pain present

Significance

We expect our data to reveal:
- Adolescents who receive prescriptions for opioids for chronic pain conditions (vs. acute or post-op pain) will have higher psychological distress and pain catastrophizing; be more likely to have a parent(s) with a chronic pain condition, a current opioid prescription, and higher pain catastrophizing; and be more likely to have peers with opioid prescriptions and low perceived risk of harm.
- Adolescent baseline pain risk and increasing pain frequency and intensity over time and increasing peer risk factors will be associated with increases in opioid use, problems, and OUD symptoms.
- Post-prescription family risk (parent medication monitoring, opioid prescriptions in the household, and parent catastrophizing about adolescent pain) will mediate the longitudinal association between family history risk (chronic pain, substance abuse, perceived risk) and opioid use, problems, and OUD symptoms.
- Post-prescription adolescent resilience factors will attenuate the association between peer risk and adolescent opioid outcomes over 2 years.

Literature Citations

Dash, G. F., Wilson, A. C., Morasco, B. J., & Feldstein Ewing, S. W. (2018). A model of the intersection of pain and opioid misuse in children and adolescents. *Clinical Psychological Science*, *6*(5), 629–646. https://doi.org/10.1177/2167702618773323

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