

Pediatric Exposures to Prescription Opioid Analgesics: Trends Over Time

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DISCLOSURE STATEMENT

George Sam Wang

Dr. Wang has disclosed the following financial relationships. Any real or apparent conflicts of interest related to the content of this presentation have been resolved.

Affiliation / Financial Interest	Organization
Grant	Colorado Department of Public Health and Environment
Royalties	Up To Date

Background

- Worldwide epidemic, affecting over 26 million people worldwide
- United States alone, affecting over 2 million people
 - Related deaths increasing 3 fold from 2001 to 2013
 - Estimated to be over 16,000 annually
- Steady increase from 2000 through 2010, rates plateaued and even decreased between 2011 through 2013, perhaps showing signs of progress in controlling the epidemic
- The toll this epidemic has on the pediatric population has only recently been recognized, affecting all pediatric age groups

Objectives

- Using the Researched Abuse, Diversion, and Addiction-Related Surveillance (RADARS[®]) System Poison Center Program, we analyzed rates of unintentional pediatric exposures and deaths from prescription opioid analgesics, from 2006 through 2014
- Describe rates of exposures to 9 individual prescription opioid analgesics

Methods

- RADARS[®] System collects surveillance data addressing prescription drug abuse
 - Seven programs, each assessing prescription drug abuse from a different perspective
 - **Our study utilizes poison center program**
 - In 2014: involves 46 US poison centers (not including DC and PR)
 - Covering 92.6% of the US population
- Opioid exposure calls to participating poison centers

Methods (cont)

- Children < 6 years
- January 2006 through December 2014
- Analyses are based upon exposures to an opioid of interest
 - Buprenorphine, fentanyl, hydrocodone, hydromorphone, methadone, morphine, oxycodone, oxymorphone, and tramadol
- IMS for prescription data

Poison Center Opioid Exposures in Children < 6 years

January 2006 – December 2014

	Total (n=55,241), %
Demographics	
Median Age (IQR)	2 (1.5,2.5)
Male (%)	29,134(52.7)
Unknown sex	195(0.4)
Exposure Site (%)	
Own home	36,438(66.0)
Other home	2,218(4.0)
Other	617(1.1)
Unknown location	15,968(28.9)

Poison Center Opioid Exposures in Children < 6 years

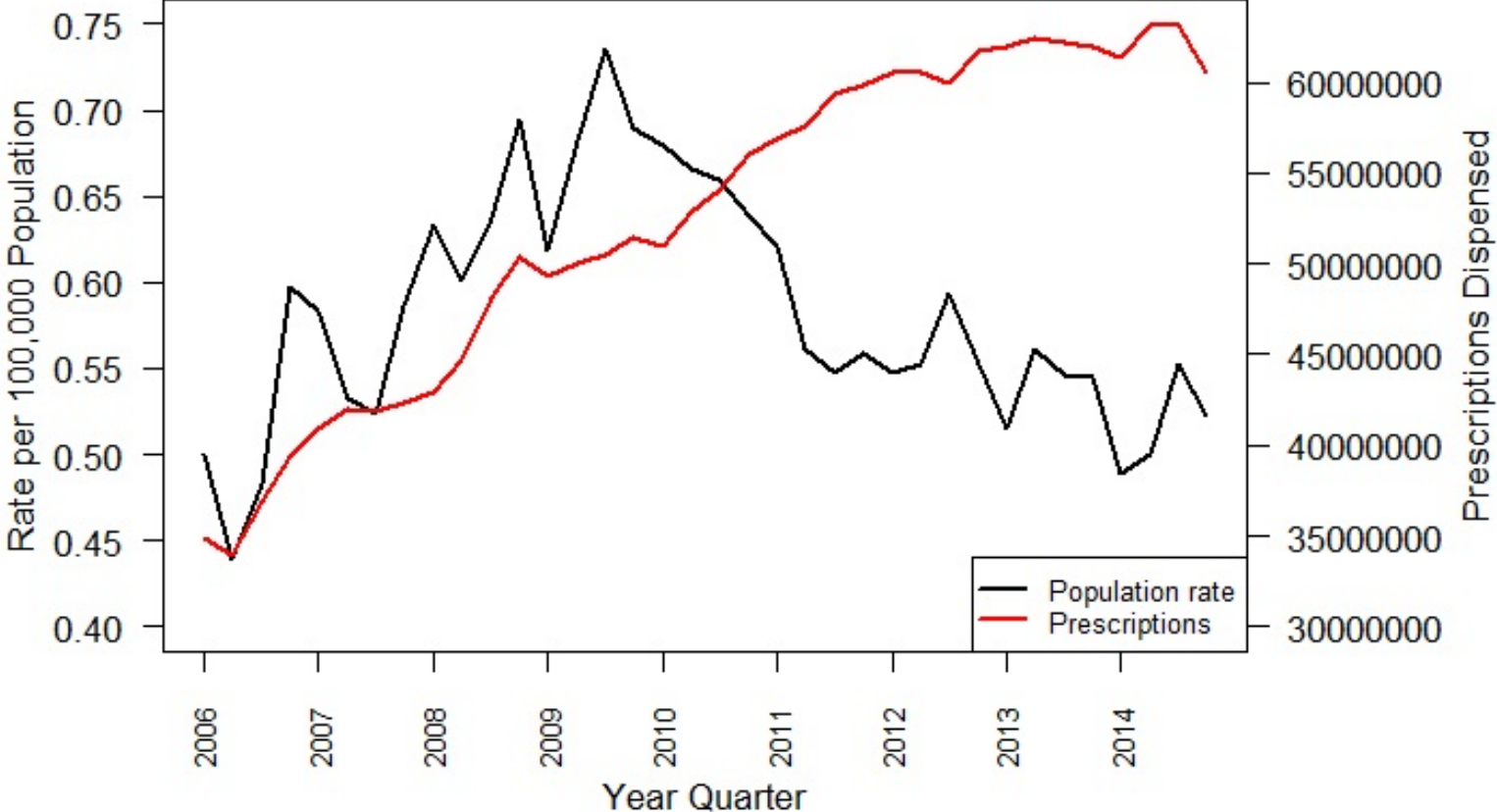
January 2006 – December 2014

	Total (n=55,241), %
Route of Exposure	
Ingest	14,479(26.2)
Inhale	32(0.1)
Injection	9(0)
Dermal	80(0.1)
Transdermal	814(1.5)
Other	2,460(4.5)
Unknown	37,367(67.6)
Medical Outcome	
No effect	26,012(47.1)
Minor effect	8,037(14.5)
Moderate effect	2,902(5.3)
Major effect	504(0.9)
Death	23(<0.1)
Unknown	42(0.1)
Unable to follow	17,721(32.1)

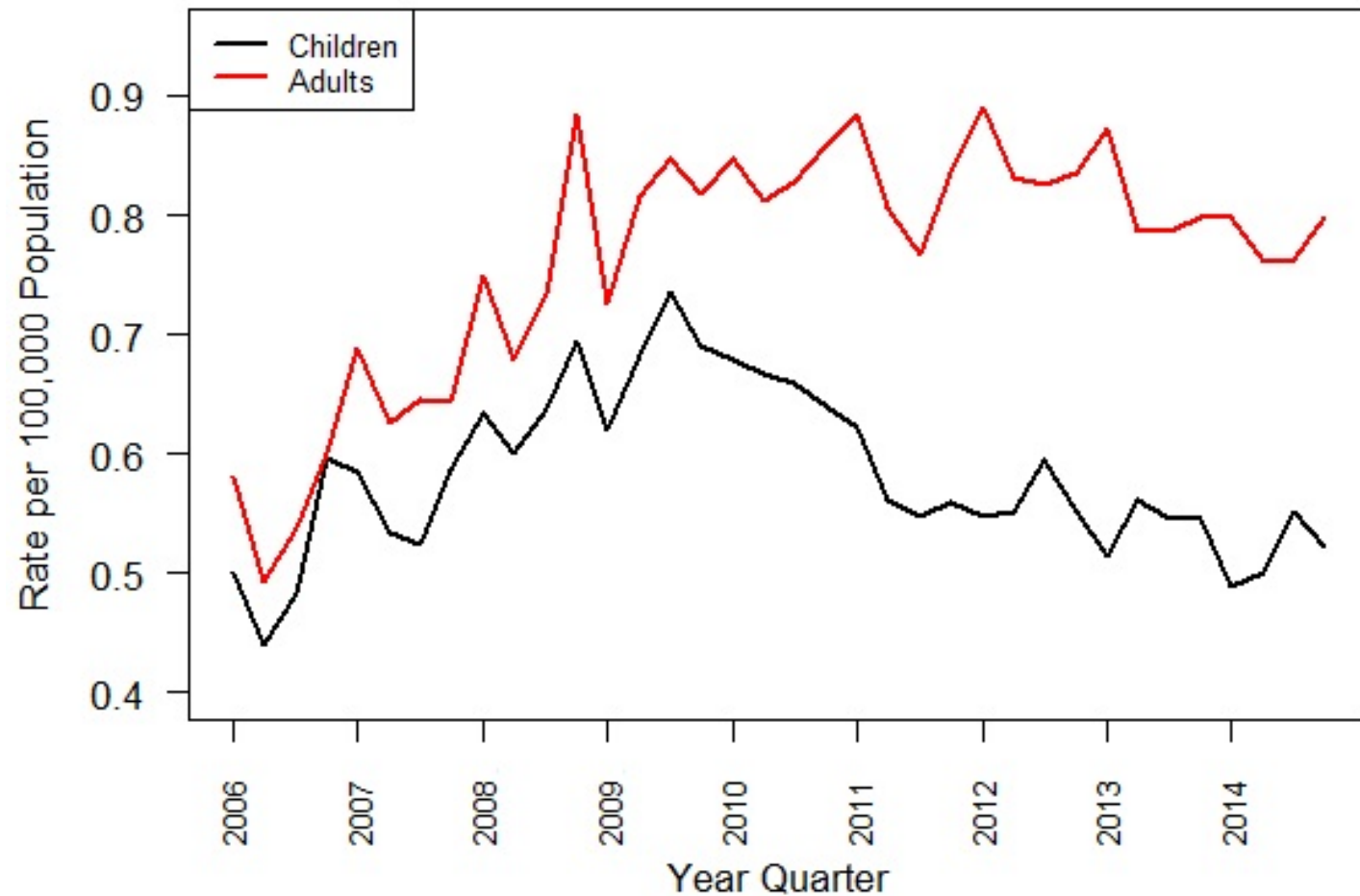
Poison Center Opioid Exposures in Children < 6 years January 2006 – December 2014

Opioid	Total (n=55,241), %
Hydrocodone	22,082 (40%)
Oxycodone	11,413 (21%)
Tramadol	9,655 (17%)
Buprenorphine	6,446 (12%)
Morphine	2,392 (4%)
Methadone	2,050 (4%)
Fentanyl	375 (<1%)
Oxymorphone	222 (<1%)

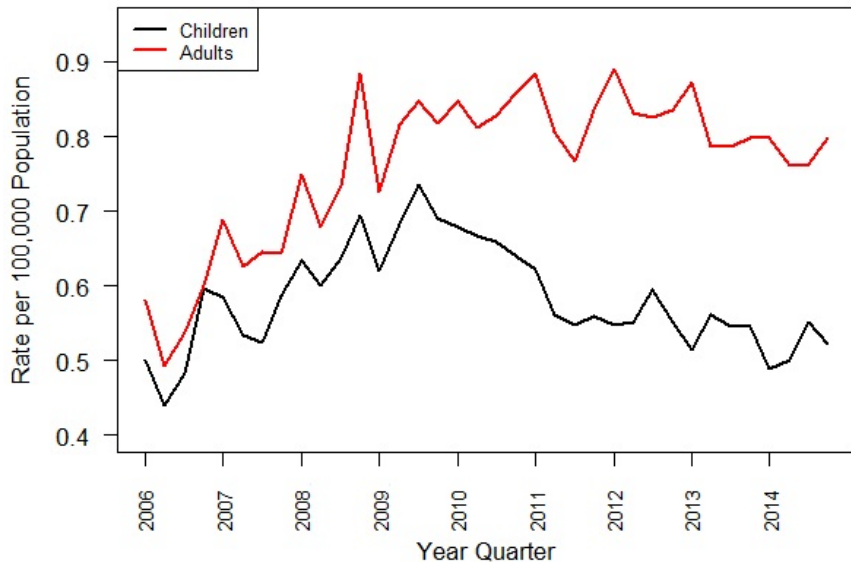
Poison Center Exposure Rates in Children < 6 Years January 2006 -December 2014



Poison Center Exposure Rates in Children < 6 years and Adults January 2006 -December 2014



Decreasing Pediatric Exposures

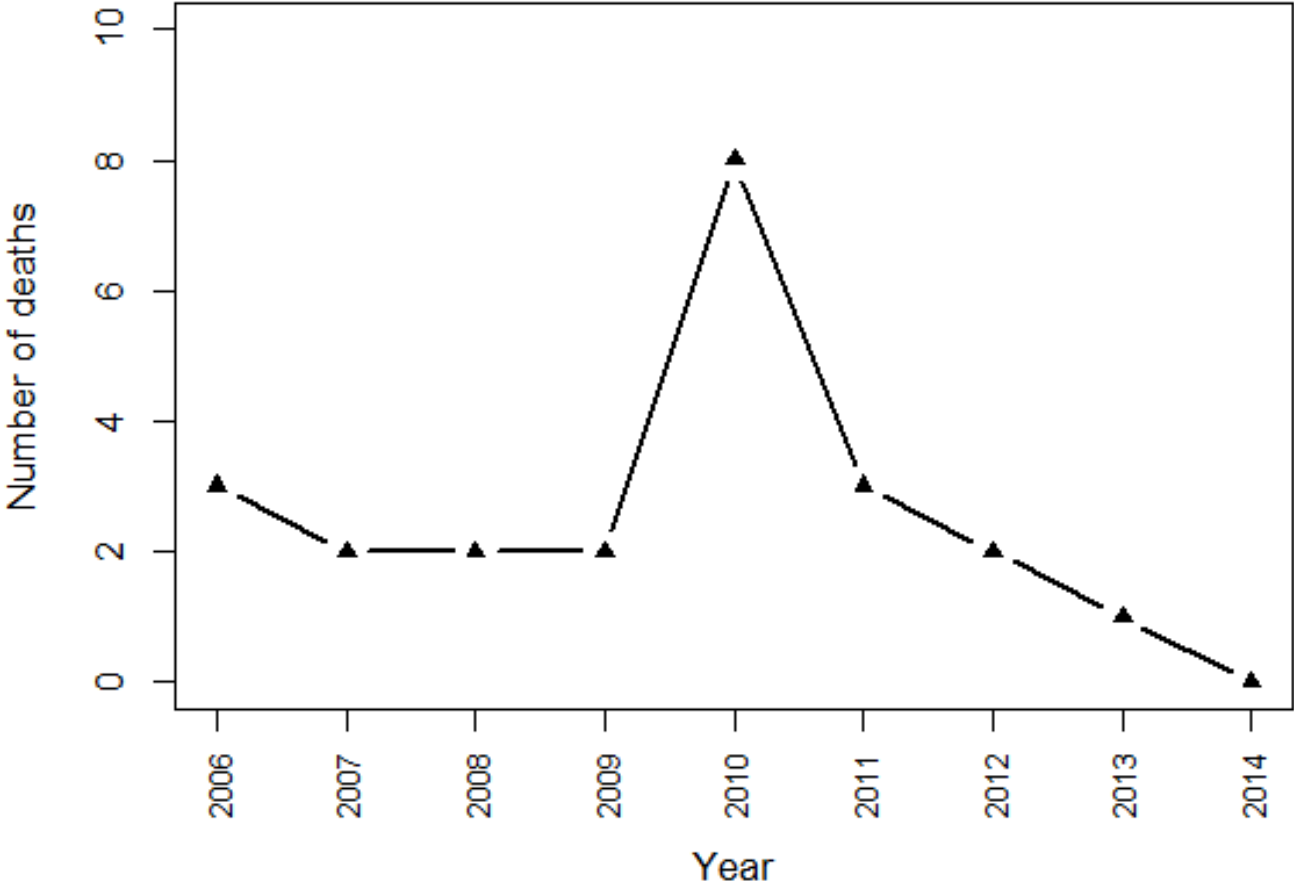


- Decrease in adult abuse, misuse and diversion
 - Opioid risk evaluation and mitigation strategy
 - PDMP's
 - Safe prescribing guidelines and awareness
 - Decreased number of prescriptions
- Public awareness and education
- Take back programs
- Abuse deterrent formulations, packaging

RADARS Poison Center Deaths in Children < 6 Years

Opioid	Number of Deaths, n(%)
Methadone	7 (30.4)
Hydrocodone	4 (17.4)
Oxycodone	3 (13)
Buprenorphine	3 (13)
Tramadol	2 (8.7)
Fentanyl	1 (4.3)

Annual RADARS Poison Center Deaths in Children < 6 Years



Limitations

- Poison Center underestimate the absolute rate of opioid exposure as Poison Centers are not called for all exposures
- Poison center data are a sample of total events and do correlate well with other data sources
- Also, not all exposures are captured, however 50 of 55 poison centers participate in the RADARS System, covering 94.3% of the US population
- Some Poison Center data may be missing since not all data points are always documented and provided

Conclusions

- A decline of pediatric opioid exposures rates has been demonstrated
- The opioid abuse, misuse and diversion epidemic in the United States continues to have a burden of unintentional exposures on the pediatric population, and deaths continue to be reported
- Improving prescribing for acute use
- Deterring diversion and abuse of opioid analgesics
- Patient and caregiver education with a focus on treatment programs

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