

Methodologies for Estimating Rates of Opioid Prescribing

Christina A. Mikosz, MD, MPH, FACP

Medical Officer

Division of Unintentional Injury Prevention

National Center for Injury Prevention and Control

Centers for Disease Control and Prevention

National Center for Injury Prevention and Control

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Background

- Opioid prescribing in the United States has peaked and begun to decline
 - Decreases noted in¹:
 - Annual prescribing rate
 - Rate of prescriptions written for <30 days
 - Average daily MME per prescription
- However, in 2015², prescribing rates still remained three times as high as in 1999
 - Almost four times as high as the amount distributed in Europe³

¹Guy GP Jr., Zhang K, Bohm MK, et al. Vital Signs: Changes in Opioid Prescribing in the United States, 2006–2015. MMWR Morb Mortal Wkly Rep 2017;66:697–704.

²Data from 2015 represents the most recent data on prescribing practices currently available.

³International Narcotics Board; World Health Organization population data. By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2017

Background

- Multiple entities have developed clinical guidelines for opioid prescribing for both acute and chronic pain
 - Government agencies, e.g. CDC Guideline for Prescribing Opioids for Chronic Pain, 2016
 - Medical professional societies, e.g. American Pain Society Guidelines on the Management of Postoperative Pain, 2017
 - Health departments, e.g. NYC ED Discharge Opioid Prescribing Guidelines, 2013
 - Other regulatory agencies, e.g. Medical Board of California Guidelines for Prescribing Controlled Substances for Pain, 2014

Background

- Recent research has highlighted several discrepancies in opioid prescribing practice, including:
 - Amount of opioids prescribed versus the amount actually taken by the patient
 - Amount of opioids prescribed versus subjective reports of pain by patients
 - Marked variation in opioid prescribing practices by clinicians for certain diagnoses or following certain medical procedures

Background

These data collectively raise several questions:

- 1) *What is the current opioid prescribing rate in the United States for various diagnoses and procedures?***
- 2) *What would the opioid prescribing rate in the United States be for various diagnoses and procedures if best practices were followed?***
- 3) *How much should opioid prescribing change in the United States to bring prescribing rates in line with best practices?***

Opioid Prescribing Estimates Project

- CDC is proposing a research project to address these questions and to:
 - Analyze medical claims data to estimate current opioid prescribing rates for various conditions and procedures
 - Use existing clinical opioid prescribing guidelines and research studies to estimate what the best-practice prescribing rate would be for certain diagnoses and procedures
 - Calculate how much the opioid prescribing rate would need to change across the U.S. population for these diagnoses/procedures in order to better align with best practice
 - Disseminate findings via journal publication and translational/communication materials

What falls outside of the study's scope:

- **Establishing a new opioid prescribing guideline, or updating the existing 2016 *CDC Guideline for Prescribing Opioids for Chronic Pain***
 - This is a research study examining population-level opioid prescribing trends.
 - The prescribing estimates used in our analysis are not meant to represent new prescribing recommendations on the individual patient level.

Prevalence of Inappropriate Antibiotic Prescribing in U.S. Ambulatory Care Visits

- 2016 study led by CDC's Division of Healthcare Quality Promotion
- Examined rates of outpatient prescribing of oral antibiotics, by age and diagnosis
- Estimated portions of antibiotic use that may be considered inappropriate in the U.S.
- Used national guidelines and regional variation in prescribing to derive diagnosis-specific prevalence and rates of antibiotic prescribing, both total and appropriate
 - 2010-2011 data from National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey
- Expert workgroup convened by Pew Charitable Trusts to determine estimates representing appropriate antibiotic prescribing

Fleming-Dutra KE et al. Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011.

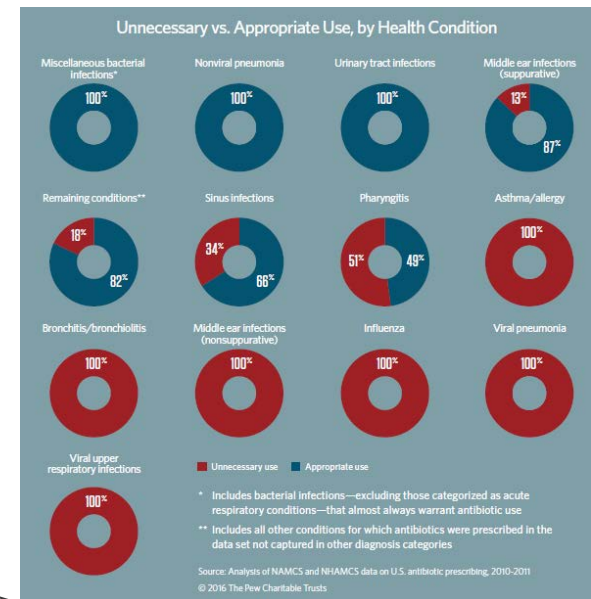
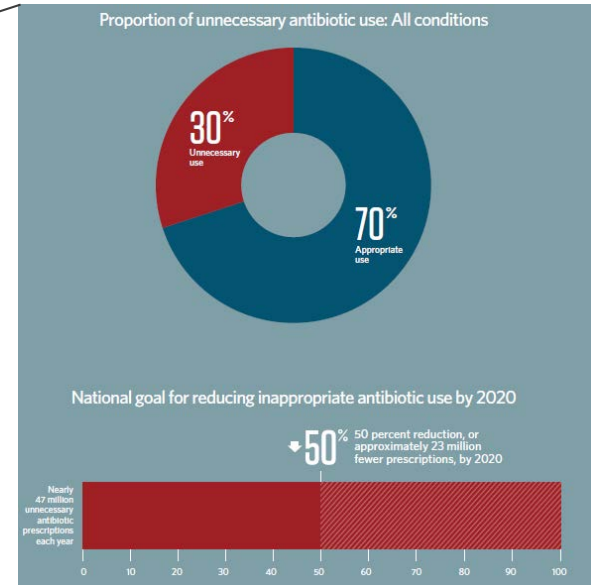
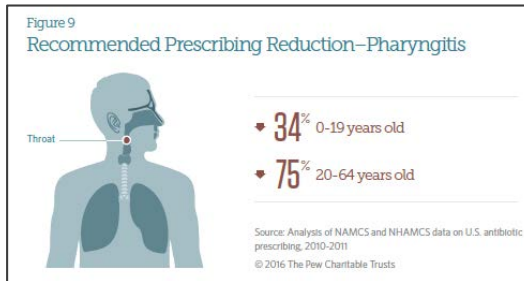
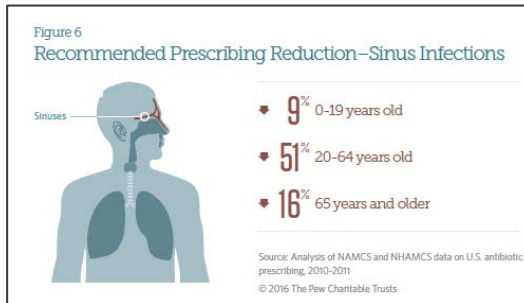
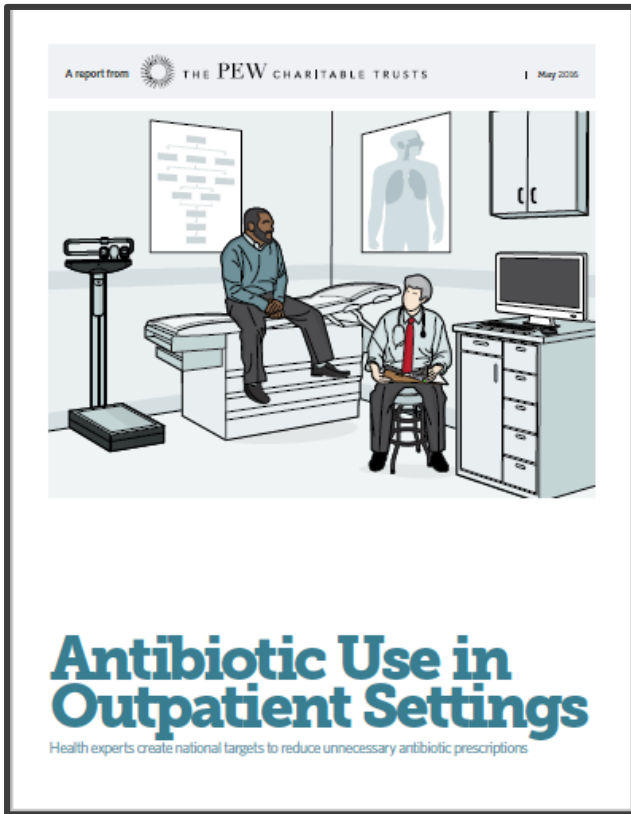
JAMA. 2016 May 3;315(17):1864-73.

Prevalence of Inappropriate Antibiotic Prescribing in U.S. Ambulatory Care Visits

Table 4. Mean Annual Antibiotic Prescribing Rates in 2010-2011 US NAMCS/NHAMCS vs Estimated Appropriate Antibiotic Prescribing Annual Rates per 1000 Population by Age Group and Diagnosis

	Rates per 1000 Population		Potential Reduction in Annual Antibiotic Prescription Rates, %
	2010-2011 Weighted Mean Annual Rate of Antibiotic Prescriptions (95% CI)	Estimated Appropriate Annual Rate of Antibiotic Prescriptions ^a	
0-19 y			
All acute respiratory conditions ^b	421 (369 to 473)	278 ^c	-34
Sinusitis	65 (51 to 79)	59	-9
Suppurative otitis media	154 (131 to 177)	138	-10
Pharyngitis	91 (76 to 105)	60	-34
Asthma or allergy; bronchitis or bronchiolitis; influenza; nonsuppurative otitis media; viral URI; and viral pneumonia ^e	90 (71 to 108)	0	-100
Pneumonia	22 (16 to 27)	22	0
Other conditions ^d	225 (197 to 252)	180 ^f	-20
Urinary tract infection	23 (17 to 28)	23	0
Miscellaneous bacterial infections	20 (13 to 26)	20	0
Remaining other conditions ^g	182 (160 to 205)	137	-25
Total^h	646 (571 to 721)	458	-29

Inappropriate Antibiotic Prescribing: Translational Materials



Opioid Prescribing Estimates Project: *Data Analysis*

- Health insurance claims data
 - Nationally representative dataset of commercially insured and Medicare Advantage population
 - Data on prescription claims and medical encounters, allowing linkage of opioid prescriptions to diagnosis down to the patient and medical encounter level
 - Geographic identifier: region or state
 - Time frame: Q1 2016 through Q1 2018

Opioid Prescribing Estimates Project:

Data Analysis

- Examine data for opioid prescribing rates across a spectrum of acute and chronic pain diagnoses
 - ICD-10-CM diagnosis codes
 - ICD procedure codes
 - Current Procedural Terminology (CPT) codes
 - Healthcare Common Procedure Coding System (HCPCS) codes
- Focus on *outpatient* opioid prescriptions
- Calculation of:
 - Dosage, in morphine milligram equivalents (MME)
 - Duration, in # days
 - Total MME

Opioid Prescribing Estimates Project:

Examples of Diagnoses

ACUTE PAIN

- Post-operative
- Kidney stones
- Migraine
- Fractures
- Sickle cell crisis
- Gallstones
- Sprains/strains

CHRONIC PAIN

- Osteoarthritis
- Chronic low back pain
- Fibromyalgia
- Neuropathic pain
- Sickle cell disease
- Rheumatoid arthritis
- Interstitial cystitis

Opioid Prescribing Estimates Project:

Examples of Diagnoses

- **Pain associated with active cancer, palliative care, or end of life care**
 - Analyzed separately from prescriptions for acute and chronic pain
 - Opioid prescriptions for these indications are all considered within the scope of best practice
 - Will be included in the analysis to estimate the proportion of opioids that are prescribed for these purposes on a population level

Opioid Prescribing Estimates Project: *Determination of Best Practice Estimates*

- Obtain recommendations from the NCIPC Board of Scientific Counselors (BSC)
- Request formation of an Opioid Prescribing Estimates Workgroup to provide observations to the BSC

Opioid Prescribing Estimates Project: *Current Prescribing vs Best Practice*

- CDC will construct best practice prescribing estimates based on available guidelines and research
 - For diagnoses/procedures where no published guideline nor consensus expert opinion exists, the “best practice” opioid prescribing rate might be represented by the lowest regional prescribing rate
- Calculate the difference between *current prescribing rates* and *best practice prescribing rates*
 - ***This difference helps define the change in current prescribing practices needed to align existing standards with best clinical practice***

Opioid Prescribing Estimates Project: *Dissemination of Findings*

- Manuscript published in a peer-reviewed scientific journal
- Translation/communication materials highlighting study findings
- Dissemination of all materials to targeted audiences

Stakeholders

- Scientific community
- Patients
- Clinicians
- Health systems
- Healthcare quality improvement experts
- Public health agencies and public health professionals
- Other organizations involved in addressing the opioid epidemic



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

www.cdc.gov/injury

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.