

An Evaluation of the Prevalence of Acute and Chronic Pain Medication Use in the United States: a Real-world Database Analysis

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BACKGROUND

- Pain is one of the most common reasons Americans seek medical care and is associated with significant economic burden and patient morbidity.^{1,2}
- While there are varying definitions of pain in the published literature and in clinical practice, generally accepted definitions of acute vs. chronic pain are as follows:
 - Chronic pain is defined by the International Society for the Study of Pain (IASP) as persistent or recurrent pain that lasts for ≥ 3 months.²
 - Acute pain may be characterized as experiencing an inciting event or stimulus that occurs suddenly and resolves when the underlying cause is treated or healed, generally within a period of 3 months or less.³
- Estimates of pain prevalence in the United States (US) also vary widely in the literature; estimates range from 50 to 100 million people.^{4,5}

OBJECTIVES

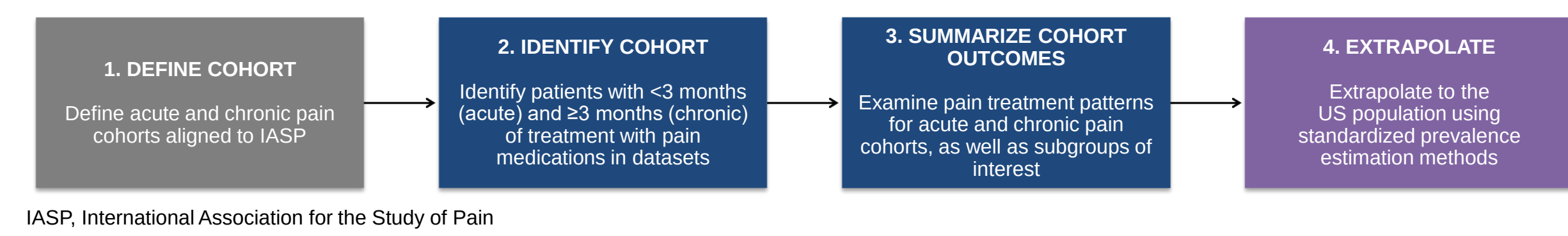
- To provide national-level estimates of the US prevalence of acute and chronic pain requiring management with prescription medication.
- To examine medication treatment patterns for the overall acute and chronic pain populations as well as for a subgroup of patients with chronic peripheral neuropathic pain (PNP), a particularly severe form of chronic pain for which treatment options are limited.

METHODS

Overview

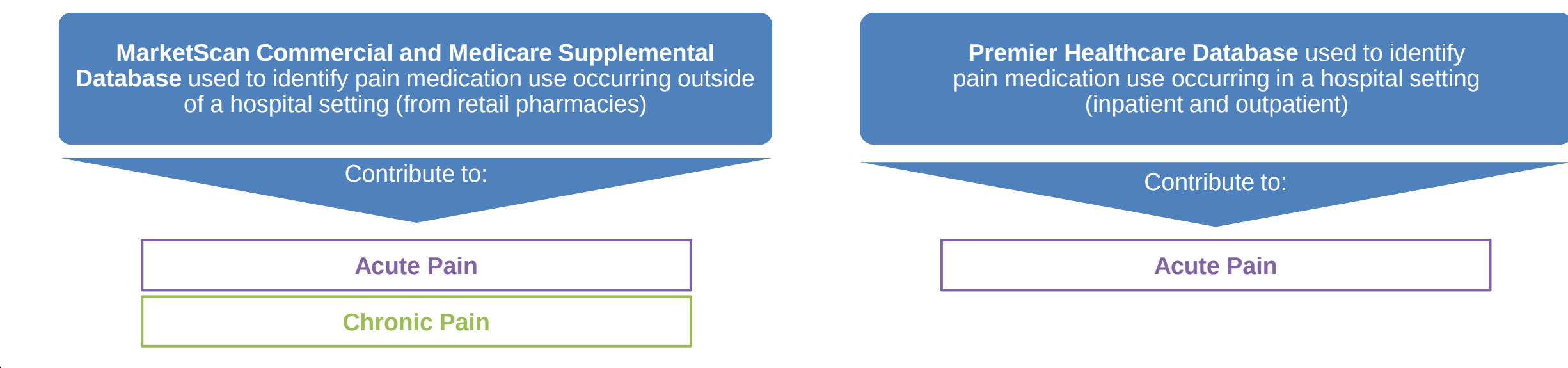
- A retrospective cross-sectional study using two robust, nationally representative datasets was conducted to provide an objective, complementary approach to evaluating the prevalence of pain medication use in the US (**Figure 1**)

Figure 1. Study Methods Overview



- A study period of January 1, 2019, to December 31, 2019 (inclusive) was used to avoid capturing medical utilization and treatment trends impacted by COVID-19 (e.g., limited availability of routine and emergency medical care, postponement of elective surgical procedures, etc.)
- Pain medications considered in the analysis included opioids, nonsteroidal anti-inflammatory drugs (NSAIDs), non-opioid analgesics, anti-convulsants, local anesthetics, and serotonin and norepinephrine reuptake inhibitor (SNRI) antidepressants:
 - The chronic pain cohort included all routes of administration, including oral, parenteral and local; the acute pain analysis excluded all parenteral drugs
 - In the chronic pain cohort, anti-convulsants and antidepressants were only considered for patients with evidence of a chronic pain condition, as to not identify patients using these medications for non-pain conditions
 - The acute pain cohort did not include antidepressants, and included only pregabalin and gabapentin for anti-convulsants
- Pain medication use was identified in the datasets summarized in **Figure 2**

Figure 2. Study datasets



Patient population

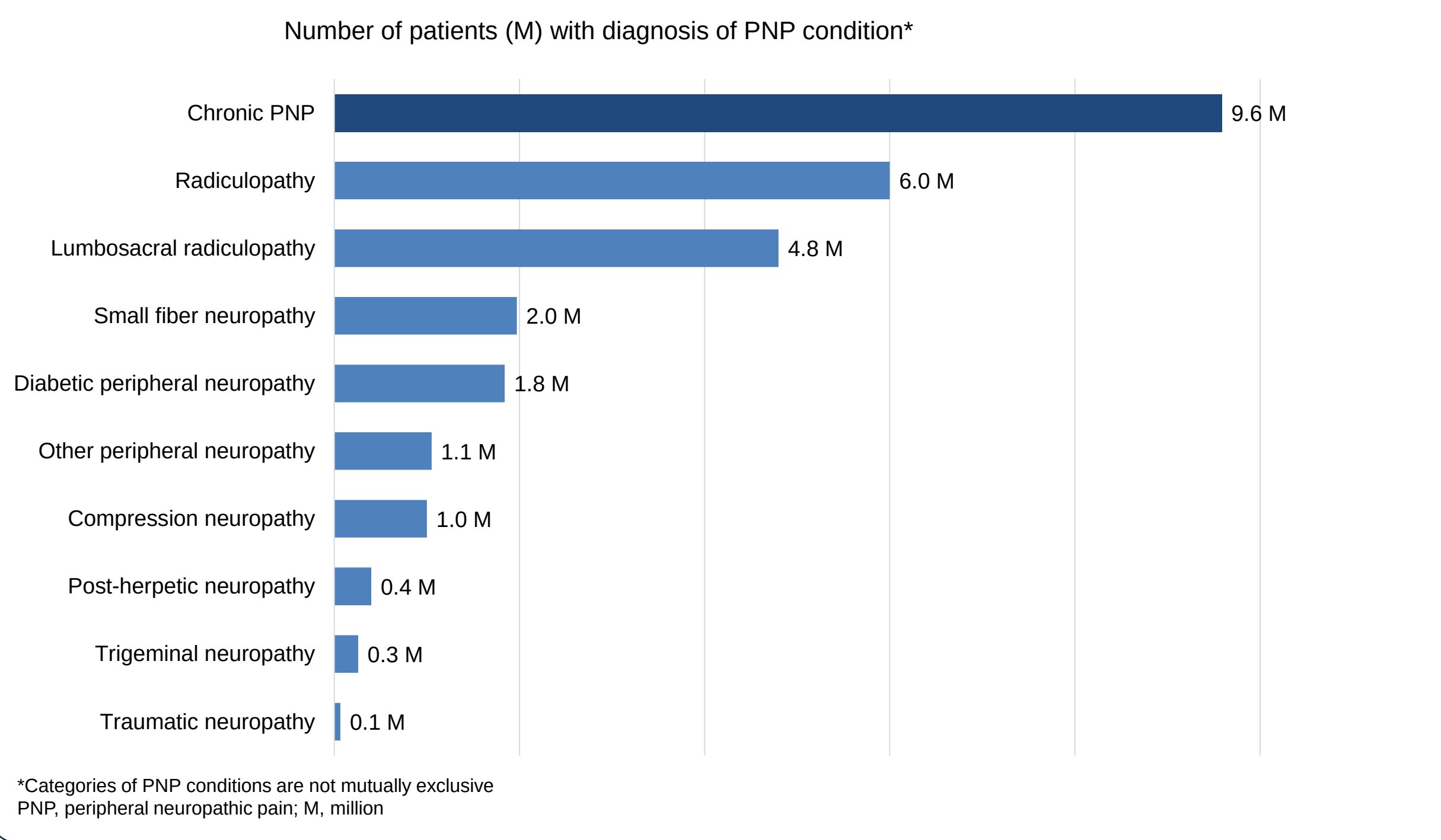
- The eligible population includes adult patients (age ≥ 18 years) who had use of pain medications of interest in the study databases during the one-year study period
- Patients in the MarketScan database were required to have a full year of continuous insurance coverage to ensure full capture of prescription medication use; no such requirement in Premier database (which captured hospitalization events)
- Aligned with the IASP definition, patients with ≥ 3 months of continuous or recurrent use of prescription pain medication within the study period were classified as chronic pain patients, while those with <3 months were classified as acute pain patients:
 - The subgroup of chronic pain patients with ≥ 3 months of non-continuous prescription pain medication use (multiple prescriptions separated by >5 -day gap between refills) were categorized as “intermittent” chronic pain medication users for further evaluation

RESULTS

Chronic pain prevalence

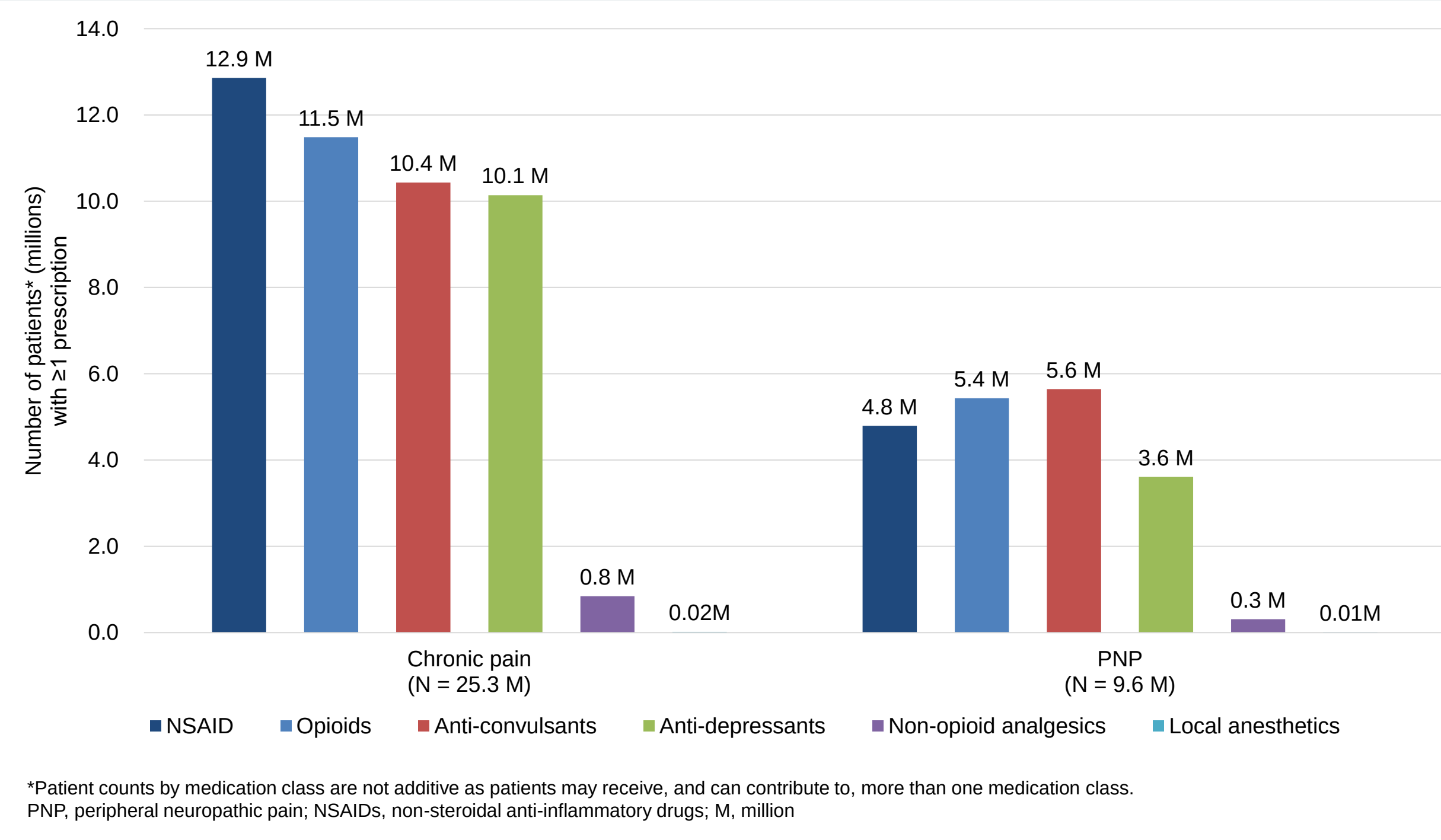
- 25.3 million (M) people per year require ≥ 3 months of prescription pain medication to address chronic pain
- Among these, 9.6 M (38%) people are estimated to have chronic PNP conditions (**Figure 3**)

Figure 3. Chronic pain patients with diagnosis of PNP condition



- Approximately half of chronic pain patients had ≥ 1 prescription for an NSAID (51%), opioid (45%), anti-convulsants (41%), or anti-depressants (40%); comparatively, the most common treatments for PNP were anti-convulsants (59% of PNP patients with ≥ 1 prescription), opioids (57%), NSAIDs (50%) and anti-depressants (38%) (**Figure 4**)

Figure 4. Prescription pain medication use in patients with chronic pain and chronic PNP conditions



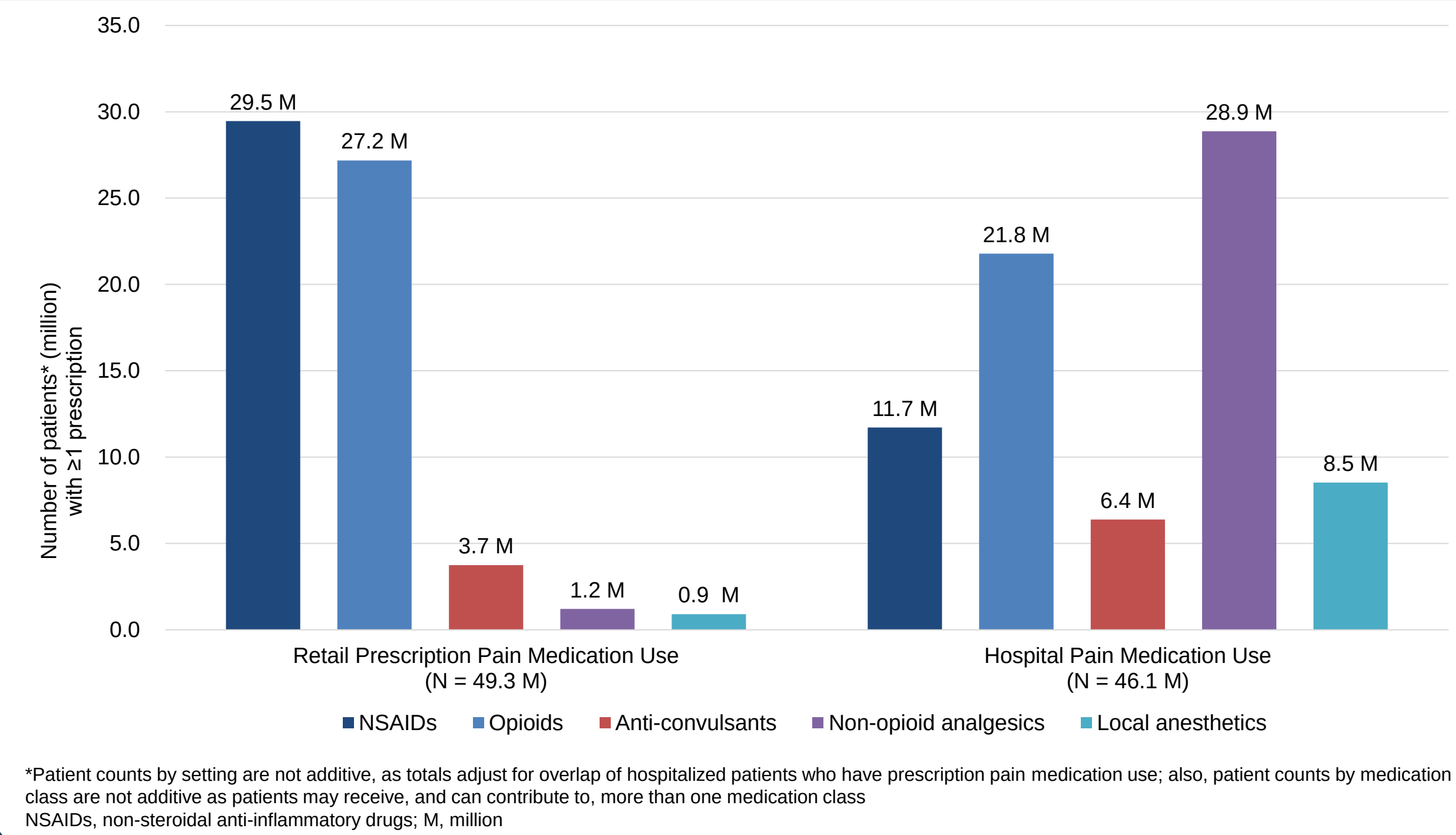
Intermittent pain medication users

- Approximately 14% (3.5 M) of patients with chronic pain were “intermittent” pain medication users (i.e., those with ≥ 3 months of non-continuous prescription pain medication use)
- On average, these patients filled 6 pain medication prescriptions per year, each of which averaged 23 days supply.
- 90% of these patients had a diagnosed painful condition, the majority with musculoskeletal pain (82%), visceral pain (51%), or peripheral neuropathic pain (PNP) (32%)
- While the intermittent patients fit the IASP definition of chronic pain (“persistent or recurrent pain for ≥ 3 months”) and the majority had diagnosis codes associated with chronic pain, their medication usage pattern indicates multiple episodes of acute pain over the course of the study period.
- We considered these 3.5 M patients to represent “acute on chronic” pain and therefore included these 3.5 M in the acute pain cohort as well as the chronic pain cohort.

Acute pain prevalence

- Acute pain, including the intermittent pain medication users, was estimated to affect 80.2 M people in the US annually.
- Among this population, nearly 46.1 M (57%) patients had evidence of a hospital inpatient or outpatient encounter during which they received pain medication for acute pain management.
- Approximately half of all 80.2 M acute pain patients had ≥ 1 prescription/administration of an NSAID (55%; 43.9 M) or opioid (51%; 40.6 M)
- The most common pain prescription medication filled at a pharmacy was NSAIDs followed by opioids; the most common pain medication administered in-hospital was non-opioid analgesics followed by opioids (**Figure 5**)

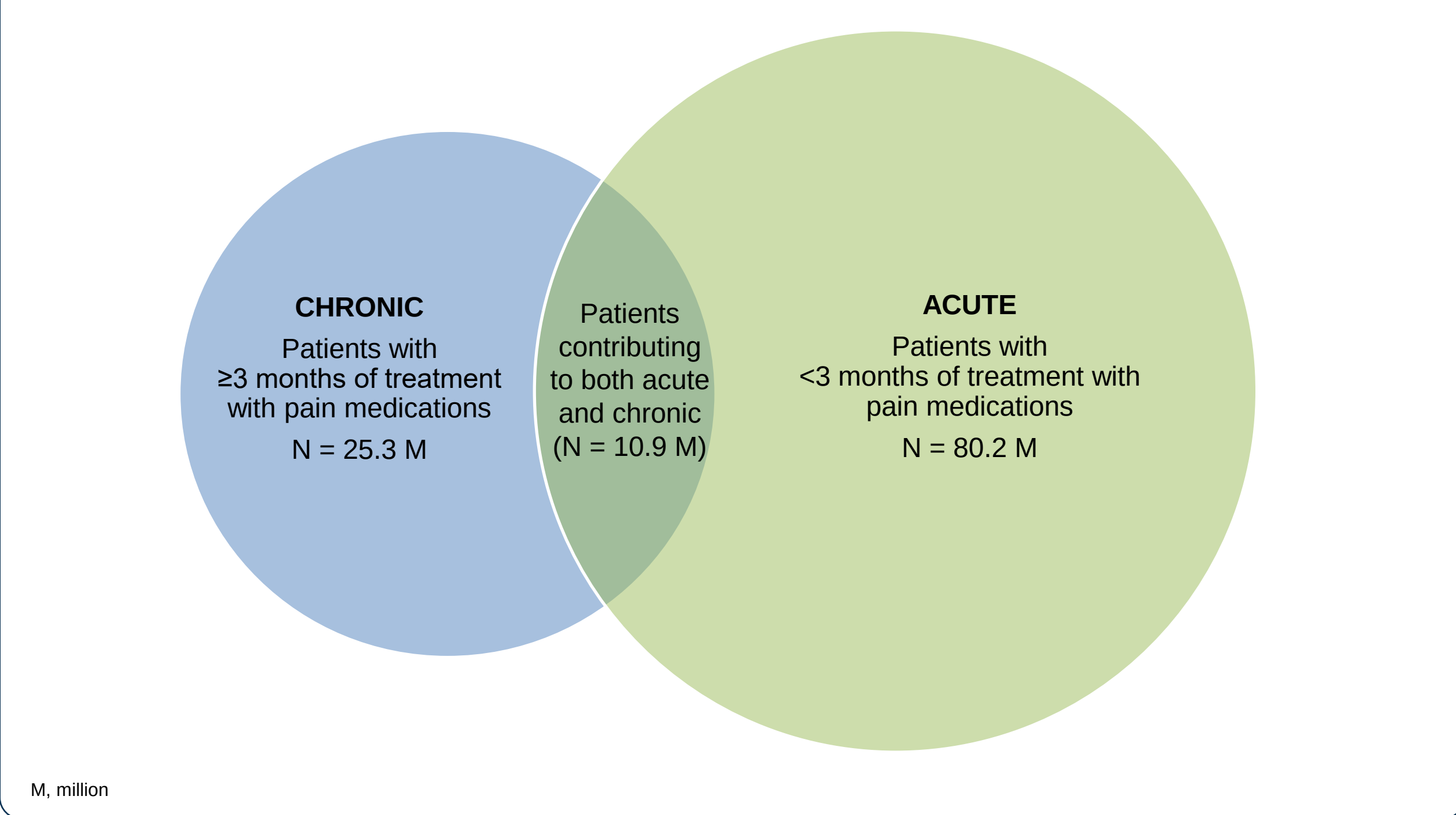
Figure 5. Pain medication use in patients with acute pain across various medical settings



Total pain prevalence estimates

- Pain requiring management with prescription medication is estimated to affect 94.6 million people in the US each year; this total reflects unique patients after addressing overlap between acute and chronic pain (**Figure 6**)
- The overlap between acute and chronic pain included 3.5 M intermittent pain patients as well as 7.4 M chronic pain patients who received acute pain medication during hospitalization

Figure 6. Total annual US pain prevalence estimates



CONCLUSIONS

- This study provides a contemporary assessment of the US pain population derived from two robust sources of US healthcare claims and hospital-encounters data.
- Results suggest that there are nearly 95 M unique adults in the US suffering from pain-related conditions being managed with prescription pain medication representing approximately 37% of the US population.
- While this study may underestimate the prevalence of pain, as it does not include patients who manage pain with non-prescription over-the-counter therapies, this study suggests that acute and chronic pain affects a large proportion of the US population every year.
- Additional research is needed to define and mitigate the substantial burden of disease.

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AUTHOR DISCLOSURES

All authors are employees of Vertex Pharmaceuticals and may own stock/stock options in the company

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