Impacts of the CDC'S 2016 Guideline for Prescribing Opioids for Chronic Pain on Opioid Prescribing and Pain Management Outcomes: A Systematic Review

HPR101

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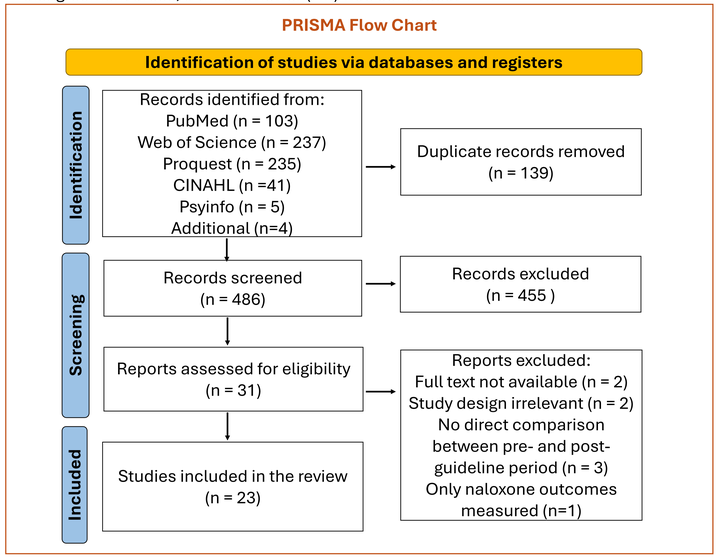
BACKGROUND

- The death rate associated with opioid prescription has significantly increased in the last decades. There were about 2.1 million of the US population had opioid use disorders (OUD) in 2016.[1,2]
- In 2016, the **CDC published the *Guideline for Prescribing Opioids for Chronic Pain*** to provide recommendations for opioid prescribing for chronic pain outside of active cancer treatment, palliative care, and end-of-life care in primary care settings.[1]
- It was reported that **the guideline has influenced unintended populations** such as inpatient palliative care patients, postoperative patients, and sickle cell disease patients.[3-5]
- **Objective:** We aimed to synthesize the literature on changes in opioid prescribing and pain management following the publication of the guidelines.

METHODS

- We adopted a standard systematic review procedure by deploying a predefined protocol, Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines.
- Databases searched include PubMed, Web of Science, ProQuest (dissertations), CINAHL, Psyinfo, and Google Scholar. A systematic search of the intervention (i.e., the CDC guideline) and outcomes (i.e., opioid prescribing practice or pain management) was undertaken in each database.
- The literature search was restricted to studies conducted for the U.S. population and published between March 2016 and May 2023 in the English language. Only original articles were included while review, letter, and commentary excluded.
- Quantitative studies that used real-world data to examine the impacts of the CDC guideline release on the opioid prescribing practice or pain management outcomes were included.
- Screening based on study titles and abstracts, as well as the full text, was conducted by two reviewers independently (YZ and AL) for eligibility, for the articles where disagreement arose, a third reviewer (HK) was consulted.



CONCLUSION

The release of the 2016 CDC guidelines was associated with decreases in various opioid prescribing outcomes in both intended and unintended groups of patients. There is a gap in the literature regarding the impacts of the guidelines on pain management outcomes.

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RESULTS

Author and Year	Data	Study Period	Sample Size	Disease/condition	Opioid Rx Outcome	Health Outcomes	Result
Jeffrey (2019)	OptumLabs DataWarehouse	01/01/2014- 03/31/2018	4,897,464	opioid-naïve	Co-prescribing of opioid and benzodiazepine		Decrease
Tucker (2021)	Optum EHR data	09/2014-09/2018	279,435	opioid-naïve non-cancer	Opioid prescription rate Co-prescribing of opioid and benzodiazepine differences across specialties/settings		Decrease No meaningful difference (SMD% 2.3%) Decrease among surgical specialists and other specialists categorized and an increase in the emergency care providers.
Togun (2021)	OptumLabs DataWarehouse	1/1/2014 - 12/31/2018	550,969	opioid-naïve chronic pain	Opioid prescription rate - extended release Rate of high dose (> 50 MME) Co-prescribing of opioid and benzodiazepine		No change Decrease (immediate after and over time) Decrease (immediate after and over time)
Togun (2022)	OptumLabs Data Warehouse	1/1/2014 - 12/31/2018	550,969	opioid-naïve chronic pain	Opioid prescription rate - first-time fill at ≥ 50MME/day Co-prescribing of opioid and benzodiazepine differences across specialties/settings		No meaningful difference (across specialties/settings and patient groups) No meaningful difference (across specialties/settings and patient groups)
Dayer (2019)	EHR of one ED	01/2015 - 06/2017	8,652	non-cancer	Opioid prescription rate Opioid dose (MME) Number of day's supply Co-prescribing of opioid and benzodiazepine		Decrease Decrease Decrease Decrease
Gumidyala (2021)	EHR of one ED	9/16/15 - 12/31/2016	1,006	low back pain non-cancer	Opioid prescription rate Number of day's supply prescribing rate of NASID prescribing rate of any analgesic		Decrease No significant change No significant change No significant change
Townsend (2021)	Optum's Clinformatics Data Mart	03/2014 - 11/2015; 07/2016 - 12/2018	454,569	chronic pain	Opioid prescription rate Opioid dose (MME) Rate of high dose (>90 MME) Number of day's supply Co-prescribing of opioid and benzodiazepine		Decrease Decrease Decrease Decrease Decrease
Salvatore (2022)	IQVIA Longitudinal Prescription (LRx) database	01/2015 -12/2019	38.8 - 51.8 million opioid prescriptions per year	general population	Opioid prescription rate Opioid dose (MME) - per prescription and person Rate of high dose (>90 MME) Number of day's supply		Decrease (trends) Decrease (trends) Decrease (trends) Decrease (greatest among neurology)
Salas (2021)	Optum integrated EHR and claims data	9/15/14 - 9/14/17	400	non-cancer	Opioid dose (MME) Rate of high dose (>100 MME)		1–50 MME increase (slope); 51–100 MME no significant change. 101–200 MME decrease Over half remained in high dose group
Bohnert (2018)	IQVIA transactional data warehouse and Real-World Data Longitudinal Prescriptions	01/2012 - 12/2017	on average19.1 million opioid prescriptions per month	general population	Opioid prescription rate Opioid dose (MME) Rate of high dose Number of day's supply Co-prescribing of opioid and benzodiazepine Percentage of patients prescribed ER/LA form of opioid		Decrease Decrease Decrease Decrease Decrease No significant change
Goldstick (2021)	Optum Clinformatics Data Mart Database	04/2011 - 12/2017	12,870,612	opioid-naïve	Opioid prescription rate Opioid dose (MME) Rate of high dose Number of day's supply		Decrease <30 MME increase; 50-90 MME decrease Decrease Decrease
Sherrer (2020)	Optum	9/15/2014 - 9/15/2017	279,435	opioid-naïve non-cancer	Opioid prescription rate		Decrease
Encinosa (2022)	MEPS	2014-2017	44,596	opioid-naïve chronic pain acute pain general population	Opioid prescription rate Prescribing rate of NASID Tapering Discontinuation	work limitation due to pain (for those discontinued opioids)	No significant association between opioid initiation for chronic and acute pain; decrease in prescription frequency for acute pain; decrease in continuous use for chronic pain. Increase Increase Increase Work limitations not exacerbated
GarcÃa (2019)	Athenahealth EHR	1/6/14 - 3/11/17	128,194,491 patient-weeks	general population	Opioid prescription rate – by period Differences across specialties/settings		Decrease (all urban-rural county groups)
Mazurenko (2021)	Midwest state's health information exchange (HIE) data repository	10/2014 - 12/2018	44,072	high-dose long-term opioid therapy non-cancer	Tapering Discontinuation		Increase (immediate after and over time) Increase (immediate after and over time)
Leja (2022)	EHR	01/2015-12/2015; 01/2017-05/2018	7,867	CKD stage IV or V or ESRD	Opioid prescription rate		Decrease
Sutherland (2021)	Optum	03/16/2014-03/15/2018	361,556	opioid-naïve **surgery**	Opioid prescription rate (opioid refill) Opioid dose (MME) Number of day's supply		Increase slightly (0.14% per month) Increased pre-guideline and decreased post-guideline Decrease
Chen (2021)	Symphony Health's Integrated Dataverse (IDV) database	2013-2018	an average of over 3.7 million cancer patients per year	**cancer**	Opioid prescription rate Opioid dose (MME) Number of day's supply		Decrease Increased pre-guideline and decreased post-guideline Increased pre-guideline and decreased post-guideline
Twillman (2018)	A survey from the members of the US Pain Foundation	Survey administrated from 09/25/2017- 10/17/2017	362	chronic pain	Opioid dose (MME)	Pain and function, mental health, interpersonal relationship, ability to work, side effects	149/362 decreased and 213/362 unchanged Decreased ER/LA opioid dose was significantly more likely to have worse health outcomes.
Bhargava (2023)	EHR	04/2011-12/2018	354	**cancer**	Opioid prescription rate - >10 days Prescribing rate of benzodiazepine>10 days Co-prescribing of opioid and benzodiazepine		Decrease Increase Decrease
Chu (2023)	California Poison Control System	01/2012-06/2021	8,785	general population	Opioid prescription rate Prescribing rate of benzodiazepine Co-prescribing of opioid and benzodiazepine	Exposure calls associated with serious medical outcomes	Decrease Decrease No significant change Increased exposure calls
Hu (2022)	MarketScan Commercial Claims and Encounters Database	2009-2018	8,969	**cancer**	Opioid prescription rate Potential misuse/SUD		Decrease Decrease (immediate after and over time)
Langnas (2022)	EHR data from UCSF academic medical center	2013–2019	37,009	opioid-naïve **surgery**	Opioid dose (MME) Number of day's supply	The proportion of patients requiring opioid refills within 30 days of discharge	Decrease Decrease Opioid refill prescription rates remained unchanged