HHS Public Access

Author manuscript

Acad Emerg Med. Author manuscript; available in PMC 2019 January 01.

Published in final edited form as:

Acad Emerg Med. 2018 January ; 25(1): 15–24. doi:10.1111/acem.13273.

Emergency Department Provider Perspectives on Benzodiazepine-Opioid Co-Prescribing: A Qualitative Study

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Abstract

Objective—Benzodiazepines and opioids are prescribed simultaneously (i.e. "co-prescribed") in many clinical settings, despite guidelines advising against this practice and mounting evidence that concomitant use of both medications increases overdose risk. This study sought to characterize the contexts in which benzodiazepine-opioid co-prescribing occurs and providers' reasons for co-prescribing.

Methods—We conducted focus groups with ED providers (resident and attending physicians, advanced practice providers, and pharmacists) from three hospitals using semi-structured interviews to elicit perspectives on benzodiazepine-opioid co-prescribing. Discussions were audio-recorded and transcribed. We performed qualitative content analysis of the resulting transcripts using a consensual qualitative research approach, aiming to identify priority categories that describe the phenomenon of benzodiazepine-opioid co-prescribing.

Results—Participants acknowledged co-prescribing rarely and reluctantly, and often provided specific discharge instructions when co-prescribing. The decision to co-prescribe is multifactorial, often isolated to specific clinical and situational contexts (e.g. low back pain, failed solitary opioid therapy) and strongly influenced by a provider's beliefs about the efficacy of combination therapy. The decision to co-prescribe is further influenced by a self-imposed pressure to escalate care or avoid hospital admission. When considering potential interventions to reduce the incidence of co-prescribing, participants opposed computerized alerts but were supportive of a pharmacist-assisted

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This research is scheduled for presentation at the 2017 EMF Grant Showcase at the ACEP Research Forum on 10/30/17 in Washington, D.C.

intervention. Many providers found the process of participating in peer discussions on prescribing habits to be beneficial.

Conclusions—In this qualitative study of ED providers, we found that benzodiazepine-opioid co-prescribing occurs in specific clinical and situational contexts, such as the treatment of low back pain or failed solitary opioid therapy. The decision to co-prescribe is strongly influenced by a provider's beliefs and by self-imposed pressure to escalate care or avoid admission.

Keywords

Opioid; Benzodiazepine; Prescribing

INTRODUCTION

Benzodiazepines and opioids are prescribed simultaneously (i.e. "co-prescribed") in many clinical settings,[1–3] despite mounting evidence that concomitant use of these medications increases risk of overdose death.[4–8] In a study of Veterans Health Administration patients receiving opioid prescriptions, concurrent benzodiazepine prescribing was associated with more than three times the risk of overdose death.[5] In a large database study of privately insured patients, concurrent benzodiazepine prescribing was associated with almost twice the risk of an emergency department (ED) visit for overdose.[7] Moreover, ED visits due to benzodiazepine-opioid overdose have increased three-fold over the last decade, from 11.0 to 34.2 per 100,000 population.[9] As a result, recent opioid prescribing guidelines released by the Centers for Disease Control (CDC) and United States Surgeon General specifically recommend against co-prescribing.[10,11]

Based on national survey data, nearly half a million ED visits per year result in a co-prescription of a benzodiazepine and an opioid.[1] While these data indicate that co-prescribing occurs more frequently in diagnoses relating to back pain and in return ED visits, they do not provide detailed information on the contexts in which this practice occurs or the prescriber's decision-making process. As evidence of the harm of benzodiazepine-opioid co-prescribing continues to grow, it is important to understand provider reasons for co-prescribing in order to develop strategies to safely optimize prescribing practices.

To goal of this investigation was to characterize qualitatively (1) the contexts in which benzodiazepine-opioid co-prescribing occurs and (2) provider reasons for co-prescribing.

METHODS

Study Design

We conducted focus group discussions with ED providers from three hospitals using semi-structured interviews to elicit perspectives on the practice of benzodiazepine-opioid co-prescribing.[12] Discussions were audio-recorded and transcribed. We performed qualitative content analysis[13] of the resulting transcripts using a consensual qualitative approach until thematic saturation was reached (see Analysis for details). The expected output of this qualitative content analysis was the identification of priority categories that describe the

phenomenon of benzodiazepine-opioid co-prescribing. This study was approved by the local institutional review board, and all study participants provided written consent.

Study Population and Setting

Focus group participants were solicited by e-mail at two academic emergency medicine residency programs who staff three hospital ED practice locations: an urban academic hospital in downtown Chicago, IL (annual census 88,000), an urban academic hospital in Aurora, CO (annual census 100,000), and an urban county hospital in Denver, CO (annual census 70,000). ED providers targeted for study participation included: resident and attending physicians, advanced practice providers (physician assistants and nurse practitioners), and pharmacists. The email solicitation offered a $25 gift card incentive for participation in a one-hour focus group intended to characterize ED provider perspectives on analgesic prescribing. All participants were recruited on the initial round of email solicitation, and no participants dropped out. The primary investigator (HSK) was known to study participants at both institutions based on a recently completed clinical residency and ongoing fellowship; the senior investigator (BLL) was not known to study participants. Providers at all three hospital locations were known to have a baseline rate of benzodiazepine-opioid co-prescribing sufficient for substantive discussion based on prior analyses at these practice locations.[14,15]

Focus groups were conducted at two locations: on-site at the academic hospital located in Chicago, IL from April to June 2016, and on-site at the Society for Academic Emergency Medicine Annual Meeting in New Orleans, LA in May 2016.

Study Protocol

We planned for an initial round of five focus group discussions, with plans to convene after the fifth focus group to discuss whether thematic saturation had been reached. In the event that new themes continued to emerge by the conclusion of these five preliminary groups, we planned to hold additional focus groups until thematic saturation was reached. We segregated focus groups by provider level in order to encourage open dialogue on prescribing practices, which otherwise may have been restricted by the presence of a supervising clinician. Each focus group discussion lasted approximately one hour and was moderated by the primary investigator [HSK] and one other study team member [DMM, JAH, or BLL] in a semi-structured format using a topic guide (see Appendix); a research participant was also present to facilitate audio recording and gather field notes. The topic guide was created by study team consensus in an outline format based on published recommendations for conducting focus group discussions in emergency medicine research.[16] Typical questions included: “In what clinical scenarios does benzodiazepine-opioid co-prescribing occur?” and “How do you decide to prescribe both medications instead of just one?” Although the topic guide was static and did not evolve between focus group sessions, the moderators’ prioritization of specific questions from the topic guide was informed by the content of prior focus group discussions.

The purpose of the focus group discussion was to elicit general and unbiased perspectives on the practice of benzodiazepine-opioid co-prescribing. Participants were informed that the

study team did not possess individual-level prescribing data and therefore participants should feel free to share their opinions without concern of audit. Data on the incidence, effectiveness, or potential harm of co-prescribing was not provided. However, at the conclusion of each focus group, the moderators presented limited data on the potential harm of benzodiazepine-opioid co-prescribing[4,5] and gauged participant reactions. Moderators further queried participants on their responsiveness to several potential interventions to reduce co-prescribing, such as computerized order entry alerts or clinical guidelines.

Each one-hour focus group discussion was audio recorded and professionally transcribed. The primary investigator verified all transcripts against the original audio recordings; member checking was not performed. The resulting final transcripts were entered into the qualitative data analysis software ATLAS.ti (Version 1.0.50; ATLAS.ti; Berlin, Germany).

Data Analysis

We performed qualitative content analysis of focus group transcripts using a consensual qualitative research approach employing a primary coding team and a secondary audit team. The primary coding team arrived at consensus judgments on codes and themes, while the secondary audit team reviewed the consensus judgments and ensured that no important data were overlooked.[13,17,18] The primary coding team consisted of two board-certified ED physicians [HSK, DMM], the latter of whom specializes in qualitative research methods and verbal communication. The secondary audit team consisted of one board-certified ED physician and medical toxicologist [JAH] and one medical social scientist who specializes in medication safety and prescribing behaviors [BLL].

Each member of the primary team analyzed and coded transcripts independently, using an open coding approach. After coding each transcript, the primary team members met to reconcile their list of codes and annotated text, reviewing codes and their content in an iterative fashion. After all transcripts had been reviewed in this manner, the primary team arrived at a consensus on summary themes that were submitted to the secondary audit team for review along with the original transcripts. The list of summary themes were then revised and finalized based on secondary audit team feedback and re-presented to the audit team for approval.

RESULTS

Characteristics of Study Subjects

Demographic characteristics of focus group participants (n=36, range 4–12 per group) are presented in Table 1. A total of five focus groups were initially planned: advanced practice providers (Group 1), resident physicians (Groups 2 and 3), and attending physicians (Groups 4 and 5). During the Group 3 discussion, an ED pharmacist was on site and requested permission to participate. The study moderators conferred after the conclusion of the five planned focus groups to discuss thematic saturation and agreed that the unique data generated from the pharmacist participant in Group 3 necessitated an additional focus group comprised of ED clinical pharmacists (Group 6). At the conclusion of the sixth focus group, the study moderators convened again and agreed that thematic saturation had been reached.

Summary Themes

The finalized list of major themes with representative quotations is presented in Table 2.

I. Linkage to the Opioid Epidemic—Conversations about benzodiazepine-opioid co-prescribing practices were closely linked to general commentary on the opioid epidemic. Many participants described increased mindfulness relating to their opioid prescribing practices, in response to both national commentary on opioids and their own anecdotal experiences with patient care. These latter experiences included treating patients presenting with acute opioid overdose, hearing patient narratives on the transition from initial opioid use to long-term dependence, and conducting difficult conversations with both opioid-naïve and chronic opioid patients requesting a prescription (Table 2).

A number of participants voiced frustration with contradicting mandates to simultaneously alleviate pain and reduce opioid prescribing. Participants pointed to the promotion of pain as a "fifth vital sign" and the increased importance of patient satisfaction as examples of externally imposed pressure to prescribe opioids. Providers spoke more generally about mandates to reduce opioid prescribing without referencing specific guidelines or formal calls to action. Some attending physicians expressed concern that recent efforts to reduce opioid prescribing have resulted in the under treatment of pain: "If anything, I think…we're paranoid of prescribing these things…we under-prescribe these medications. I see my residents giving eight pills of Norco and that's enough for one day" (Group 5).

II. Co-Prescribing is Rare and Reluctantly Performed—Prescribers from all groups endorsed co-prescribing benzodiazepines and opioids in their clinical practice but insisted they did so infrequently and with hesitation. Many participants highlighted the narrow scope of clinical indications for co-prescribing (Table 2). Some cited awareness of the adverse side effect profile of co-prescribing and described a thorough decision-making process: "There's a lot of things that go through my mind when I prescribe these things together. And kind of paramount among them is: is this someone I trust?" (Group 2).

III. The Decision to Co-Prescribe is Multifactorial—Factors influencing the decision to co-prescribe were grouped into three main subthemes. First, co-prescribing is isolated to specific clinical conditions such as back pain: "Yeah, I think it's the cocktail thing. It's like, oh you have back pain" (Group 4). Some participants reported co-prescribing for neck pain: "Whiplash injury is the only other thing…I think we all kind of look at neck and back pain as a continuous spectrum of illness" (Group 2).

Second, participants also reported co-prescribing in specific situational contexts, such as the failure of prior care with a solitary medication: "I mean I definitely do it when … they've already been on something and it's not effective, especially if they've maximized my armamentarium of medications already, then it's not uncommon for me to add on another" (Group 4). Others explained that an evaluation of the chronicity of the pain complaint also factored into their prescribing decision: "I think that the unique component comes into these patients who have tried everything, they know their pain, they sometimes tell you this is what's going to work for me, and I think that in those unique circumstances it will change

your clinical approach from what you may do if someone is just coming in with an acute episode of low back pain" (Group 1).

Third, the decision to co-prescribe is influenced by the beliefs that providers hold about the effectiveness of combination therapy. Participants described clinical and personal experiences that have shaped these beliefs, such as anecdotal observations of patient improvement or experiencing debilitating back pain themselves: "…as someone who has had sciatica and literally couldn't move, like laid down on the hallway floor and had to pee in a Tupperware because I couldn't move at all, you're absolutely miserable" (Group 4). Others based this belief on informal teaching received during residency training, modeling of prescribing behavior after other providers, and the role of local culture in dictating specific medication practices: "Our practice styles are very much dictated by who trains us, right? So there's a culture here at [this program], so everybody practices similarly. You look at the attendings that come from this program, and they're all the same. You can guess what they're going to do" (Group 3). No participants cited literature as a source of their beliefs on the effectiveness of combination therapy.

IV. Providers Feel Self-Imposed Pressure to Escalate Care—Participants consistently described a strong sense of pressure to escalate therapy, ultimately driving their decision to co-prescribe benzodiazepines and opioids. This pressure was generally self-imposed and in response to beliefs centered on two major subthemes. First, participants felt that they needed to "do something more" to alleviate symptoms, both as a core tenet of their purpose as an acute care provider and to optimize customer service. Providers stated that patients presenting with intractable back pain, for example, left them with no other option but to prescribe a stronger analgesic in order to achieve symptom relief (Table 2). Without explicitly using the language of "customer service," participants expressed a desire to achieve this aim: "And it's not always multiple medications that does that, but I think there is this sense of: you want them to feel like they were seen, heard, treated, got their money's worth" (Group 4).

Second, providers described a desire to avoid admitting a patient to the hospital for intractable back pain, which participants viewed as an undesirable outcome: "I think I will be pretty aggressive and…really to try to keep them out of the hospital because again, that's not going to help them" (Group 5). Some participants further viewed intractable low back pain as an unjustifiable reason for admission: "I think it's just trying to get people to feel well enough to go home so you don't admit them for a ridiculous cause" (Group 1). Similarly, participants viewed a return visit to the ED as an undesirable outcome that could be prevented by co-prescribing: "I don't care what it is that works. I just don't want them coming back to my ED, and so I guess from that perspective I'm always like let me load you up and that way I don't have to worry about you coming back saying that I'm not controlling your issues" (Group 4).

V. Provider Beliefs about Muscle Relaxants are Heterogeneous—Providers expressed mixed beliefs about benzodiazepines and other muscle relaxants with respect to mechanism of action, effectiveness, and safety profile (Table 2). Many participants expressed a belief that benzodiazepines do not act in any specific capacity to relax skeletal

muscles, instead achieving symptom relief by general sedation or sleep facilitation. In contrast, some participants described a specific mechanism of action for benzodiazepines based on activation of inhibitory neurotransmitter receptors. Most participants agreed that diazepam is *more effective* than cyclobenzaprine for low back pain; however, most providers felt that cyclobenzaprine was *safer* than diazepam in regards to side effects. A number of providers stated that this belief has led them to co-prescribe cyclobenzaprine exclusively with opioids: "When I have co-prescribed, sort of the last thing I think about is do I use, say Flexeril instead of Valium, maybe it's slightly less sedating and I curtail the amount of both I give" (Group 2).

VI. Co-Prescribing Discharge Counseling Occurs—A number of participants reported providing specific discharge instructions to patients about dosing frequency, side effects, and activities to avoid. Some participants specifically emphasized the combined risk of these medications compared to either medication alone: "I actually give the same spiel with both meds, and I specifically mention driving and mixing with alcohol for either or, but particularly when I do both simultaneously. I will really emphasize to the patient like this is very sedating medication individually and you're using both of them together" (Group 2).

Participant Responses to Concluding Remarks

I. Mixed Reactions to Data on Potential Harm—In response to moderator-provided data on the potential harm of benzodiazepine-opioid co-prescribing, a small number of participants expressed that they were unaware of the magnitude of increased overdose risk and that this data would change their prescribing practices immediately: "Okay, wow. Not doing that anymore. Here's your ibuprofen, good luck" (Group 1). Other participants expressed skepticism that the limited quantity of pills in a typical ED prescription could meaningfully contribute to overdose: "What's the alternative? There has to be something there for the patient, and I still would have a little bit of a hard time believing that, you know, three days of a prescription to get through acute pain is really what's causing the harm" (Group 5). Many participants requested additional details regarding the quality of evidence supporting the increased risk of co-prescribing, emphasizing that any medication comes with an associated risk profile: "I think that anything that would come out about the dangers of co-prescribing should talk about what is the alternative. If people then shift to doing something different, like sub-dissociative ketamine, then we need to know what the risks of that are too to be able to make an informed decision" (Group 5). Others discussed alternative therapies for intractable back pain in a more rhetorical manner: "What's the alternative? What would you like us to do?" (Group 5).

II. Receptiveness to Potential Interventions to Reduce Co-Prescribing—Participants were united in their opposition to a computerized order entry alert intervention. One physician participant stated: "the first thing I would say is…no more alerts in the medical record" (Group 4). A pharmacist participant also expressed frustration with computerized alerts: "You know honestly, we get alert fatigue [too] because we actually turn off a majority of [your] alerts but they don't turn off any of those for us, it's annoying" (Group 3).

Notably, all physician and advanced practice provider focus groups voiced support for pharmacist-based interventions to reduce co-prescribing, such as personal dialogue with the prescriber initiated by the in-ED clinical pharmacist: “the pharmacist [could] come out and say hey, you prescribed these two medications, you know, there’s data that says this is a really bad idea, can you change this…and then I wouldn’t do this again” (Group 4). Another participant echoed: “I would rather have the pharmacist intervention to be honest. I think that that would make a dramatic difference for me and I think that interacting with the pharmacist is always a good thing in my opinion…[it] changes my practice going forward” (Group 4).

In contrast, pharmacist participants expressed varying levels of support for this intervention. One pharmacist stated: “I think hands down [we] would definitely be on board because you know we’re being trained and we’ve been alerted to these prescribing practices and so the pharmacy organizations are working at some resolutions to some of these problems as well” (Group 3). However, pharmacists in Group 6 were skeptical of how this dialogue would be received by busy clinicians, especially due to the implied surveillance of prescribing behavior and the corrective tone of this conversation.

III. Intrinsic Value of Discussion—At the conclusion of several focus group discussions, participants noted that the process of discussing their prescribing habits with others had been beneficial: “This has been great. I’ve learned a lot. I’m amazed at how similar we are. I wish we could just do these sessions so we can learn from each other” (Group 5). Attending physicians, in particular, commented on the benefit of learning the prescribing patterns of their colleagues: “I think that one of the weird things about being an attending is that you don’t know what anyone else is doing” (Group 4).

DISCUSSION

In focus group discussions with ED providers, we elicited several major themes relating to the topic of benzodiazepine-opioid co-prescribing. Although participants reported that co-prescribing is rare, most participants described circumstances in which they choose to co-prescribe benzodiazepines and opioids. These circumstances centered on discrete contexts, such as intractable low back pain and failed prior solitary therapy, reiterating the findings from prior analyses that co-prescribing is limited to specific and occasional scenarios.[1,14]

The majority of participants were generally aware of an increased risk of over-sedation due to combined use of benzodiazepines and opioids but were not specifically aware of an additive increase in mortality.[4] Many participants felt that the risk of ED co-prescribing was minimal due to the small number of pills typically prescribed in the ED setting, and that this minimal risk was outweighed by the need to alleviate symptoms or avoid hospital admission.

The need to alleviate symptoms or avoid hospital admission represents a novel and major finding of this study. ED providers consistently reported a sense of pressure to escalate therapy or “do something more” for their patients. Although likely formed in response to external constraints, such as a culture of customer service or a societal emphasis on pain relief, this pressure was often self-imposed and deeply linked to a provider’s sense of

purpose. This same sense of purpose appeared to motivate a provider's avoidance of hospital admission for what was perceived to be an unjustifiable diagnosis of back pain. To many ED providers, this self-driven pressure to escalate therapy or avoid admission outweighed the potential risks of co-prescribing, which again were thought to be minimal due to the small number of pills prescribed. To better inform this prescribing decision, further research efforts should focus on determining whether or not ED-issued co-prescriptions are closely associated with overdose events.

We also found that the decision to co-prescribe is impacted by beliefs about the effectiveness of combination benzodiazepine-opioid therapy. This belief is formed by a number of factors, but the most frequently discussed was the practicing culture of the clinical environment in which the participant trained. Although this finding is not unexpected given the known regional variability in opioid and benzodiazepine prescribing,[19] it does emphasize the importance of directing interventions focused on appropriate prescribing towards physicians and advanced practice providers in training. To this end, there is an important need to develop and implement formal curriculum on responsible pain management in residency programs.[20]

When exploring receptiveness to various potential interventions to reduce the incidence of co-prescribing, prescribers and pharmacists reported universal opposition to a computer alert intervention. This is consistent with the known literature on the high override rate of drug alerts.[21,22] Additionally, participants were generally unaware of national- or hospital-level guidelines on co-prescribing despite the recent release of the CDC chronic opioid prescribing guidelines,[10] suggesting that guidelines may not be an effective means to impact prescribing behavior. This finding is supported by prior research indicating ED physicians use opioid prescribing guidelines primarily as communication tools rather than decision-making tools.[23] Future efforts to impact analgesic prescribing patterns should consider provider aversion to computerized order entry alerts and poor uptake of guidelines.

Notably, prescribers were supportive of a pharmacist-assisted intervention to reduce co-prescribing and strongly supportive of more pharmacist involvement in discharge medication planning, citing the value of their advice. This novel finding argues for greater integration of clinical pharmacists into ED-based initiatives to ensure safer opioid prescribing, especially given that pharmacist-based interventions have demonstrated success in similar settings.[24,25] Finally, many providers commented on the intrinsic value of participating in discussions on opioid prescribing habits in the setting of common clinical dilemmas. Other practice settings may find that conducting similar discussions among their clinicians may help to standardize analgesic prescribing practices.

Importantly, a subset of focus group participants expressed concern that ongoing efforts to address the opioid epidemic have resulted in the under-treatment of pain. Some attending physician participants described scenarios in which a resident physician prescribed an inadequate quantity of analgesics for a legitimate painful diagnosis. This sentiment of "swinging the pendulum too far" has been previously discussed by others[26] and serves as a timely reminder to thoughtfully consider whether proposed interventions are well-targeted to

achieve specific goals rather than indiscriminately targeted to reduce opioid prescribing generally.

The themes identified in this study are not a complete detailing of all possible perspectives. Other themes, such as the role of pharmaceutical marketing or hospital drug formularies, were not discussed in these focus groups and may be important mediators of co-prescribing. Although this study focused on the specific topic of co-prescribing, concomitant use of benzodiazepines and opioids may also occur as a result of *overlapping* prescriptions from different prescribers (e.g., a patient is already prescribed a benzodiazepine for anxiety then receives a new ED opioid prescription). We discussed this topic indirectly during our focus group discussions by asking if providers routinely investigate whether a patient is currently taking a benzodiazepine prior to prescribing an opioid. Prescribers denied engaging in this practice, citing clinical time constraints and unreliable charting in the medical record. To this end, developing a more robust system for reporting current benzodiazepine or opioid use in ED patients may be beneficial (e.g. integrating prescription drug monitoring program access into electronic medical record systems).

LIMITATIONS

The representativeness of these findings may be limited due to the selection of participants from academic hospital settings in only two metropolitan areas. However, we increased sample representativeness by recruiting participants from three hospital locations, one of which included a county hospital with a high volume of trauma and indigent care. These findings remain relevant to real world practice given that all emergency physicians complete residency training in similar academic settings. Furthermore, the goals of qualitative research are to describe poorly understood phenomena in an in-depth manner and to generate hypotheses. The smaller sample frames required to accomplish these goals are commonly perceived as having limited generalizability; however, qualitative investigations stake their validity on thematic saturation rather than generalizability.[16] Some study findings may have limited applicability to hospital EDs that do not utilize electronic medical record systems or employ ED clinical pharmacists. Focus groups involving advanced practice providers and ED clinical pharmacists were limited in size due to the low total number of providers employed in these hospital EDs; the resulting list of themes generated from these providers may therefore be incomplete.

Additionally, these findings may be limited by social desirability bias, as some participants might have felt compelled to share viewpoints congruent with the perceived expectations of the focus group moderators or their colleagues. This limitation may be particularly true when discussing opioid prescribing, a topic which has moralistic undertones and is often framed in the language of appropriateness. We attempted to minimize this bias by prefacing each focus group discussion with an objective disclaimer and segregating focus groups by provider type, but some participants may have nevertheless shared perspectives which understated the incidence of co-prescribing or overstated their willingness to change prescribing behavior. Ideally, focus group discussion moderators would have been independent from the study team in order to maximize objectivity, however, we felt that moderator familiarity with this niche topic and knowledge of ED practice culture was

necessary to lead meaningful discussion. Finally, this study may be limited by recall bias, as focus group discussions rely on post-hoc recollections from study participants.

CONCLUSIONS

In summary, we conducted focus group discussions with ED providers from three hospital practice locations to elicit perspectives on the topic of benzodiazepine-opioid co-prescribing. Our findings confirm that co-prescribing occurs in specific clinical and situational contexts, and suggest that this prescribing decision is influenced by a provider's beliefs about the efficacy of combination therapy and a self-imposed pressure to escalate therapy or avoid hospital admission. These themes outline the major components of the risk-benefit analysis that providers integrate into their decision-making and should inform future efforts to ensure appropriate prescribing.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Funding Sources/Disclosures:

This work was funded by the Center for Communication and Health at the Northwestern University Feinberg School of Medicine, as well as a joint mentored training award from the Emergency Medicine Foundation and the National Institute on Drug Abuse (HSK, DMC, BLL). HSK is a T32 National Research Service Award postdoctoral fellow supported by the Agency for Healthcare Research and Quality (AHRQ). DMM, DMC, and BLL receive grant funding from AHRQ for investigator-initiated research. JAH receives grant funding from the U.S. Department of Justice for investigator-initiated research.

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Table 1

Demographic Characteristics of Participants

Age, median (IQR)	
Advanced Practice Providers (n=4)	37.0 (30–47)
Resident Physicians (n=16)	30.0 (29–30)
Attending Physicians (n=12)	40.0 (37–47)
Clinical Pharmacists (n=4)	31.5 (28–35)
Female sex, no. (%)	
Advanced Practice Providers	4 (100%)
Resident Physicians	7 (44%)
Attending Physicians	4 (33%)
Clinical Pharmacists	3 (75%)
Years in practice, median (IQR) *	
Advanced Practice Providers	10.5 (5–17)
Resident Physicians	3.5 (3–4)
Attending Physicians	11.0 (8–17)
Clinical Pharmacists	5.0 (4–8)

IQR: interquartile range

* Includes clinical training

Table 2

Summary Themes and Representative Quotations

Themes	Representative Quotations
I. Linkage to the opioid epidemic. Conversations about benzodiazepine-opioid co-prescribing are inextricably tied to general commentary on the opioid epidemic and its influence on prescribing.	"[T]he idea of giving that combination to somebody at home when you kind of put that back in your brain as like oh, this is conscious sedation, it makes you maybe a little bit more careful there. I also think that we are kind of in that shift where we're seeing the issues of the opioid epidemic and all of that. I think we're all in that shift, and I think some of us are much more I guess stingy than we were previously." (Group 3) "That's what I'm generally aware of – that it's a dangerous thing we're doing. It's probably similar to addiction, where we know it's a theoretical possibility, but until you're confronted with the patient who is like, I was addicted by my first Norco script. That when you weigh that possibility against this patient who seems to be in extremis at the time, it's hard to find the equipoise between not doing something that seems to be helping them." (Group 2)
II. Co-prescribing is rare and reluctantly performed. Providers state that they co-prescribe benzodiazepines and opioids, however they do so infrequently and with hesitation.	"I'm pretty remiss to actually do it. I do it, I will say I've done it, but there's a lot of things that go through my mind when I prescribe these things together." (Group 2) "I think prescribing like this is definitely with a certain type of patient, it's not all the time and it's for intractable pain when somebody comes in and they're screaming. It's not a common thing to send people home but yes, I have done it, so it's not all the time." (Group 1) ""[T]here are occasions when I still do co-prescribe in severe cases. I mean I do it very rarely, but I, there are absolutely cases and when I do it, I'm very, very specific on how I want the patients to take the pills." (Group 4)
III. The decision to co-prescribe is multifactorial.	
Subtheme A: Co-prescribing is diagnosis specific. Providers endorse co-prescribing in specific clinical diagnoses, such as back or neck pain.	"I think we're mostly talking about back pain with co-prescribing, and that's about the only thing that I co-prescribe [for]." (Group 5)
Subtheme B: Co-prescribing is situational. Providers consider co-prescribing in certain situational contexts — such as failed prior care that a patient may have received or a chronic pain complaint.	"I feel like I'm adding on Valium for the person who is already on oral narcotics coming in saying like my doctor gave me Norco last week and I'm still in pain, like what are we gonna do next?" (Group 2) "So it totally depends on the mechanism of injury, the chronicity of it, a patient who has known disc disease and even has had surgery is a totally different person than a healthy worker who bends and twists and lifts something at work and comes in with back pain." (Group 5)
Subtheme C: Co-prescribing is influenced by provider beliefs. Providers voiced specific beliefs about the effectiveness of combination therapy, which have been shaped by anecdotal observations, clinical training, or personal experiences with back pain.	"It works. I don't think we'd do it if it didn't work." (Group 5) "I think it was sort of word of mouth in residency that [this] was the sort of back pain cocktail that we give to people in the emergency department." (Group 4) "Older doctors told you this is what you use for back pain." (Group 3) "It is your own experience sometimes that influences. I've had so much back trouble over the years… I mean that's really influenced how I treat back patients…I only took the 2 mg of Valium that one time when my disc first went out…but it was impressive how much 2 mg worked." (Group 5)
IV. Providers feel self-imposed pressure to escalate care.	
Subtheme A: Providers feel pressure to alleviate symptoms. Providers expressed a strong sense of self-imposed pressure to "do something more" for their patients.	"It's kind of where these patients, you feel boxed in [because] they've…presented themselves in crisis and you can't resolve that crisis in any reasonable way other than advancing something." (Group 2) "Sometimes I'll try like a Lidoderm patch, just to give them something so they feel like they're getting some added therapy to what they came in with." (Group 2)
Subtheme B: Providers feel pressure to avoid admission or repeat ED visits. Providers often cited a reluctance to admit a patient or a desire to avoid a repeat ED visit as a reason for co-prescribing.	"And then you think about what's the alternative? Like if they're already on a narcotic to transition them to an IV narcotic to get them under control and bring them into the hospital? Or to just try an oral benzo and add that on to what they're already taking and try to get them home." (Group 2) "And so I kind of weigh a hospital admission versus the co-prescribing and I've kind of come to the conclusion, at least in my own mind and this may be wrong, that it's better for the patient to stay out of the hospital and to not get into this cycle of admitting people for IV narcotics." (Group 2) "Right and like I say to the residents all the time, it's like a mantra…you make them feel better as soon as possible as best you can so that they go home and they don't come back. Like from a convenience standpoint, a satisfaction standpoint, and like a financial standpoint." (Group 4)
V. Provider beliefs about muscle relaxants are heterogeneous. Providers voiced mixed beliefs about benzodiazepines and other "muscle relaxants" with respect to	"I commonly do it for back pain. I think it's, I feel it's a standard to give muscle relaxants for bad back pain. I'm not convinced they really work though, usually low-dose Valium." (Group 5) "Well and I think if you look at the data behind treating back pain, you know…there's no question that benzodiazepines work better in terms of pain control than Flexeril does." (Group 4) "I usually tell people, you know, I say there is no such thing as a true muscle relaxant." (Group 5)

Themes	Representative Quotations
mechanism of action, safety profile, and effectiveness.	
VI. Co-prescribing discharge counseling occurs. Providers report that they sometimes provide specific discharge counseling when co-prescribing.	"I'll tell you that there are occasions when I still do co-prescribe in severe cases…When I do it, I'm very, very specific on how I want the patients to take the pills, so I say: what you do is take two of the Percocet and then you wait two hours. If you're not better, then you take one of the diazepam and that way they can do it on a schedule…I fully understand that's a risk, but what I don't want is for them to take a handful of pills and they're probably still doing it that way." (Group 4)