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## Point/Counterpoint

**Guest Discussants: Ameet Nagpal, MD, MS, MEd, Rachel Xu, MD, Sanjog Pangarkar, MD, Ian Dworkin, MD**  
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## Driving Under the Influence of Opioids

### CASE SCENARIO

A 45-year-old man presents to your clinic as a new patient. His medical history is negative; however, his surgical history reveals a history of an L4-S1 posterior decompression and fusion that was performed 5 years earlier. The fusion was performed for a well-established chronic left-sided L5 and S1 lumbar radiculopathy. The patient's low back pain and left lower extremity pain improved for 3 months and then returned to his presurgical level of 7/10. Postsurgical magnetic resonance imaging shows stable fusion structure without evidence of new disk herniations, with scar tissue surrounding the left-sided L5 and S1 nerve roots. The patient refuses further surgery or interventional options. In your clinic, he fills out a Screener and Opioid Assessment for Patients with Pain—Revised (SOAPP-R), and his final score is 6, which indicates low risk for opioid misuse. His examination is consistent with failed back surgery syndrome (FBSS), and you believe it is appropriate to have him start taking a low-dose opioid medication. The patient signs a controlled substance agreement (CSA) in your clinic, submits a baseline urine drug screen, and after failing to find adequate relief with non-opioid-based therapies, the patient was given a prescription for morphine sulfate extended release, 15 mg twice a day. At his follow-up visit 1 month later, he reports that this medication provides good relief and limited adverse effects. His urine drug screen is appropriate for the medication prescribed, and his state prescription database monitoring program reveals no aberrancies.

He would like to continue to commute to work and asks if it is safe for him to drive while taking long-acting morphine. Drs Ameet Nagpal and Rachel Xu will argue that operating a motor vehicle while taking opioid medication is not recommended because they can cause cognitive impairment. Drs Sanjog Pangarkar and Ian Dworkin will argue that the patient is taking a stable dose of long-acting opioids and therefore, with no history of cognitive-related adverse effects, driving would be considered safe.

### Ameet Nagpal, MD, MS, MEd, and Rachel Xu, MD, Respond

During the 1996 American Pain Society presidential address, Dr James Campbell advocated for the importance of adequate pain management and for pain severity to henceforth be utilized as the so-called "fifth vital sign" [1]. During the following years, opioid usage rose dramatically and has continued to rise, with a 149% increase in sales from 1997 to 2007 [2].

Although it represents only 5% of the world's population, in 2007, the United States was responsible for consuming 99% of the world's hydrocodone supply [3]. As the opioid epidemic grew, the number of opioid-related deaths rose dramatically as well. From 1999-2013, drug-poisoning deaths involving opioid analgesics increased almost fourfold [4]. The causes for opioid-related deaths

are multifactorial. Among the root causes identified are physician error, substance use disorders, the presence of additional central nervous system (CNS)-depressant drugs, and sleep-disordered breathing [5]. Driving under the influence of opioids (DUIO) has only recently been implicated as a possible frequent cause of mortality. DUIO as a secondary issue related to opioids needs to be addressed before it becomes a statistically significant contributor to opioid-related deaths.

It is generally established that patients who recently initiated or escalated opioid doses are likely to demonstrate psychomotor and/or cognitive impairment, and therefore should not drive until these adverse effects have resolved [6-8]. Patients are often counseled that

with the exception of constipation, most adverse effects from opioids, including sedation, are short-lived and diminish over time [9].

Although it is commonly accepted that opioid-naïve patients should not drive when exposed to opioids, controversy exists regarding the recommendations for patients taking stable doses. In some studies it is noted that patients who take maintenance doses of opioids experience no impairment of psychomotor abilities on neuropsychological testing or with on/off-road driving simulations [10,11]. Therefore, the implication is that patients taking stable doses of opioids are free from the level of cognitive or psychomotor impairment that may clinically manifest as driving impairment.

Conversely, several studies present alarming evidence that these impairments persist in "stable" opioid users as well. Sjogren et al [12] conducted well-established neuropsychological tests in patients with chronic nonmalignant pain who were prescribed stable long-term opioid therapy. The domains tested, including vigilance/attention, psychomotor speed, and working memory, all showed significant impairment in patients with chronic nonmalignant pain when compared with healthy control subjects. These functions were described as most crucial to general adaptive and information-processing aspects of behavior. Therefore, with the assumption that "normal" performance is a prerequisite for completing everyday tasks, including driving, the issue of DUIO needs to be carefully re-examined before concluding that it is safe to drive while taking opioids.

The findings of cognitive impairments in patients receiving opioid maintenance therapy are further substantiated in several other reviews. In a 2013 systematic review, Wang et al [13] examined methadone maintenance treatment (MMT) as described in 35 articles and came to a similar conclusion. Most research suggested that MMT was associated with impaired cognitive function and that these deficits extended across a range of domains. The systematic reviews by Strand et al [14] extended these findings to also include buprenorphine. Almost all of the studies reviewed showed some degree of impairment. Two other studies found increased risk of traffic accidents for both methadone and buprenorphine groups when compared with control subjects [15,16]. One study even implicated gender as an additional variable, concluding that men exposed to methadone had increased risk of being involved in a motor vehicle accident [15].

One study has shown that the risks associated with driving while taking opioids is dose dependent. In a large case-controlled Canadian study published in 2013, drivers taking high doses, defined as 100-199 morphine equivalents (MEQ) per day, were 42% more likely to be involved in road trauma than drivers taking the lowest doses [17]. Doses greater than 200 mg MEQ were associated with triple risk of opioid-related deaths when

compared with doses less than 20 MEQ. Subgroup analysis stratified opioid users from very low ( $\leq 20$  MEQ) to very high ( $\geq 200$  mg). This analysis revealed that the very high group ( $>200$  MEQ) actually had less risk of road trauma compared with the high group (100 mg-199 MEQ). This finding was possibly attributed to "psychologic opioid tolerance among patients who undergo long-term treatment at a fixed dose." Such stratification strategies are helpful in correlating dosage to impairment, but unfortunately, they are not typically used in the studies on opioid use and driving. Our patient, at 30 MEQ, falls in the low-dose group, which was found to have a 21% increased odds of road trauma compared with the very low group. Regardless of the definition of patients receiving "stable" opioid therapy, essentially all patients using opioids are at increased risk of road trauma. The alarming findings of this study should be a red flag for policy makers to consider restricting drivers' licenses for patients taking high doses.

Particularly vulnerable are young drivers using opioids, who were found in one study to engage in risky driving behavior [18]. The authors noted a higher prevalence of DUIO among both medical and recreational opioid users (9.6% and 25.1%, respectively) when compared with the prevalence of DUIO among all students in the study (4.3%). Because the medical users were not found to have a higher association with engaging in other risky behaviors (such as driving under the influence with alcohol, cannabis, and the like), these findings appear to have more benign and modifiable reasons. Perhaps it was the lack of knowledge of the effects of opioids on cognition or legal implications that DUIO may constitute a criminal offense. For these young patients, it is even clearer that they should be advised to refrain from driving when taking prescription opioids.

As opioid use grows rampant, future research is necessary to ensure safe policy making. Regardless of how stable a patient's opioid treatment may be, it is ultimately the prescribing physician who will be called to the stand when his or her patient is involved in a fatal accident. The physician may have had the best intentions, but positive opioid metabolites in the urine will implicate him or her until proven innocent. We must exercise additional caution with driving to protect not only our patients but also ourselves. For patients who must drive to work, it is certainly in their interest to under-report adverse effects. We regularly counsel patients regarding potential adverse effects and have all experienced the difficulty of achieving mutual understanding and patient compliance.

Opioid users are often unaware of the legal risks associated with driving while taking opioids, and unfortunately, the physician is also unaware of these risks in some cases. We urge all physicians to be familiar with their state laws regarding DUIO. According to the 2009 National Highway Traffic Safety Administration analysis

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