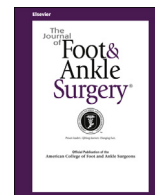




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## Original Research

## U.S. State Driving Regulations Relevant to Foot and Ankle Surgeons

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## ABSTRACT

The effect of lower extremity pathology and surgery on automobile driving has been a topic of contemporary interest, because these conditions can be associated with impaired driving function. We reviewed the U.S. driving laws relative to foot and ankle patients, for the 50 U.S. states (and District of Columbia). We aimed to address the following questions relative to noncommercial driving regulations: does the state have regulations with respect to driving in a lower extremity cast, driving with a foot/ankle immobilization device, driving with acute or chronic lower extremity pathology or disability, those who have undergone foot and/or ankle surgery, and those with diabetes? Full state-specific answers to the preceding questions are provided. Most states had no explicit or specific regulations with respect to driving in a lower extremity cast, a lower extremity immobilization device, or after foot and/or ankle surgery. Most states asked about diabetes during licensing application and renewal, and some asked specifically about lower extremity neuropathy and amputation. Most did not require physicians to report their patients with potentially impaired driving function (Pennsylvania and Oregon excepted) but had processes in place to allow them to do so at their discretion. Most states have granted civil and/or criminal immunity to physicians with respect to reporting (or lack of reporting) of potentially impaired drivers. It is our hope that this information will be useful in the development of future investigations focusing on driving safety in patients with lower extremity dysfunction.

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The effect of lower extremity pathology and surgical intervention on automobile driving function has been a topic of contemporary interest in orthopedic lower extremity studies. Several investigators have reported general guidelines (1–4) and produced original data (5–11) on the return to safe driving after lower extremity surgery. Others have specifically studied the effect of chronic musculoskeletal lower extremity pathology (12–14), the use of immobilization devices (15–20), the effect of major limb amputation (21–23), and the general effects of diabetes and hypoglycemia on driving outcomes (24–27). Our group has previously specifically studied the effect of diabetes, diabetic sensorimotor neuropathy, and diabetic foot disease on driving outcomes (28–30), and the effect of lower extremity immobilization in a surgical shoe and walking boot on driving performance (31). A sample of these studies seems to provide evidence that at least some degree of impaired driving function is associated with lower extremity pain and/or disability (5,6,10,11,13,30).

Given this seeming potential for impaired automobile driving function in patients with foot and ankle pathology, we sought to organize and summarize the individual U.S. state laws and regulations with respect to driving that might be related to patients presenting for care to foot and ankle surgeons.

## Materials and Methods

We collected data from the 50 U.S. states (and District of Columbia) to address the following questions:

1. Does the state have specific regulations with respect to driving in a lower extremity cast or with a foot/ankle immobilization device?
2. Does the state have any regulations with respect to drivers with acute or chronic lower extremity pathology and/or disability or those who have undergone foot and/or ankle surgery?
3. Does the state have any regulations with respect to drivers with diabetes?
4. Does the state have regulations with respect to physician reporting of potentially impaired patient driving?
5. Where can foot and ankle surgeons from the state find more information?

The focus of our investigation was with respect to noncommercial driving regulations. We first went directly to the Web sites of the respective state governments and departments of motor vehicles to review the information available online. This specifically included searches of driver's manuals (which often summarize state driving laws), the initial and renewal license application forms, physician medical evaluation

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forms, lists of moving violations, and state administrative statutes (often referred to as “vehicle code”). In addition to manually reading this material, when possible, we performed electronic searches of the documents for the following terms: “ankle,” “foot,” “toe,” “leg,” “cast,” “brace,” “device,” “diabetes,” “neuropathy,” “fracture,” “amputation,” “surgery,” and “injury.” If answers were not directly supplied from these searches, the information was not clear, or we had any remaining questions, we contacted the individual state departments of motor vehicles and police departments directly by telephone and e-mail in an attempt to answer these questions.

We also found 2 additional Web sites to be useful in data collection and would recommend them to interested physicians. The first is the Web site of the American Diabetes Association, which has a subsection discussing drivers with diabetes (available at: <http://www.diabetes.org/living-with-diabetes/know-your-rights/discrimination/drivers-licenses/drivers-license-laws-by-state.html>). This includes a state-by-state analysis of the regulations interestingly written from the perspective of patient rights and preventing discrimination against diabetic drivers. The second is an online, searchable database of state laws (available at: <http://law.justia.com>).

We are neither current nor aspiring lawyers, judges, law enforcement agents, or government personnel. The intention of the present review was to promote general awareness and give physicians a resource to inquire further about more information. Our review was not intended as, and should not be taken as, medical or legal advice. We make no warranties or guarantees regarding the accuracy, completeness, or adequacy of the information presented in our review.

## Results

### *Does the State Have Specific Regulations With Respect to Driving in a Lower Extremity Cast or With a Foot/Ankle Immobilization Device or Any Regulations With Respect to Drivers With Acute or Chronic Lower Extremity Pathology/Disability or Who Have Undergone Foot and/or Ankle Surgery?*

The full state-specific findings are listed in the Table. We found that most states had no explicit or specific regulations with respect to driving in a lower extremity cast, in a lower extremity immobilization device, or after foot and/or ankle surgery. Connecticut, Maine, and Vermont were the only states we identified for which we were able to obtain some information with respect to driving with a cast or limiting device. However, even this information was somewhat vague, and we were unable to correlate it with a specific state statute. The most specific state was Maine, where a document from the Department of Secretary of State, Bureau of Motor Vehicles titled *Physical, Emotional, and Mental Competence to Operate a Motor Vehicle* stated that “driving may need to be temporarily prohibited due to an immobilizing cast...if it impedes safe operation of a motor vehicle” (32). Even this, the most specific information we found documented, contains the words “may” and “if.”

We further identified 12 states (Colorado, Connecticut, Delaware, Kansas, Kentucky, Maine, Montana, New Jersey, New Mexico, South Dakota, Tennessee, and Washington) that had driver’s manuals containing a general statement along the lines of the following: “Driving is a complex skill. Any health problem can affect your driving... even a sore leg. If you are not feeling well and need to go somewhere, let someone else drive.” Kansas uniquely stated in their driving handbook (33): “Your foot should be able to pivot smoothly from brake to accelerator while the heel is kept on the floor.”

The initial and renewal driver’s license application forms of most states at least generally asked about any physical or mental conditions that could affect one’s ability to safely operate a motor vehicle. We identified only 3 states (Arkansas, Mississippi, and New Hampshire) that did not ask any specific health-related questions on their driver’s license applications. A few states also specifically included on the application questions relating to the presence of “musculoskeletal conditions,” “any permanent impairment,” or “amputation” that could affect driving. If answering yes to any question about health or medical conditions that could affect driving, the applicants were then generally required to undergo a specific medical evaluation, and most states had a specific medical evaluation form for physicians to complete and return. These forms varied but usually included questions

and sections on at least “musculoskeletal conditions” and “neuromuscular conditions.” The exact wording of the questions on these applications and medical evaluation forms for specific states is provided in the Table. Pennsylvania was the only state we identified that required a formal medical examination of all new drivers applying for a learner’s permit (34). Also, on this topic of a formal medical evaluation, we came across a Web site promising to help find “driver friendly” doctors for these physical examinations (available at: <http://dotphysicaldoctor.com/>).

However, we found that 2 broad concepts should be remembered when attempting to address this first set of questions. First, we spoke to 1 police officer who stated that although often no specific state regulations were available regarding driving with lower extremity impairment or restrictive devices, police officers could always potentially cite a driver for “not driving under reasonable or ordinary conditions” if a police officer was looking for something and that it would be very easy to demonstrate driver “negligence” in these situations. We found that most states had very vague and subjective definitions for “careless,” “reckless,” and “negligent” driving. For example, Nebraska defines negligent driving as “indifferent, offhand, neglectful”; careless driving as “inattentive, forgetful, inconsiderate”; reckless driving as “rash, heedless, dangerous”; and willful reckless driving as “deliberate and intentional” (35). Although none of these specifically refer to driving in a cast, brace, or postoperative bandage, we do not believe that it would be a stretch to imagine someone making this argument. Second, the use of narcotic pain medications while driving, which are commonly prescribed by physicians in the perioperative period and in the treatment of chronic conditions, could lead to a “driving under the influence charge” in most states.

### *Does the State Have Any Regulations Regarding Drivers With Diabetes?*

Again, the initial and renewal driver’s license application forms of most states at least generally asked about “any physical or mental conditions that could affect your ability to safely operate a motor vehicle.” Some states specifically asked about the presence of diabetes on these applications, and others asked physicians on the specific medical evaluation forms. Idaho, Indiana, Massachusetts, Michigan, Mississippi, Montana, Nevada, New Hampshire, New Jersey, Oregon, South Dakota, and Wyoming were the only states we identified that did not specifically ask about the presence of diabetes on either the license application or the medical evaluation forms. Most medical evaluation forms asked physicians questions about diabetes as it primarily related to the potential for hypoglycemic events, loss of consciousness, and seizures. It was less common for these forms to ask questions about potential lower extremity manifestations of diabetes, including lower extremity neuropathy, wounds, or amputations. However, Alabama, Connecticut, Kentucky, Tennessee, Oregon, Washington, and Wisconsin specifically asked about the presence of lower extremity neuropathy on their respective medical evaluation forms. Also, Oklahoma uniquely had a requirement that drivers with diabetes requiring insulin keep “food, fruit or candy within reach of the driver” (36).

### *Does the State Have Regulations Regarding physician Reporting of Potentially Impaired Patient Driving?*

Most states do not require physicians to report their patients with potentially impaired driving function but have processes in place to allow physicians to do so if they choose. Exceptions to this were Pennsylvania and Oregon. We encourage physicians in these states to carefully review these specific regulations because they require “mandatory reporting.” In Pennsylvania, “all physicians and other persons authorized to diagnose and treat disorders and disabilities

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