

What doctors want patients to know about helmet safety

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AT A GLANCE: Wearing a helmet every time you ride a bicycle, e-bike, scooter or motorcycle can help protect your head and brain if you fall or crash. Here are key things you will learn about helmet safety to prevent traumatic brain injuries from Thomas K. Watanabe, MD, a physical medicine and rehabilitation doctor with Jefferson Health, in this article:

- Choose a helmet designed for what you ride because e-bikes travel faster and require more protection than traditional bicycle helmets.
- Check helmet safety standards and certification labels, and make sure your helmet fits properly using the 2-2-2 rule.
- Replace your helmet every three to five years and after any crash, even if you cannot see damage.
- Stay aware of traffic and road hazards and wear a helmet even when local laws do not require one.
- Seek medical care after a fall or collision if you are concerned about a possible head or brain injury.

Whether riding a bicycle to work, hopping on an e-bike or using an electric scooter for a quick trip, more people are turning to two wheels to get around. But even a short ride can end with a serious injury when a fall or collision occurs—especially when the head is not protected.

Helmets are a simple but important layer of protection that can help lower the risk of traumatic brain injury and other serious head trauma. That protection is increasingly important as e-bikes and scooters allow riders to travel faster than they might on a

traditional bicycle, adding to the force involved in a crash. Choosing the right helmet, making sure it fits properly and wearing it every time can make a meaningful difference.

The AMA's What Doctors Want Patients to Know™ series gives physicians a platform to share what they want patients to understand about today's health care headlines and how to take charge of their health through preventive care.

In this installment, [Thomas K. Watanabe, MD](#), a physical medicine and rehabilitation doctor, and director of the Drucker Brain Injury Center at Jefferson Moss-Magee Rehabilitation, took time to discuss what you should know about helmet safety, especially while riding bicycles, e-bikes and scooters.

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Helmets protect the head and brain from injury

"Helmets can really lessen the impact when the street or a car or whatever hits somebody in the head," Dr. Watanabe said, emphasizing that "it takes away some of the force."

"Some helmets are designed to redistribute the force a bit as well," he added.

There are different helmet needs for what you ride

"Bicycle helmets generally are designed to prevent significant injury at about 14 miles an hour or less," Dr. Watanabe noted. "E-bike helmets are designed more robustly because the anticipation is that you'll be moving at much higher speed."

"Because many e-bikes are also bigger, faster and heavier, there's more momentum going on as well," he added. "The helmets are definitely designed differently because of those different requirements."

For e-bike helmets, there is more "coverage in the back of the head and along the temple. It is also much heavier," Dr. Watanabe explained, noting that some also "can come with

lights, which might help for safety as well.”

“Then there is the typical bike helmet, which is really reasonable for bikes, but it’s lightweight and has much less coverage in the temple region as well as just the foam and light plastic shell in” both the front and the back, he explained.

Pay attention to helmet safety standards and certification labels

“For a general bicycle, the Consumer Product Safety Commission Standard is adequate,” Dr. Watanabe said. “That’s designed more for that approximately 14 mile an hour impact.”

Meanwhile, “for e-bikes, there are a couple of different standards. The one that most people would recommend is the NTA8776 that was developed by a Dutch group specifically for e-bikes,” he explained, noting it’s much more robust.”

“There’s also the FMVSS-218—that’s a Federal Motor Vehicle Safety Standard,” Dr. Watanabe said. “This is designed for higher vehicle mass, higher speed produced by motorcycles,” but it can be used for e-bikes too.

Also, there is “a downhill mountain bike standard—ASTM F1952—that would certainly be adequate for an e-bike as well,” he noted.

When traveling, keep helmets in mind too

“A lot of bike rental places will have helmets as part of the procedure,” said Dr. Watanabe. “That might also vary from state, depending on the laws as well, but more often than not they will have them available.”

“E-bikes and scooters, not so much. Electric scooters, depending on where you live, are all over the place and don’t come with helmets,” he said. Most people aren’t carrying a helmet around the city, so if you’re traveling, it is something to consider.”

Each state has their own helmet laws

“There are different laws in different states for motorcycles, and people can choose to follow laws or not, which is a separate issue,” Dr. Watanabe said. “And the laws are really different for bikes and e-bikes from state to state as well.”

For example, “I live in Philadelphia, Pennsylvania, right across the river is New Jersey, and the difference in laws by age is very dramatic in the three miles from where I am to New Jersey,” Dr. Watanabe said. “In New Jersey, everybody must have a license. So, if you’re 17 or older, you’ll have a drivers license. If you’re 15 or 16, you have to get a license to handle an e-bike and if you’re younger than 15, you can’t ride an e-bike at all.”

“That’s because there is some concern about children’s ability to handle these vehicles, and maybe some questions about judgment, even though adults don’t always have the best judgment either,” he said. Meanwhile, “In Pennsylvania there are no laws in terms of licenses for e-bikes, no registration of the vehicle and no helmet laws unless you are under 12 in the state. In New Jersey everyone under 17 must wear a helmet.”

“And those are just two states, so it’s quite the range,” Dr. Watanabe noted. “Even within states, certain municipalities have their own rules as well, so it can be confusing.”

That is why it is important to “check your state, even when you’re traveling, to make sure you know what the laws and rules are,” Dr. Watanabe said. However, “if you’re traveling in a state that doesn’t have rules, that doesn’t mean it’s safer there. Ultimately, wear a helmet even if the law says you don’t have to.”

Make sure your helmet fits properly

“Helmets really need to fit well to give protection, so one recommendation is what’s called the 2-2-2 rule,” Dr. Watanabe said. “The rim should be no more than two finger breadths above the eyebrow.

“Then there are two fingers for the side straps, which should be hitting right under the ears,” he added. “And then two fingers under the chin straps. That is a good

recommendation in terms of how tight to have it under the chin strap.”

“If you have those things going for you, it’s probably a good fit other than the size of the head. This is something especially in the pediatric population because their heads are growing,” Dr. Watanabe said. “A helmet might fit nice and snug—meaning sitting on the head and doesn’t shake when moving your head—but that will change over time if you are growing, so you want to make sure it’s fitting well.”

Replace your helmet every three to five years

“Some people ask about how many years a helmet holds up and I haven’t seen great information to give a good recommendation about that,” Dr. Watanabe said, “but typically every three to five years” is a reasonable time due to wear and tear, UV light and heat exposure. Those can all contribute to a weakening helmet.”

Additionally, it is important “to remember that if you fall with a helmet and there’s any sort of a crack or damage, you need to get a new helmet because the crack is absorbing some of the force from that initial fall and it’s really not as effective after that,” he explained, emphasizing that “if it is involved in a crash, even if damage cannot be seen,” it should be replaced.

Kids don’t have great control of their head with falls

“Younger kids really have more difficulties managing even bicycles, so the whole issue of balance, judging speeds and things like that are a concern,” Dr. Watanabe said. “And the faster you’re going, the more of a concern that is.”

“There’s also some understanding that for younger children, the head to body ratio is greater, so there’s more likelihood of head and neck injuries because they don’t have as great of control of their head with falls,” he said. “As you get older, not only do you get stronger necks, but your head is, relatively speaking, not as big, so it’s not flopping around quite as much.”

Follow the rules of the road to prevent brain injuries

“If you drive a lot or if you’re on e-bikes a lot, in any event, you have more experience with dangerous situations,” said Dr. Watanabe. For example, “you will know when a car might be cutting you off or when you might be in a car’s blind spot, because if you’re a driver, you know what a blind spot is.”

“If you’re a kid who has never driven, you don’t really understand that the car might not see you, those types of things,” he added. “All those experiences in life really can impact the safety of youth versus an adult on e-bikes, scooters and bicycles.”

Always be aware while on a bike or scooter

It is vital that everyone has “great awareness that things can happen with bikes,” Dr. Watanabe said. “In general, there are some things you have to be nervous about, such as riding over grates when your tire might get caught or potholes.”

“Then, if you jump on an e-bike right away, you’re going much faster and you may not react to potential issues like that as quickly or even be aware that that’s a problem,” he said. “So, then the injuries are that much more likely and greater.”

“You want to be aware of your environment. You’re very vulnerable on these bikes, so whatever you can do to stay aware is good,” Dr. Watanabe said. “Whatever you do to stay visible, so lights are that much more important, especially as it gets towards dusk.”

“E-bikes are on the road more, so that whole road awareness issue and being able to anticipate unsafe situations is really very important. It could be pedestrians or balls rolling from the sidewalk into the street,” he said. “All those types of things really come into play in addition to cars zigzagging in and out and doors opening.”

Make helmet wearing the norm

“If early on you make it the culture, the norm, to always grab a helmet first, hopefully that will carry on through the years,” Dr. Watanabe said. “If the helmet looks cool, a child might

be more likely to use it.”

For example, “skiers wear helmets a lot now and part of it is the look, even for people who aren’t competitive skiers,” he said. “So, whatever it takes to get people to wear helmets, that’s fine with me.”

Know when to see a doctor

“After a fall or collision, seek medical care if you are concerned about a possible head or brain injury,” Dr. Watanabe said, noting that “symptoms such as a worsening headache, vomiting, confusion, slurred speech, weakness or numbness, seizures or unusual drowsiness can signal a more serious injury and warrant immediate medical attention.”

Also “keep in mind that symptoms of a head injury may not appear right away and can develop over several hours or days,” he explained.