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SUMMARIES FOR PATIENTS

Antihistamines and Driving Performance

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The summary below is from the full report titled "Effects of Fexofenadine, Diphenhydramine, and Alcohol on Driving Performance. A Randomized, Placebo-Controlled Trial in the Iowa Driving Simulator." It is in the 7 March 2000 issue of **Annals of Internal Medicine** (volume 132, pages 354-363). The authors are J.M. Weiler, J.R. Bloomfield, G.G. Woodworth, A.R. Grant, T.A. Layton, T.L. Brown, D.R. McKenzie, T.W. Baker, and G.S. Watson.

What is the problem and what is known about it so far?

Many people take medications for allergy symptoms. Some of these medications, particularly the older nonprescription antihistamines, can cause drowsiness. It is generally known that driving while drowsy can be unsafe. However, the influence of antihistamines on driving performance has not been studied in detail.

Why did the researchers do this particular study?

The researchers wanted to determine exactly how much two common antihistamines affect driving performance. One antihistamine was diphenhydramine (Benadryl), an older drug known to cause drowsiness. The other was a newer drug, fexofenadine (Allegra), which is not known to cause drowsiness.

Who was studied?

Forty experienced licensed drivers 25 to 44 years of age who had seasonal allergies.

How was the study done?

The study was done by using the Iowa Driving Simulator, a computerized facility in which participants sit in a real car within a domed structure and experience realistic movement. It simulates driving conditions and measures driving performance. The system simulated a 45-mile drive in dry weather conditions on a two-lane rural highway. Each participant completed four driving sessions separated from each other by 1 week. Before each session, the driver received fexofenadine, diphenhydramine, alcohol, or placebo (a dummy pill containing no active ingredient). In addition to a pill, patients received a drink of soda before each drive; the drink either contained alcohol or just had a small amount of alcohol rubbed on the rim of the cup. Neither the driver nor the person who judged the driving performance was aware which of the four substances the driver had received. The researchers measured the ability of the participants to match the varying speed of a "virtual vehicle" they were following. They also measured drowsiness, the ability to stay in the lane, and the driver's response to a "virtual vehicle" that unexpectedly pulled out into the road and blocked the lane.

What did the researchers find?

After taking alcohol or fexofenadine, participants were better able to match the speed of the vehicle they were following than after taking diphenhydramine. Lane keeping was more impaired after taking alcohol and diphenhydramine than it was after taking fexofenadine. The average response time to the blocking vehicle was worst after consuming alcohol, followed by diphenhydramine and then fexofenadine. Driving performance was about the same after taking fexofenadine as it was after taking placebo. Driving performance was generally worse after taking diphenhydramine than after drinking alcohol. Self-reported drowsiness was not a good predictor of driving performance.

What were the limitations of the study?

The study used simulated driving rather than real-world driving experience. It is uncertain whether similar findings would occur when actually driving a car. It is also not known how well the measures the researchers are relate to the risk for motor vehicle accidents. Furthermore, only a single dose of the drug was used. People may develop less drowsiness after repeated doses of the drug. but in this study, drowsiness did not indicate impairment; the real issue, therefore, is whether impairment would decrease over time. In addition, it should be noted that the maker of fexofenadine partly funded the study, one author is a consultant to the company, and one is an employee.

What are the implications of the study?

Diphenhydramine, a sedating antihistamine, may interfere with driving performance at least as much as alcohol does. People should be as cautious about driving after taking sedating antihistamines as they are after using alcohol.