

IF YOU RE LIKE MOST PARENTS, the thought of your child with attention-deficit/hyperactivity disorder (AD/HD) obtaining a driver's license is a cause of major concern, if not downright scary. You've seen firsthand the difficulties your child has with self-control, staying focused, paying attention and resisting distractions, and you know how important these attributes are to safe driving. You may feel your child is not ready to manage this high stakes responsibility at age 16, 17 or 18, but you also know that obtaining a license cannot be postponed forever. What are the risks, and what is a parent to do?

We know from existing research that adolescents and young adults with AD/HD have problems with inattentiveness, concentration, self-control, impulsivity, hyperactivity, distractibility and risk taking, and are also at increased risk for co-existing problems with substance abuse. They tend to be developmentally immature, compared to their peers of the same age. Given all of these risk factors, along with their lack of driving experience, it would not be surprising to suspect that adolescents and young adults with AD/HD have poorer driving performance and outcomes than those without AD/HD. But is this true? What does the

science tell us about this high stakes and oftencontentious issue? Do adolescents and adults with AD/HD actually have more driving difficulties and negative driving outcomes than others without AD/HD?

The answer appears to be a resounding YES. Several research studies have now firmly established that adolescents and adults with AD/HD experience more negative driving behaviors and outcomes than their peers without the disorder. Here is a brief overview of the major findings from some of these studies.

Research Findings

Results of a 1970s long-term study of hyperactive children followed to adulthood found that adults with AD/HD were more likely to be involved in accidents than their peers without hyperactivity. 12 This study also found that although most adults had been involved in at least one auto accident, those with a childhood history of AD/HD had more frequent and more severe accidents (as measured by monetary damage to vehicles).

A three-to-five-year follow-up survey of 35 adolescents with AD/HD and 36 adolescents without, ages 16 to 22,¹ found the AD/HD group was (1) almost four times more likely to have had an accident while they were the driver; (2) more likely to have been cited for *repeated* traffic violations, mostly for speeding; (3) more likely to have had their licenses suspended or revoked; (4) more likely to have driven illegally before receiving their license; and (5) less likely to be practicing sound driving habits in their driving performance, as reported by their parents.

immature, compared to their peers of the same age. Given all of these risk factors, along with their lack of driving experience, it would not be surprising to suspect that adolescents and young adults with AD/HD disorder, using both self-reporting and official driving records obtained from departments of motor vehicles. The results were similar to the previous studies.



Adolescents and young adults with AD/HD have problems with inattentiveness, concentration, selfcontrol, impulsivity, hyperactivity, distractibility and risk taking and tend to be developmentally immature, compared to their peers of the same age.

More specifically, the groups did not differ in the proportion of individuals having experienced at least one accident. However, more than twice as many adults with AD/HD had been involved in three or more accidents as the driver compared to the group without AD/HD (25.7 percent vs. 9.4 percent). The AD/HD group had more incidents, more "at fault" crashes, more speeding tickets and license suspensions, more episodes of driving illegally before getting their license and more severe monetary damage per accident (\$4,221 vs. \$1,665) than individuals without AD/HD.

A more recent study² found people with AD/HD to have more difficulties with attentiveness, impulse control, inhibition, vigilance, sense of time, resistance to distraction and rule following as measured by various laboratory test instruments. These factors are presumed to be important in safe driving; therefore, these findings would suggest greater driving risks for those with AD/HD.

Finally, a recent long-term study of children with AD/HD followed into adulthood8 found much the same results as the earlier Barkley studies. However, this study also employed trained driving instructors

observing and rating subjects driving during actual road tests. Observations by the instructors indicated a significantly greater number of driving errors due to impulsiveness in the AD/HD group compared to the control group. In addition, the AD/HD group had slower and more variable reaction times, greater steering variability, and a greater number of scrapes and crashes on a driving simulator machine.

These findings of significant driving problems in those with AD/HD extend beyond the United States. Two studies of adolescents in New Zealand^{9,13} found similar results. In these studies, those with AD/HD were at higher risk for various traffic offenses including crashes, crashes resulting in injury, driving without a license, and drinking and driving.

What can be done to reduce the likelihood of these negative driving outcomes? Although we do not yet have a firm foundation of scientific intervention studies to guide us, common sense suggests the following:

■ Parents should model safe driving habits, such as always buckling seat belts before driving, checking mirrors, using turn signals, adjusting to weather

conditions, maintaining a safe distance between cars, driving within the speed limit, not talking on the cell phone when driving and keeping the music at a reasonable decibel level. Parents should emphasize the severe consequences of driving under the influence of alcohol, drugs and even sleep deprivation.

- Read the book entitled *AD/HD* and *Driving: A Guide* for Parents of Teens with AD/HD by Marlene Snyder Ph.D. This is an excellent and comprehensive "must read" for parents of children with AD/HD that includes sample driving contracts, tips to promote safe driving behaviors and strategies for dealing with poor driving behaviors.
- Drivers who have AD/HD should always take their prescribed medication. In fact, four recent studies have found preliminary but compelling evidence that stimulant medication improves the driving performance of individuals with AD/HD.4,5,6,7
- Teens and young adults should consider choosing larger cars with good safety ratings whenever possible.
- Parents should require more supervised practice hours, including nighttime practice.
- In some cases, it may be advisable to delay obtaining a teen's license for one to several years.

A number of states use a graduated licensing system in which young drivers are required to undergo longer training periods to obtain both learner's permits and regular licenses. Currently, California, Florida, Michigan and Virginia require junior operators to complete at least 50 hours of supervised driving, including nighttime practice before a regular license is issued. In addition, a graduated system may allow a junior operator to drive only during daylight hours and might prohibit having other teens in the car. After a designated period of time without violations, they progress to the next level of driving privileges, including nighttime driving and driving with others in the car. Some states impose stiffer penalties for junior operator driving infractions as a deterrent to unsafe practices. It is still unclear to what extent such a hierarchical graduated system with lengthier practice periods and stiffer sanctions for rule violations will result in better outcomes, but it may be well worth finding out.

Conclusion

The risks associated with AD/HD and driving have been clearly established through sound scientific re-



Parents should model safe driving habits, such as always buckling seat belts before driving, adjusting to weather conditions, maintaining a safe distance between cars, driving within the speed limit, not talking on the cell phone when driving and keeping the music at a reasonable decibel level.

search. It is critically important for parents, adolescents and adults with AD/HD to understand and acknowledge these risks and to take appropriate action to reduce them.

Kevin Murphy, Ph.D., is the former chief of the Adult AD/HD Clinic at the UMASS Medical Center, Worcester, Mass., and is currently director of the Adult AD/HD Clinic of Central Massachusetts in Northboro, Mass. He is also a member of the CHADD Hall of Fame.

References

- Barkley, R.A., Guevremont, D.C., Anastopoulos, A.D., DuPaul, G.J. & Shelton, T.L. (1993). Driving—Related risks and outcomes of attention deficit hyperactivity disorder in adolescents and young adults: A 3- to 5year follow-up survey. Pediatrics, 92(2): 212-218.
- 2 Barkley, R.A., Murphy, K.R., DuPaul, G.J. & Bush, T. (2002). Driving in young adults with attention deficit hyperactivity disorder: Knowledge, performance, adverse outcomes and the role of executive functioning. Journal of the International Neuropsychological Society, 8(5): 655–672.
- 3 Barkley, R.A., Murphy, K.R. & Kwasnik, D. (1996). Motor vehicle driving competencies and risks in teens and young adults with attention deficit hyperactivity disorder. Pediatrics, 98(6): 1089-1095.
- 4 Barkley, R.A., Murphy, K.R., O'Connell, T.O. & Connor, D.F. (2005). Effects of two doses of methylphenidate on simulator driving performance in adults with attention deficit hyperactivity disorder. Journal of Safety Research. 36: 121-131.

- 5 Cox, D.J., Merkel, R.L., Kovatchev, B. & Seward, R. (2000). Effect of stimulant medication on driving performance of young adults with attention-deficit hyperactivity disorder: A preliminary double-blind placebo controlled trial. Journal of Nervous and Mental Disease, 188(4): 230-234.
- 6 Cox, D.J., Humphrey, J.W., Merkel, R.L., Penberthy, J.K. & Kovatchev, B. (2004a). Controlled-release methylphenidate improves attention during on-road driving by adolescents with attention deficit hyperactivity disorder Journal of the American Board of Family Practice, 17(4): 235-239.
- 7 Cox, D.J., Merkel, R.L., Penberthy, J.K., Kovatchev, B. & Hankin, C.S. (2004b). Impact of methylphenidate delivery profiles on driving performance of adolescents with attention-deficit/hyperactivity disorder: A pilot study. Journal of the American Academy of Child and Adolescent Psychiatry, 43(3):
- 8 Fischer, M., Barkley, R.A., Smallish, L. & Fletcher, K. (2005). Hyperactive children as young adults: Driving behavior, safe driving abilities and adverse driving outcomes. Accident Analysis and Prevention, in press.
- 9 Nada-Raja, S., Langley, J.D., McGee, R., Williams, S.M., Begg, D.J. & Reeder, A.I. (1997). Inattentive and hyperactive behaviors and driving offenses in adolescence. Journal of the American Academy of Child and Adolescent Psychiatry, 36(4): 515-522.
- 10 Snyder, J.M. (2001). ADHD and Driving: A Guide for Parents of Teens with ADHD. Whitefish, Mont.: Whitefish Consultants.
- 11 Weiss, G., Hechtman, L.T. (1993). Hyperactive Children Grown Up, Second Edition: ADHD in Children, Adolescents and Adults. New York, N.Y.: Guilford
- 12 Weiss, G., Hechtman, L., Perlman, T., Hopkins, J. & Wener, A. (1979). Hyperactives as young adults: A controlled prospective 10-year follow-up of 75 children. Archives of General Psychiatry, 36: 675-681.
- 13 Woodward, L.J., Fergusson, D.M. & Horwood, L.J. (2000). Driving outcomes of young people with attentional difficulties in adolescence. Journal of the American Academy of Child and Adolescent Psychiatry, 39(5): 627-634



Drivers who have AD/HD should always take their prescribed medication.