From the Exam Room to Behind the Wheel

Can Healthcare Providers Affect Automobile Morbidity and Mortality in Teens?

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Abstract: Despite clear evidence that motor-vehicle crashes are the leading cause of mortality and severe morbidity among adolescents and young adults, healthcare providers have not been fully engaged in efforts to reduce these rates. A new national awareness and effort to reduce motor-vehicle crashes provides an opportunity to engage healthcare providers and encourage them to play an active role in curbing crash rates. Indeed, research supports the notion that, when provided with adequate knowledge, training, and charting tools or electronic prompts, healthcare providers can increase their rates of screening, educating, and counseling youth and their parents about safe driving and that these efforts can be effective at increasing safety and reducing risk. Healthcare providers' efforts to advocate for safer driving laws and regulations are also important efforts in reducing youth driving risk. (Am J Prev Med 2008;35(3S):S304–S309) © 2008 American Journal of Preventive Medicine

Introduction

The statistics are daunting: In the U.S. in 2004, almost 12,000 individuals aged between 10 and 24 years died as the result of a motor-vehicle crash. These deaths represent 31.3% of all deaths among people in this age group. More deaths result from motor-vehicle crashes than from all traditional "diseases."[1] Despite the fact that motor-vehicle crashes continue to be the leading cause of mortality and severe morbidity in adolescents and young adults, healthcare providers have been less than fully engaged in efforts to alter these statistics. The reasons for such lack of involvement in this critical public health effort are probably multifactorial. But the growing interest and emphasis on the problem of teenage crash rates offer new opportunities to encourage healthcare providers to become involved in efforts to curb crashes.

In this article, we discuss the role of healthcare providers in reducing crash rates. In particular, we (1) provide a rationale for why healthcare providers need to be involved in these efforts, (2) speculate as to why healthcare providers may not have been involved previously, (3) discuss the effectiveness of healthcare providers in counseling efforts, and (4) suggest efforts aimed at reducing teen driving risk that healthcare practitioners can specifically provide during their care to teenagers.

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Why Should Healthcare Providers Be Involved?

Public health specialists usually generate the important facts and figures concerning morbidity and mortality rates and related risk factors for all age groups. This is as true for adolescents and young adults as it is for older adults and infants. These specialists have the ability to reach the public through social marketing campaigns, regulatory agencies, and legislation, and they have influence over schools and campuses where health behaviors are taught and their meaning interpreted. The emphasis of what they do is on disease prevention and health promotion.

Such public health intervention models provide remarkable opportunities to succeed with adolescents and young adults, who are the ultimate consumers of mass media, particularly electronic media. These young people both help create and are influenced by such communication efforts. Similarly, public health rules and regulations have additional opportunities to disproportionately affect adolescents who are, in many cases, still influenced by their parents and/or living in settings where the rules can be enforced. What public health specialists, for the most part, cannot do is sit face-to-face with an adolescent or young adult in an attempt to influence what that particular individual does as a day-to-day health consumer. This aspect of health education is left to those who actually provide individual-level health care to these youth and their families.

Through the provision of individualized and focused services, healthcare providers have a unique opportunity to provide key prevention efforts for youth in a variety of ways. First, one of the remarkable and satisfying aspects of caring for adolescents and young adults is that any health intervention has the opportunity to

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affect that person for years. Many of the health habits that people carry into adulthood have their genesis during this developmental stage. Pediatricians and family practitioners who provide primary care to the majority of adolescents are familiar with providing anticipatory guidance around issues as diverse as exercise, eating habits, television viewing, drug and alcohol use, and sexual health. All of these areas are meant to improve the health and well-being of teenagers and young adults immediately and, if effective, have an excellent chance of having positive effects on these patients' health throughout their adulthood. For instance, provider counseling has been associated with increased smoking cessation,[2] improved bicycle helmet use,[3] decreased alcohol abuse,[4] and decreased sexual risk taking.[5]

Second, in contrast to more indirect messages delivered via mass media efforts, healthcare providers have the opportunity, through the provision of direct and personal interventions, to interpret and reinterpret important public health information in a way that may be more meaningful for the individual adolescent and his or her family. For instance, the data on mortality from motor-vehicle crashes clearly show that the rates per 100,000 population are highest in male drivers. However, if one looks at the proportionate mortality from crashes—the percentage of all deaths in a certain age group resulting from that cause—a higher percentage of all deaths that occur in young women aged 16–20 are due to motor-vehicle crashes than in similarly aged young men.[6] What is the practical impact of this difference? Decreasing motor-vehicle deaths will have a greater effect on overall death rates of young women than young men!

Third, healthcare providers can serve as advocates and teachers not only for their patients but also for their communities. A good example is provided by a recent report from the AAA Foundation, which caused a considerable stir in the provider community. This report, titled "Teen crashes—everyone is at risk," detailed the impact that teen drivers have both on themselves and on the morbidity of passengers, pedestrians, and non-adolescent drivers.[7] The initial furor created by the report was over the fact that it appeared that teen drivers were being demonized and portrayed as villains. A closer reading of the report, however, led many of the same providers who objected to using this information as a tool to argue for more appropriate, state-based legislation for improved graduated driver licensing (GDL) laws.

Provision of Clinical Preventive Services Concerning Teen Driving

Unfortunately, healthcare providers themselves have not been adequately encouraged to provide targeted screening, education, and counseling concerning teen driving behaviors. A number of national guidelines concerning physicians' provision of preventive services have been developed, including *Guidelines for Adolescent Preventive Services* (GAPS) [8,9]; *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*[10,11]; *Guidelines for Health Supervision*[12]; *Clinician's Handbook of Preventive Services: Put Prevention into Practice*[13]; and *Guide to Clinical Preventive Services.*[14,15] These guidelines generally recommend that all children and adolescents have an annual healthcare visit during which all patients should receive confidential preventive services, including screening, education, and counseling on a number of biomedical, emotional, and sociobehavioral areas, including safety. The guidelines further recommend that parents should be provided with information on normative adolescent development and encouraged to monitor and support their adolescent.

These guidelines for providing adolescent preventive health care, however, lack recommendations for driver safety. For example, suggestions concerning counseling around driving behavior are typically focused on alcohol abuse and seatbelt use, rather than providing counseling on steps needed to be a safe driver. Further, while some of the guidelines do suggest encouraging observance of the speed limit, none of them has any reference to carrying passengers, driving distractions (cell phones, loud music), driver training and GDL, or health conditions (e.g., attention deficit disorder) that can affect driving. More recently, the American Academy of Pediatrics developed two new sets of guidelines that provide more specific guidelines for care that focus more on driver safety: *The Teen Driver*[16] and *Office-Based Counseling for Unintentional Injury Prevention.*[17] However, the impact these guidelines have made on physician practices and ultimately adolescent driving has yet to be studied.

Further, research shows that physicians' rates of screening, educating, and counseling around safety concerns—including those related to teen driving—are less than optimal. For example, Rand and others[18] examined data from the National Ambulatory Care Survey and showed that counseling of any kind is not a frequent part of the health care that adolescents receive. Halpern-Felsher and colleagues[19] showed that providers in a managed care setting reported screening an average of 59% of their adolescent patients about seatbelt use, with only 26% of providers reporting that they screen for seatbelt use with all of their adolescent patients. Providers indicated that, on average, they educated about 79% of their adolescent patients who reported not always wearing seatbelts. Finally, providers reported educating, on average, 43% of their patients' parents about the need to monitor their adolescent's behavior (including reckless driving). Similar studies looking at attempts to evaluate the effectiveness and regularity of delivering health messages concerning sexuality, smoking, and nutrition have been similarly

disappointing.[20–24] The studies showed, for example, that the AMA's Guidelines for Adolescent Preventive Services and the guidelines outlined in Bright Futures were both irregularly and inadequately implemented. Rates of screening and counseling adolescents about risky behavior varies by physician characteristics, including age, gender, year of graduation, practice setting, and subspecialty (see, for example, Halpern-Felsher et al.,[19] Blum et al.[24]), with physicians more likely to provide preventive services if they are younger, female, and have graduated more recently.

Most such studies assess services provided by busy primary care providers. It is possible that, were we to look at those who are specially trained to provide services to adolescents, we would find that the guidelines were indeed being followed and that these practices could then serve as a model for others. To do this, Meyer and D'Angelo[25] surveyed the Society for Adolescent Medicine membership to ascertain if any counseling, but in particular counseling regarding driving attitudes and behaviors, was a part of the regular services provided to teens seen by these specialists. Results showed that 90% of providers reported providing some kind of preventive health counseling, and 85% reported counseling about driving behaviors. Of these, although 80% counseled about seat belt use and 83% about drinking and driving, only 30% regularly counseled about driving with passengers. When asked about their knowledge of GDL laws, only 60% knew whether their state had such laws. Hoping that a subset of providers—those with teenagers as part of their own households—might be more knowledgeable, we were again disappointed to find that only 77% knew of these laws in their states. Hence, the first challenge is to get providers, both primary care and specialist, to provide appropriate anticipatory guidance around driving risks.

Increasing Provision of Clinical Preventive Services

Physicians cite a number of barriers to their provision of clinical preventive services, including (1) having a large number of patients, which results in time constraints per patient, (2) inadequate reimbursement relative to the time and effort required to provide such services, (3) fear of alienating patients and families, (4) insufficient education and training, (5) lack of dissemination to physicians of research supporting positive treatment outcomes and negative effects of failure to intervene, and (6) lack of information about how to access referral and treatment resources.[26,27] Research also suggests that physicians' self-efficacy to screen adolescents about risky behavior, including seatbelt use, is related to their delivery of preventive services.[28]

Given these barriers, a number of interventions have been developed and implemented to improve provision of preventive services. These interventions, which have included physician training and the addition of charting tools and electronic prompts through electronic medical records, have yielded small to moderate effects on service provision. Although there is probably no easy solution to the concern over time constraints, Klein,[29] Lustig,[30] and Boekeloo[31] have all shown that primary care providers who are responsible for delivering prevention messages to adolescents are both willing and able to learn how to do this efficiently and effectively.[3–6] Further, once familiar with the appropriate guidelines, physicians are more likely to actually screen and counsel youth. This training appears to be most effective when it is skills-based[31] and when there is an overall commitment to such services by the clinical administrative unit rather than just on the level of an individual provider.[30] Moreover, such skills-based training is further enhanced with the implementation of charting tools and reminders.[32,33]

Can Healthcare Providers Make a Difference?

While there are reasonable arguments as to why healthcare providers should be interested in the problem of adolescent motor-vehicle crashes and deaths, the immediate question is whether healthcare providers can actually increase teen driver safety and reduce crash rates. Although no study has definitively addressed this question—and certainly not with respect to teen driving specifically—empirical studies do suggest that such efforts on the part of primary care providers can make a difference. For example, Boekeloo and others[5] showed that the delivery of a consistent prevention message by primary care providers did have long-term effects in reducing rates of unprotected intercourse. Johnston and others[3] demonstrated that in an environment as hectic as an emergency department, health counseling can reduce injury risk. Ozer and colleagues[34] demonstrated that a pediatric primary care intervention involving training, integration of screening and charting tools, and health education can lead to significant increases in the use of seatbelts by teens aged 14 to 16 years compared with adolescents not in the intervention.

Next Steps: What Should Healthcare Providers Do?

Although research linking the role of provider guidelines on physician counseling and the role of counseling on adolescent risk driving is limited, the review presented in this article clearly suggests that the provision of clinical preventive services is a promising way to improve safety among teens as they gain driving experience. Healthcare providers should consider several specific avenues in doing their part to reduce crash risk among teen drivers. First and foremost, it is imperative to recognize that the majority of healthcare providers will be providing counseling to their patients in the context of annual or interval healthcare visits. Regard-

less of the nature of these visits, ideally the provider will be able to ascertain the extent to which the adolescent patient has already received counseling regarding safe driving, and the elements of safe driving included in this counseling. As is true with more active preventive health measures such as immunizations, providers should not "miss the opportunity" either to initiate or repeat important safe driving and safe pedestrian messages, even during "sick visits." Although no research exists to suggest the specific age at which an adolescent should receive safe driving education, it stands to reason that such information should be conveyed around age 15, just as adolescents and parents are preparing for driving education and licensure. Efforts to include the parent in these conversations are also critical, especially since adolescence is a time when parents are often less directly involved in the exam. A "prevention check list" based on clinical guidelines developed from GAPS or Bright Futures, for example, may be a helpful guide to remind a busy practitioner to screen, educate, and counsel parents and their adolescents about safe driving. Such reminders can be in the form of charting tools[32] or even electronic prompts.

Second, in addition to these reminders, to provide the most effective guidance to adolescents concerning safe driving, providers should have clear guidelines as to what they need to know about teen driving, as well as what information they should convey to both the adolescent and his or her parents. For example, Table 1 shows several areas of knowledge that providers should know or have access to (from one of the variety of guides available) so that they can answer questions or help find information. It is important that providers seeing soon-to-be or newly initiated drivers know the laws of their state concerning licensure. Because all states now have a GDL process, it is important to have a working knowledge of what is included in each of these stages for licensure.[35] It is also important to appreciate what medical conditions can affect patients' driving or their ability to be licensed. For instance, it is important to know which patients with seizure disorders can hold licenses[36] and to appreciate the fact that patients with attention deficit hyperactivity disorder on stimulant medication will probably need this medication to function as responsible drivers.[37]

Healthcare providers should also be aware of the necessary elements for effective patient counseling concerning teen driving safety. The recent guidelines published by the American Academy of Pediatrics[16,17] include extensive recommendations for the topics a provider should be reviewing with patients and families. The recommendations can be separated into those items focused on the patient and those focused on the parent/family. Table 2 includes the patient-focused items to review, and Table 3 includes those counseling topics that the provider should discuss with the parents or families of young drivers who are still minors.

Third, the healthcare provider can be an advocate. Although the role of counselor and educator is not foreign to most providers, the role of community advocate is not one that all providers will embrace. Nonetheless, being an advocate in the community and being knowledgeable about teen driving and related concerns is a valuable aid to communities trying to lower their morbidity and mortality rates from auto crashes. This advocacy can occur at a community level or a legislative level. Regardless of how the provider seeks to influence local, state, or national policy, certain factors should serve as the basis for this advocacy. These include the following:

1. The cornerstone of a local or state effort to improve the morbidity and mortality associated with auto crashes is a strong GDL program. The elements of a model program are listed in Table 4. Key restrictions in such a program are ensuring adequate driver experience in the training and preliminary-licensure phases, limiting nighttime and passenger driving, eliminating distractions to whatever degree possible,

Table 1. Important items for providers to know and do

Know the state licensure laws
Know medical conditions that need special clearance (e.g., seizures)
Counsel teens and parents on safe driving
Encourage teen–parent contract, driver responsibilities, delayed licensure, and other measures to increase safe driving

Table 2. Patient-focused counseling topics

Level of licensure (e.g., permit, provisional)
Amount of driver's experience to date (e.g., hours on road, classroom instruction, types of driving experiences)
Pattern of driving (When do you drive? Who goes with you?)
Auto responsibilities (e.g., gas, insurance, family curfews)
Safety (e.g., seatbelt use; distractions such as cell phones, passengers, music)
Risks (e.g., alcohol, speed, distractions, night driving, health conditions)

Table 3. Parent/family-focused counseling topics

Stress role of parent as role model on a daily basis
Parents' adherence to licensing laws (e.g., supervision of driving, enforcement of curfews and limits)
Provision of a safe vehicle (e.g., age appropriate, not outfitted for speed)
Personal responsibility of teen driver (e.g., gas, upkeep, insurance)
Contracting for mutually agreed-upon behaviors (e.g., no drinking, call for problems, behavior when a passenger)
Encourage driving aids (e.g., professional lessons, driving simulators, websites for instruction and support)

Table 4. Key elements of the optimal graduated driver licensing (GDL) program[16]

Cover all new drivers, regardless of age
Utilize at least three stages
Don't start sequence of stages until at least age 16
Require 50 hours of parental/adult supervised driving with 10%–20% at night
Stage 1 (permit stage) should last at least 6 months; **no teenaged passengers**
Stage 2 (provisional-license stage) should last 1 year or until age 18, whichever is longer; **no more than one teenaged passenger**
No use of cell phones, including hands-free cell phones, until Stage 3 (full licensure)
Limit on night driving (9 PM at Stage 1, 12 MN at Stage 2)
Mandatory seatbelt use
Zero tolerance for substance use
Mandatory fines and suspensions for violations and 6-month delay in process

and ensuring a substance-free driver through a scrupulous zero tolerance approach.

2. No substance use in adolescents who drive should be tolerated. Television and other media programs or manufacturers who glamorize or condone underage drinking should be identified and called to task for these practices.
3. Zero tolerance for driving laws not being obeyed or supported.

The final point we can and should ask of providers is that they appreciate and support the need for ongoing research into innovative ways to reduce adolescent and young adult morbidity and mortality due to crashes. This help may necessitate their participation in recruiting research participants and/or serving as research participants themselves, as attitudes and practice styles of providers are surveyed and analyzed. Further research on the extent to which healthcare providers observe guidelines around adolescent driving safety, and whether adherence to such guidelines ultimately results in safer adolescent driving, should also be encouraged, as should more research to identify additional, effective ways in which such driver safety information can be conveyed to parents and adolescents. Promising new avenues include the use of CD-ROMs and links to the Internet that are provided in waiting rooms, but definitive research is still needed.

Much progress has been made in the struggle to reduce adolescent and young adult morbidity and mortality resulting from motor-vehicle crashes. As efforts go forward to continue and accelerate this progress, we hope that healthcare providers can play a meaningful role in these efforts.

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