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DRAFT Prepared Written Testimony
(Updated version of January 23 2006 written testimony)
Pennsylvania State House Committee on Transportation
July 24, 2007

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Thank you for inviting The Children's Hospital of Philadelphia to speak this morning about proposed amendments to Pennsylvania's traffic laws, which would improve Pennsylvania's graduated driver's licensing (GDL) law by adding passenger restrictions for young novice drivers, increasing the number of hours the type of conditions for supervised driving during the learner's phase. House Bill 163 will significantly increase the safety of the more than 95,000 teen drivers, their occupants and all people with whom they share the road while traveling in motor vehicles throughout the Commonwealth. In addition, we will present strong evidence for provisions that go beyond House Bill 163 in protecting our teen drivers and those who are on the road with them, including primary enforcement of restraint use for all occupants under age 18 years, cell phone restrictions, and increased nighttime driving restrictions.

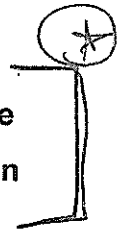
We are the founders and scientific directors of the Center for Injury Research and Prevention (formerly TraumaLink). We are practicing pediatricians in primary and emergency medicine at CHOP and are Associate Professors of Pediatrics at the University of Pennsylvania School of Medicine with advanced degrees in bioengineering and epidemiology.

The Center for Injury Research and Prevention is the home of the world's largest study of children in crashes, Partners for Child Passenger Safety, an on-going research initiative with State Farm Insurance Companies. As traffic injury researchers and parents of children ranging from 8 years of age to 18 years of age, we are uniquely qualified to present you with recommendations about teen drivers that are both evidence-based and practical.

Children's Hospital is Pennsylvania's first designated Level One Pediatric Trauma Center and maintains one of the busiest emergency departments in the Commonwealth. The Emergency Department at the hospital sees more than 70,000 visitors each year— admitting into the hospital about 1,200 trauma-related patients who are under 20. We are the nation's number one children's hospital according to *USNews & World Report* and consistently rank in the top two for National Institutes of Health funding for pediatric research. Celebrating our 150th anniversary this year, we have seen our share of teen driver-related trauma. Our clinical and research expertise in the area of pediatric trauma prevention, as well as that of our institution, will be brought to bear in this testimony.

On behalf of Children's Hospital, we congratulate the legislature on implementing a Graduated Drivers Licensing system in 1999. This three-stage system includes a six-month learner's permit requiring supervised driving and a junior license with nighttime driving restrictions to age 18, unless full licensure is received at an earlier age. You already understand the statistics and facts related to teen driver-related crash and fatality risks and that a GDL system helps protect teen drivers by phasing in full driving privileges over time while they acquire their new driving skills and mature under safer driving conditions.

However, Pennsylvania's GDL system is out-of-sync with evidence-based "best practice" as recommended by the National Highway Traffic Safety Administrations (NHTSA), the Insurance Institute for Highway Safety (IIHS), National Transportation Safety Board and many other distinguished organizations and experts. **Pennsylvania's limited GDL system is part of the reason why we have such a high death toll related to teen drivers. We can do better.**



Thus, my testimony will focus on scientific evidence for future action that Pennsylvania should undertake to achieve future reductions in rates of crashes and fatalities.

Strong evidence supports Graduated Driver Licensing Laws that have provisions for one or NO passengers, limited nighttime driving, zero tolerance to alcohol, and mandatory seat belt wearing. In addition, there is new and emerging evidence that supports cell phone restrictions.

The Case for Passenger Restrictions

Extensive published research demonstrates that compared with driving alone, teen driver deaths increase with each additional passenger. While most Pennsylvania parents now understand the need to restrict nighttime driving with their teens and to forbid drinking and driving, thanks in large part to raised awareness from Pennsylvania's GDL, most parents have not gotten the message that carrying passengers is one of the greatest risks for teen drivers. This lack of awareness has led to devastating injuries and deaths that could have been prevented.

Our research points to the need for strong laws that give consistent messages to parents and that the laws need to be backed up by strong and sure enforcement.

In the fall of 2005, families across the Delaware Valley were shaken by two local high-profile crashes, involving eight teenagers, resulting in five fatalities and three serious injuries. The impact of these tragedies is hard to measure. As parents, we share the fears and tears of many other parents coping with news of these tragic losses. At the same time, we recognize the need to give our children the privilege of driving when they come of age. All are great kids and they deserve to be rewarded, but full driving privileges don't all have to come in one day. Our children need to gain experience driving alone under low risk conditions before we add the known risk of teen passengers to the mix. With improvements in our GDL system, such horrific stories will become less common in Pennsylvania.

Teen passengers are key factor for crash risk

As Pennsylvania's first Level One Pediatric Trauma Center, Children's Hospital treats teenagers and sees tragic cases resulting from teen-driver related crashes each year. In 2006, such a case came into our Emergency Department. We have changed the names and identifiers to protect the privacy of the patients, but the story tells the same story you hear over and over.

One Friday night, a male teenage driver was driving home his four friends around 10 p.m. The kids were talking about plans for the weekend ahead. The driver and his two male passengers weren't wearing seat belts. The two female passengers were only using the lap belt. It was raining and dark and the driver took the curve too wide and hydroplaned off the road into nearby woods. Within 50 feet of the road he crashed into a tree.

The driver and one other male passenger suffered extensive lacerations requiring 40 stitches. They were the lucky ones.

Both girls sustained seat belt syndrome, serious injuries to internal organs from not using shoulder belts. The front-seated female passenger sustained a fracture to her cervical spine and a laceration to her liver. Her girl friend fractured her lumbar spine and sustained two lacerations to her bowel. She required surgery to repair the damage.

The fifth occupant, a male teen, suffered a closed head injury that left him in a coma for several days before he succumbed to his injuries. The distraction of multiple friends was too much for a young driver trying to concentrate on wet country roads at night. We do not believe that alcohol or drugs were involved in this crash.

A few simple precautions – wearing seat belts properly, limiting passengers - would likely have prevented a family's lifetime of mourning, regret, and guilt.

Preventable injuries such as these occur every day.

Society is quick to place the blame on alcohol-impaired driving and bad behavior. While these factors play a role, simple inexperience is more to blame. The main characteristic of fatal crashes for young drivers is driver-error. After driver-error, having multiple passengers in the vehicle is twice the factor for a fatal crash than alcohol-impaired driving for 16 year olds. Among fatal crashes with 16-year-old drivers in 2003, 28 percent of the drivers had three or more passengers while only 13 percent involved drivers with blood alcohol content above .08.

Fatal crash characteristics by driver age, 2003

	16 yrs.	17-19 yrs.	20-49 yrs.
Driver Error	77%	73%	57%
Speeding	38%	36%	23%
Single vehicle	50%	45%	39%
3+ occupants	28%	24%	18%
0.08+ BAC	13%	27%	42%

Source: Insurance Institute for Highway Safety, February 9, 2005

Passengers, especially teen passengers, are a major distraction for teenage drivers. A 1998 study of police-reported crashes in Ontario found that carrying one passenger almost doubled the fatal crash risk of teen drivers compared to driving alone, while for two or more passengers this risk was five times as high (Doherty et al, 1998).

A 1999 study of 16 and 17-year-old drivers in the US, conducted by Johns Hopkins University and the Insurance Institute for Highway Safety (IIHS), found that this age group of drivers had a much higher risk of dying in a crash than did older drivers and that, compared with driving alone, driver deaths increased with each additional passenger. Carrying at least three teen passengers results in a three-fold increase in the probability of a teen in that vehicle being killed. (Chen et al, 2001)

These researchers estimated that passenger restrictions could save hundreds of lives each year. If 100 percent of these teens drove by themselves, rather than riding with other young drivers, 275 lives could be saved each year.

Experts see two main reasons for the deadly effect of multiple passengers on teen drivers. First, teenage passengers create distractions for teen drivers. Teen drivers are inexperienced and need to pay full, undistracted attention to the task of driving. Second, peer passengers in the vehicle can induce young drivers to take risks in order to 'look cool' or that their passengers might even encourage risky driving. Although the extent to which this occurs is yet to be established, what we do know is that teenage drivers are aware of risks but the influence of peers clouds their better judgment.

Risk of teen drivers to child passengers

Children's Hospital is particularly sensitive to the impact of teen driver crashes on our most vulnerable passengers – children. We have published two studies on this exact topic. The most recent, published this past month in the journal *Injury Prevention*, addressed the risk of child passengers from teen drivers: siblings versus non-siblings.

We found that while children driven by teens are twice as likely to suffer crash injury as those driven by adults, their risk is 40 percent lower if the teenaged driver is their older brother or sister. (Winston FK, 2007)

Thus, children are safer and more likely to be restrained when riding with a teenaged sibling than with a non-related teenager, but they're safest when they're riding with a driver older than 25.

Busy parents have come to rely on their older children helping with shuttling siblings to various commitments. By allowing family member exceptions, passenger restrictions may be readily accepted by families.

Please note that our earlier research, published in 2005, showed that teen drivers (siblings and non-siblings combined) are less likely to make sure that everyone in the car is buckled up. In fact, children driven by 15- to 17-year-old drivers are three times as likely to have no restraint *at all* as those with adult drivers. Children under age 13 years riding with novice teen drivers were more likely to sit in the front seat as compared to those with adult drivers. Teen drivers present a high risk for child passengers – not just for fellow teens. (Chen IG, 2005)

If we are to allow sibling passengers or one non-sibling passenger to ride with teen passengers, as HB163 suggests, there needs to be appropriate education and strong disincentives such as postponement of full-driving privileges and fines if all occupants are not properly restrained.

Passenger restrictions reduce fatalities

We support the addition of passenger restrictions for drivers ages 16 and 17 years because it will delay the distraction of multiple passengers until a time when young drivers are better equipped with maturity and driving skill to manage the task of driving and respond appropriately to risk situations requiring quick decisions. (Groeger, 2000)

IIHS examined passenger restrictions for 16-to-17-year-old drivers carrying passengers less than 20 years of age. They concluded that there would be substantial reduction in road user fatalities, even after factoring for an increase in the number of teens driving alone. The estimated reductions in road user fatalities (including pedestrian, motorcycle and bicycle fatalities) increase according to increased compliance. (See chart on following page)

**Estimated Reduction in Fatalities For Novices
Affected By Passenger Restrictions**

Compliance rate	Reduction in fatalities
20%	7%
50%	22%
70%	23%-29%
90%	31%-42%

Source: Chen et al, 2001

Community support for passenger restrictions

California's GDL law went into effect in 1998 and was the first to include a meaningful passenger restriction. No passengers younger than 20 were allowed in the vehicle during the first 6 months of licensure unless an adult 25 or older was present. When the IIHS surveyed California parents several years into the new GDL system, there was strong support for GDL. **When asked specifically about passenger restrictions, 84 percent of parents approved and 39 percent of teens approved.** While GDL does limit some teens' social activities, four out of five teens were able to adapt and participate in these activities anyway. The majority of parents reported no inconveniences (Williams et al, 2002).

A Harris Poll conducted by Advocates for Highway and Auto Safety also reported parent support for passenger restrictions. The 2001 poll showed a 74 percent to 23 percent majority in support of passenger restrictions.

Teenagers themselves can also be empowered by passenger restrictions. New Zealand research has shown that young drivers report less pressure from their peers to provide lifts, to drive at night when tired, or after consuming alcohol (Baughan & Simpson, 2002). **There, 70% of young drivers agreed with their GDL restrictions** (Begg et al, 1995).

We Can Do More With House Bill 163

Scientific evidence points to additional GDL elements that would improve outcomes for teen drivers and their passengers. We ask that you also consider the following evidence-based recommendations.



Primary seat belt law and booster seat law

While we have described factors above that cause teen crashes, low rates of seat belt use kill teen drivers and their passengers.

Providing standard, or primary, enforcement for the Commonwealth's seat belt and booster seat laws will decrease fatalities and injuries.

Teens have the lowest belt use rates of any age group. Results of a very recent national survey conducted by our research group and representative of all U.S. 9th, 10th and 11th grade public school students confirmed that teens are inconsistent with seat belt use. 79% of these students "often or always" use seat belts when driving and only 70% "often or always" use seat belts as passengers. (*Driving: Through the Eyes of Teens*. Children's Hospital of Philadelphia and State Farm report, 2007)

The result: unbelted teens are over-represented in crash fatality statistics. In 2005, 62% of teens killed in crashes were unbuckled. In Pennsylvania, 60% of teens killed as a driver or as occupants in crashes were unbuckled in 2005. (NHTSA, *Fatality Analysis Reporting System*, web-based query on July 22, 2007.) We need to get our youth into seat belts if we want to save lives.

Less than a year ago, we were struck by a tragedy close to home. It involved three 18-year-old boys and one 17-year-old girl driving home from jobs at the King of Prussia Mall. The only survivor of the crash reported that the driver sped up and lost control of the car after hitting a pothole and crashed into a pole.

Inexperience and a momentary decision to speed caused the crash. Lack of seat belt use killed. The only survivor was wearing her belt and suffered only a scratch on her neck. The others suffered fatal injuries, at least one due to ejection from the vehicle. Perhaps, primary enforcement of our belt law would have made the difference for these young kids. We'll never know.

Research has shown that, on average, the effect of primary enforcement is larger and more consistent than secondary enforcement in increasing belt use and decreasing injuries among adult drivers and passengers. Teenage drivers are also more likely to wear seat belts in primary enforcement states according to research from the Insurance Institute for Highway Safety. (McCartt AT, 2004)

Research conducted and published by our Center's researchers found that teens, ages 13-15 years, were more than twice as likely to ride unrestrained in secondary enforcement states than were their peers in primary enforcement states. In this study, we found that age and restraint use of the driver is associated with restraint use of 13- to-15-year-olds suggesting that teens may mimic the restraint use of the driver. (Durbin DR, 2007)

Still, primary enforcement belt laws have an effect on belt use for pre-driving teens that is independent of the effects of the driver's belt use. Even states with high-baseline restraint use rates would benefit by upgrading restraint use laws to primary enforcement.

At minimum, a primary seat belt law should be introduced for all drivers and all occupants less than 18 years, regardless of their seating position.

This would require legislators to upgrade child restraint use (child safety seats and belt-positioning booster seats) laws to primary enforcement. Currently, mandatory booster seat use for children 4 to 8 years has only secondary enforcement status.

We published research from the Partners for Child Passenger Safety study in March 2007 that demonstrates the strong independent effect of booster seat laws on increases in appropriate restraint use by children ages 4 through 7 years. Children in states with booster seat laws were 39 percent more likely to be in the correct restraints. (Winston FK, 2007)

As Pennsylvania is the only booster law state with secondary enforcement, we cannot determine the diminishing effect secondary enforcement status may have on booster seat usage rates. In 2005, booster seat use among 4 to 7 year olds in Pennsylvania stood at 48 percent. (Partners for Child Passenger Safety Fact and Trend Report, 2006) This is a huge improvement since the 2002 enacted law, when only 12 percent were riding in boosters. (Partners for Child Passenger Safety Study data, 2002)

However, we believe that promoting the primary enforcement of Pennsylvania's booster seat law among law enforcement professionals and among the public will generate further increases in booster use, reducing injuries and fatalities among children ages 4 through 7.

GDL cell phone restrictions

Researchers estimate that the distractive effects of mobile phone use while driving increases crash risk by around 25 percent and that the risk of a driver fatality is between four and nine times higher than when not using a phone. Research suggests that mobile phone use, including hands-free use, is associated with greater crash risk for all drivers. (Beirness, Simpson & Pak, 2002; Brühning, Haas, Mäder, Pfafferott & Pöppel-Decker, 1998; Laberge-Nadeau, Maag, Bellavance, Desjardins, Mesier & Saïdi, 2003; Ranney, Mazzae, Garrott & Goodman, 2000; Redelmeier & Tibshirani, 1997, 2001; SWOV, 2000; Violanti, 1998; Violanti & Marshall, 1996)

It is likely that these risk estimates are conservative due to a serious under-reporting bias, as drivers are reluctant to provide information on their activities just prior to a crash that may implicate personal responsibility for the crash. Research has shown that risks are similar for calls placed by the driver and calls received by the driver, during the day and night, during summer and winter, irrespective of age and experience. (Redelmeier and Tibshirani, 1997, 2001)

A 1998 study looked at the duration of drivers' glances away from the road while driving when dialing a mobile phone, changing an audio-cassette or tuning the radio. Investigators found that novices' glance-duration was more variable than

that of experienced drivers, including more short and long glances at the distraction device. In addition, 29 percent of novices made glances that were longer than the maximum glance duration of experienced drivers. Moreover, these lengthy glances were associated with greater lateral displacement of the vehicle. (Wikman et al, 1998)

At the first-ever International Conference on Distracted Driving that took place in Toronto just a few months ago, Australian researchers announced findings that **young novice drivers spent up to 400 percent more time with their eyes off the road when they were text messaging** than when not text messaging during a simulated drive (Hosking et al, 2005).

We recommend introducing restrictions on all cell phone use for learners and junior licensed drivers.

Increasing Night time restrictions by 2 hours (9 pm – 5 am)

[will be added to final written testimony that will be submitted for the permanent record]

Conclusion

We thank the House Transportation Committee for this opportunity to share the scientific evidence that supports the addition of passenger restrictions, increased and varied supervised driving, to our Commonwealth's GDL system. We are grateful for those who called for this hearing and who drafted the legislation. If enacted, HB 163 will save lives and prevent serious injuries to motorists of all ages. We also hope you will consider other policies, such as cell phone

restrictions, primary enforcement seat belt and booster seat laws and increasing the nighttime restrictions by two hours. All will better protect our teens as they take on the responsibility of becoming safe drivers. All will move Pennsylvania to become the model GDL state.

We would be willing to participate in further discussions related to effective policies to reduce the burden of teen-driver related deaths and injuries in the Commonwealth. I am happy to address any questions you may have.

Summary of Recommendations

The following recommendations of The Children's Hospital of Philadelphia are based on published research and expertise in pediatric and adolescent traffic injury:

1. Support extending passenger and nighttime driving restrictions for, at least, the first six months of licensure to all new drivers regardless of age.
2. Support increasing supervised driving to include more hours and more varied driving experiences.
3. Support including a restriction on all cell phone use for learners and junior licensed drivers.
4. Support enactment of a primary enforcement seat belt and booster seat laws to protect all Pennsylvania residents, particularly teens and children.

Data Sources

Arnett JJ (2002). Developmental sources of crash risk in young drivers. *Injury Prevention*, 8 (Supp. II), ii17-ii23.

Baughan C & Simpson H (2002). *Graduated Licensing: A review of some current systems*. TRL Research Report 529. Transport Research Laboratory, UK.

Begg DJ, Langley JD, Reeder AI, & Chalmers D (1995). The New Zealand graduated licensing system: teenager's attitudes toward and experiences with this car driver licensing system. *Injury Prevention*, 1, 177-81.292-296.

Beirness DJ, Simpson HM, & Pak A (2002) *The Road Safety Monitor: Driver Distraction*. Traffic Injury Research Foundation: Ontario.

Brühning E, Haas I, Mäder H, Pfafferott I, & Pöppel-Decker M (1998). *Telephone Use while Driving and Traffic Safety. Summary*. Bundesanstalt für Strassenwesen (BASt), Bergisch Gladbach.

Chen, IG; Elliott, MR; Durbin, DR; Winston, FK (2005). Teen drivers and the risk of injury to child passengers in motor vehicle crashes. *Injury Prevention*, 11, 12-17.

Chen L-H, Braver ER, Baker SP, & Li G (2001). Potential benefits of restrictions on the transport of teenage passengers by 16 and 17 year old drivers. *Injury Prevention*, 7, 129-134.

Children's Hospital of Philadelphia and State Farm Insurance Companies (2007) *Driving: Through the Eyes of Teens*. The Children's Hospital of Philadelphia, January 2007.

Durbin, DR, Smith R, Kallan MK et al (2007) Seat belt use among 13-15 year olds in primary and secondary enforcement law states. *Accident Analysis & Prevention*, March 2007.

Groeger JA (2000). *Understanding Driving: Applying cognitive psychology to a complex everyday task*. Sussex, UK: Psychology Press.

Hosking S, Young K, & Regan M (2005). The effects of text messaging on young novice driver performance. First International Conference on Distracted Driving, Toronto, Canada, October 2-5.

Laberge-Nadeau C, Maag U, Bellavance F, Desjardins D, Mesier S, & Saïdi A (2003). Wireless telephones and the risk of road accidents. *Accident Analysis & Prevention*, 35, 649-660.

Maycock G, Lockwood CR, & Lester JF (1991). *The accident liability of car drivers*. TRL Research Report 315, Transport Research Laboratory, UK.

Mayhew DR, Simpson HM & Pak A (2003) Changes in collision rates among novice drivers during the first months of driving. *Accident Analysis & Prevention*, 35, 683-691.

McCartt AT, Shabanova VI & Leaf WA (2003) Driving experience crashes and traffic citations of teenage beginning drivers. *Acc Anal & Prev*, 35, 311-320.

McCartt AT, Northrup VS (2004). Factors related to seat belt use among fatally injured teenage drivers. *Journal of Safety Research* 35 (1), 29-38.

NHSTA/National Highway Traffic Safety Administration (2005)

NHTSA/National Highway Traffic Safety Administration (1997). *An Investigation of the Safety Implications of Wireless Communications in Vehicles*. National Highway Traffic Safety Administration, US Department of Transportation. <http://www.nhtsa.dot.gov/people/injury/research/wireless>.

Partners for Child Passenger Safety Fact and Trend Report. The Children's Hospital of Philadelphia. October 2006.

Ranney TA, Mazzae E, Garrott R, & Goodman MJ (2000). *NHTSA driver distraction research: Past, present and future*. National Highway Traffic Safety Administration. <http://www-nrd.nhtsa.dot.gov/departments/nrd-13/driver-distraction/PDF/233.PDF>.

Redelmeier DA & Tibshirani RJ (1997) Association between Cellular Telephone Calls and Motor Vehicle Collisions. *The New England Journal of Medicine*, 336, 453-458

Redelmeier DA & Tibshirani RJ (2001) Car phones and car crashes: some popular misconceptions. *Canadian Medical Association Journal*, 29, 164.

RoSPA/The Royal Society for the Prevention of Accidents (2002). *The risk of using a mobile phone while driving*. Department of Transport Local Government Regions: UK.

SWOV/The Netherlands Institute for Road Safety Research (2000) *Telephoning in the car and road safety*. Available at: <http://www.swov.nl/en/kennisbank/index.htm>

Violanti J (1998) Cellular phones and fatal traffic collisions. *Accident Analysis & Prevention*, 30, 519-524.

Violanti, J.M. & Marshall, J.R. (1996). Cellular phones and traffic accidents: an epidemiological approach. *Accident Analysis & Prevention*, 28, 265-270.

Wikman A-S, Nieminen T, & Summala H (1998). Driving experience and time-sharing during in-car tasks on roads of different widths. *Ergonomics*, 41, 358-372.

Williams AF, Nelson LA, & Leaf WA (2002). Responses of teenagers and their parents to California's graduated licensing system. *Accident Analysis & Prevention*, 34, 835-842

Winston FK, Kallan MK, Elliot MR, et al (2007). Effect of booster seat laws on appropriate restraint use by children 4 to 7 years old involved in crashes. *Archives of Pediatric and Adolescent Medicine*. March 2007; Vol 161.