

Pedestrian Injury Prevention through Vision Zero Model

Information Paper

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In 2013, on average, every eight minutes a US pedestrian was struck by an automobile and injured. A pedestrian was killed every two hours. That year, there were an estimated 66,000 pedestrian injuries and 4,735 pedestrian deaths.¹ These accidents consume medical resources in the prehospital, critical care, and rehabilitation areas, and the patients and families bear a heavy physical, emotional, and financial toll. The World Health Organization² showed that by 2020, road traffic injuries will increase to become the third leading cause of disability adjusted life years (DALY) (with unipolar major depression and cerebral vascular disease being the top two causes).

Pedestrian injuries and death are associated with well-established, but preventable, risk factors. The majority of pedestrian deaths occur in urban areas, at non-intersection locations, and/or at night.² Older adults (age 65 and over) account for a fifth of all pedestrian fatalities and comprise an estimated 10% of all pedestrian injuries. Children are also highly vulnerable to injury and death as pedestrians, particularly in low-income, densely populated, urban residential areas.³ More than one-fifth of children ages 14 and under killed in traffic crashes are pedestrians.³ Alcohol involvement, for the driver and/or the pedestrian, was reported in almost half of all traffic crashes resulting in pedestrian fatalities in 2013. Emergency physicians have long been leaders in their communities in other forms of injury prevention. Emergency physicians can be a strong voice toward establishing programs to prevent pedestrian injury.

Pedestrian injury prevention techniques are described by the World Health Organization.⁴ Recommendations include physically separating traffic from people via barriers (engineering), training to minimize driver distractions and educate pedestrians, and enforcement of traffic and pedestrian laws. Similarly, many pedestrian deaths are preventable through interventions to improve traffic safety such as the constructed environment, outreach education to high-risk populations at the extremes of age, and elimination of impaired driving.

“Vision Zero” is a successful initiative started in Sweden to address road safety with a focus on road system design with the underlying philosophy that “No loss of life is acceptable.”

Some examples of successful pedestrian intervention techniques in New York City, San Francisco, Sweden (through their Vision Zero initiative), and other locations include:

- Identification of hazardous intersections and purposeful redesign and reengineering of pedestrian and traffic flow to enhance safety.
- Specific safety measures such as reduced speed limits, physical barriers to prevent contact between pedestrians and vehicles, and improved lighting.
- Increased police enforcement of moving violations like speeding, failure to yield to pedestrians, and texting while driving.
- Public engagement, education, and outreach to promote a unified, coordinated approach to pedestrian safety.
- Land-use planning and roadway design organized to accommodate the special needs of pedestrians.
- Fully-integrated trauma care systems to enhance survival and rehabilitation of injured pedestrians.
- Pedestrians, if walking in early morning, evening, or night should wear reflective clothing and carry lights or strobes to improve visibility.

Of note, the majority of current preventive interventions concentrate on pre-event human and environmental factors. Education and aggressive enforcement of existing laws for drivers and pedestrians are pivotal. Environmental factors mentioned in Vision Zero publications include reduced speed limits and installation of physical barriers to prevent pedestrian access to road crossings in dangerous areas. Accident prevention in real time may be possible if advances in crash avoidance technology in automobiles are applied to warn drivers or automatically brake if pedestrians step in front of vehicles, or if accident avoidance sensors in our mobile technology could warn pedestrians of approaching vehicles. Post-event research should be directed at evidence-based triage protocols for pedestrian injuries, as well as transport and management of injured pedestrians to trauma centers to provide optimum care.

The Vision Zero program is a starting place and can provide an initial point to prevent pedestrian injuries and deaths in our communities. It can be improved upon with future research and participation by emergency physicians in bringing pedestrian injury prevention programs to the consciousness of the public.

References

1. National Highway Traffic Highway Administration (NHTSA) National Center for Statistics and Analysis [Traffic Safety Facts. Pedestrians, 2013 Data](#). February 2015.
2. Peden M. [World Report on Road Traffic Injury Prevention: Summary](#). World Health Organization. 2004.
3. Safe Kids Worldwide. [Pedestrian Safety Fact Sheet](#) 2014
4. World Health Organization. [Pedestrian Safety: A Road Safety Manual for Decision-Makers and Practitioners](#) 2013

Additional Resources

CDC Injury Prevention & Control: [Motor Vehicle Safety – Pedestrian Safety](#). Provides state data on the problem of pedestrian safety and related costs.

National Center for Safe Routes to School-[Safe Routes](#). Program focused on improving the safety of children walking and riding bicycles to school. Includes national reports on trends in walking and bicycling to school.

National Highway Traffic Safety Administration. [Everyone is a Pedestrian](#). Stats, tips, publications and links focused on pedestrian safety.

*Created by members of the ACEP Public Health and Injury Prevention Committee
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