It wouldn't hurt to walk: promoting pedestrian injury research

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In 2009, the Centers for Disease Control (CDC) National Center for Injury Prevention and Control (NCIPC) developed a comprehensive research agenda that described the research needs and priorities for 2009–18.[1] The research priorities were identified as those that warrant the greatest attention and intramural and extramural resources from the NCIPC during the next 10 years. For all priorities in the research agenda, special attention was given to vulnerable populations who experience disparate, increased injury risks. Pedestrian safety was identified as a priority area because pedestrians are a vulnerable population, the burden of pedestrian injuries is large (40 000 pedestrians killed in the United States since 2000), and there is a need to develop and implement effective interventions. SAVIR and CDC have been working together to identify strategies to promote the research agenda and identify resources that could be used to help fund the research priorities. Pedestrian injuries have been identified as a focus area for this partnership with the Division of Unintentional Injury Prevention at CDC.

The built environment, physical activity, pedestrian injury

The built environment encompasses all aspects of one's surroundings that are human-made or modifiable.[2] Traditionally, research on the built environment and physical activity has focused on land use patterns, physical infrastructure of roads, and sidewalks.[3] Recently, the social environment, for example, crime, violence, and physical disarray, has also been recognised as an important factor when considering physical activity.[4] Walking is a popular form of physical activity because it is inexpensive and available to almost everyone. Streets are one of the most common places for walking,[5] and despite an increased recognition of the importance of the built environment on physical activity there has been a dearth of research exploring its influence on traffic-related deaths and injuries, especially those to pedestrians.[6] This inattention is problematic since two commonly cited barriers to walking are traffic dangers and perceived safety.[7–9]

Federal efforts to encourage walking

In what amounts to a sea change for the U.S. Department of Transportation, on 15 March 2010, Secretary Ray LaHood announced that the needs of pedestrians (and cyclists) will be considered alongside those of motorists, and that the automobile will no longer be the prime consideration in federal transportation planning. He emphasised that walking and biking are an important component of liveable communities. On his blog he wrote: 'this is the end of favoring motorized transportation at the expense of non-motorized' (http://fastlane.dot.gov/2010/03/my-view-from-atop-the-table-at-the-national-bike-summit.html). With this significant focus on walking, the relationship between pedestrian safety and the built environment becomes a more important researchable area. Planning, funding, and implementing changes in the built environment that favour more walking and biking can have important safety implications. Modifying the built environment to encourage more pedestrian mobility must be accompanied by efforts to reduce and effectively prevent pedestrian injuries.

CDC's research agenda for pedestrians

Among the NCIPC research priorities in transportation safety in the 2009 Research Agenda, the following research ideas were outlined under the section 'Evaluate the effectiveness of behavioral and environmental strategies to prevent pedestrian injuries' (p. 66)[1]:

> Multidisciplinary approaches involving theory-based education and training programs, engineering solutions, and strong law enforcement… Research should include interventions that focus on pedestrians, drivers and the driving environment (e.g., strengthening enforcement strategies for speed limits, yield-to-pedestrian laws, and school zones). Changes in pedestrian and driver behaviors and modifications in roadway environments, including traffic-calming measures that slow traffic and improve road conditions for pedestrians and bicyclists, might provide the strongest mix of prevention strategies. Researchers should develop and evaluate strategies that reduce the risk for collisions with pedestrians (e.g., increased pedestrian and vehicle visibility or the influence of roundabout intersections on pedestrian behaviors) and address the different risk factors for groups in urban and rural settings.

Additional priorities identified by SAVIR and CDC

As a result of renewed emphasis on the built environment and its implications for pedestrian safety, several new research priorities were identified by a team of SAVIR and CDC researchers that, if funded, could have dramatic impacts on knowledge, design, and implementation of effective interventions to protect pedestrians.

Epidemiology of pedestrian injury

- Document the relationship between increased walking and pedestrian injury risk.
- Document the relationship between use of mobile devices and technology (cell phones, iPods, etc.) while walking and the accompanying pedestrian injury risks.
- Identify risk and protective factors for rural pedestrian injuries.
- Assess differences in pedestrian injury risk among communities; identifying risk and protective factors based on cross-community comparisons.

Measurement

- Add pedestrian exposure and pedestrian injury information to routine public and government surveys.
- Develop tools to document objective measures of pedestrian behaviours, traffic patterns, and traffic/pedestrian mix that can inform engineering solutions.
- Measure the impact of converting commercial streets to pedestrian streets, on 'accident migration' to adjoining streets.

Intervention effectiveness

- Apply cost–benefit and cost utility evaluations to traffic calming and pedestrian street conversions.
- Assess injury outcomes of policies and programmes to increase physical activity.
- Coordinate safe routes to schools evaluations across sites to enable pooling data on injury outcomes.
- Evaluate the safety and exposure impact of new DOT initiatives and incentives aimed at promoting walking and biking.

Research that addresses these issues will be critical in the coming years as the U.S. Obama administration highlights obesity prevention and the creation of environments that promote physical activity. An important question for the injury prevention community is, can these changes be accomplished in a way that also *decreases* pedestrian injuries rather than *increases* them? Without changes in the environment, efforts to promote physical activity are likely to increase pedestrian injuries.

Conclusion

Many agencies have been involved in funding pedestrian-related research, and with the advent of the new emphasis on sustainable transportation and the built environment, more research will no doubt be conducted. It is our hope that investments in liveable environments and community safety can be coordinated to maximise potential research applications that impact pedestrian safety. Federal and state agencies, foundations, corporations, and civic entities can use funding opportunities as a way to increase our knowledge, ultimately leading to improved protection for pedestrians, but only if investments are made strategically. Joint research efforts on topics like those above, which might pique the interest of several agencies, and meet several funding mandates simultaneously, may ultimately be the best way to proceed.

Fifty years ago, motor vehicle manufacturers viewed safety as an afterthought in vehicle design, but safety has now become a leading design feature. Consumers pay attention to crash protection in their choice of vehicle purchase. By the same token, safety cannot be an afterthought for pedestrians. Liveable communities need to be walkable, and as cityscapes are built that encourage more physical activity, environmental safety (like vehicle safety), must be 'built-in'. Just as consumers have come to expect safety in their automobiles, they should come to expect and even demand that safety be an integral component of communities in which they live.

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