



Editor's Spotlight/Take 5

Editor's Spotlight/Take 5: Lawnmowers Versus Children: The Devastation Continues

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Mass-media campaigns have a solid track record of improving healthy behaviors. Road-safety campaigns, for instance, have reduced the number of automobile crashes and increased crash survival by promoting the use of seatbelts, infant booster seats, reductions in speeding, and the use of helmets for motorcyclists and bicyclists. Public-service announcements and advertisements have helped

increase the number of children getting vaccinated, reduced the number of children dying from sudden infant death syndrome, and decreased the use of aspirin in young children due to potential dangerous side effects [5].

Put in this context, the medical community's media campaign educating the public on the best practices for avoiding pediatric lawnmower injuries should have resulted in a decrease in lawnmower accidents. But that simply has not been the case. According to Douglas G. Armstrong and his team from Penn State University, the incidence of serious injuries to children due to lawnmower-related trauma held steady during their 12-year study period.

Have we done enough? The American Academy of Pediatrics disseminated a policy statement on lawnmower injuries some 15 years ago [2, 4]. Since then, the American Academy of Orthopaedic Surgeons [1] and The Pediatric Orthopaedic Society of North America [1] jointly have followed suit.

Why have these efforts—along with the safety modifications offered by manufacturers—failed to decrease pediatric lawnmower injuries? What can be done to more-effectively reach parents and caregivers with a safety message that conveys the horrific lifelong consequences of a child injured by a lawnmower?

The message is clear: We need more-effective public safety advocacy to protect our children from severe, preventable injuries. Physicians should take an active role in getting the message out by contacting local media when these accidents happen or, even better, prior to them happening. Advocacy at a local level, perhaps coinciding with the publication of reports such as this one by Armstrong and his team, may go a long way toward embracing our important role in public health.

Legislative action, such as restricting lawnmower use to individuals above a certain age, may help, but mowing a lawn is a rite of passage for many American teenagers, so recommending age guidelines along with better training for youth prior to operating these machines would likely be better accepted by the public than an age restriction.

A note from the Editor-In-Chief:

In "Editor's Spotlight," one of our editors provides brief commentary on a paper we believe is especially important and worthy of general interest. Following the explanation of our choice, we present "Take Five," in which the editor goes behind the discovery in a one-on-one interview with an author of the article featured in "Editor's Spotlight."

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As a specialty, we must not turn our backs on the vexing problem of preventable orthopaedic injuries. We are on the front line treating these injuries; we must also be on the front line of preventing them.

Join me in the Take-5 interview that follows with senior author Douglas G. Armstrong MD as we take a critical and fresh look at the best ways to deliver public-safety campaigns to protect our children from lawnmower and other serious, preventable injuries.

Take Five Interview with Douglas G. Armstrong MD, senior author of "Lawnmowers Versus Children: The Devastation Continues"

Matthew B. Dobbs MD: *Congratulations on this important, yet sobering study. It touches on so many important issues that are not limited just to lawnmower injuries in children. Perhaps the most important is the difficulty of effectively running public-awareness and safety campaigns that actually work to protect our pediatric population from preventable harm. The medical community has promoted guidelines to protect children from lawnmower injuries. According to your study, these campaigns may not have been effective. Why do you think this is?*



Douglas G. Armstrong MD

Douglas G. Armstrong, MD: There is no simple answer. Perhaps part of the problem may be the message was not received by the intended audience. Considerable thought and effort have been put into the safety guidelines by our associations, and manufacturers of lawnmowers have installed automatic shut-off switches, no mow-in-reverse features, and placement of obvious warnings on the machines. However, some people ignore these safety features, while others actively disable them.

Older and inexpensive lawnmower models that may not have contemporary safety features are still available and widely used. Tractor-type lawnmowers appear benign and kids like the idea of riding on them. The agriculture industry has had similar issues. The Childhood Agriculture Safety

Network has been working for many years to address the problem of childhood injuries and mortality on farms. The bottom line: It is difficult to keep children completely out of harm's way with education and advocacy. As a result of our research, we feel that perhaps it might be more effective to run annual campaigns at the beginning of the cutting season.

Dr. Dobbs: *What prompted you to do this study? There are certainly other more-common mechanisms of injury in children. Had you seen an increase in pediatric lawnmower injuries at your own hospital?*

Dr. Armstrong: We were concerned by the persistent number of children who we see every spring and summer with mutilating injuries. Pediatric orthopaedic surgeons and pediatric trauma surgeons generally agree these are consistently among the worst injuries we treat. Children who are admitted to the hospital often have horrific trauma, with injuries analogous to those from a blast injury. These injuries are unforgettable and those of us who treat them generally feel strongly about lawnmowers. When we examined our institutional data for the same time period as this study, the yearly number of injuries was fairly consistent.

Editor's Spotlight/Take 5

Dr. Dobbs: *Are you concerned that other pediatric safety campaigns such as those raising awareness of concussion risk in contact sports, for example, may face the same failure? If so, why?*

Dr. Armstrong: That's a great analogy. Currently there is heightened public awareness of sports-related concussion symptoms. Specialized clinics and protocols have been established throughout the country to manage this patient population. However, the incidence may be increasing [3]. Why? While I don't think anyone truly has an answer, it's apparent that for some high-risk activities like tackle football, the perceived benefits appear to outweigh the risks that parents are willing to accept. Advocacy groups raising awareness about concussions may not be received with the same enthusiasm as other campaigns where the message and the risk versus reward is more clearly defined.

Dr. Dobbs: *While many readers do not treat pediatric patients with lawn-mower injuries, many of us have children, and all of us can appreciate the magnitude of this problem on society. With this in mind, what lesson do you want the reader to learn from your work?*

Dr. Armstrong: The problem is not going to go away for the foreseeable future. For those of us who take call at a community hospital but who have not seen these injuries, I would recommend vigilance and awareness of the potential for extreme injury. Lawnmower injuries may result in partially hidden wounds, which can be more extensive than first realized. Ride-on lawnmowers in particular can produce high-energy trauma, analogous to a blast injury. Young children can maintain systematic perfusion up to the moment of collapse. Orthopaedists should have great respect for any lawnmower injury in a young child, and ensure that there is adequate resuscitation and stabilization prior to transfer to a tertiary pediatric trauma center.

Dr. Dobbs: *As your study raises many important questions, what do you think should be the sequel to your paper?*

Dr. Armstrong: Americans love our lawns. However, when visiting Canada last year, I noticed that a great many people replaced their lawns with low-maintenance gardens and groundcover. There are several provinces that have banned the use of pesticides. I think the next study should examine whether or not that has had any effect on these injuries. If, as I suspect, there has been

a decrease in such injuries subsequent to the bans on pesticides, then maybe we should advocate for that.

References

1. American Academy of Orthopaedic Surgeons; American Association of Orthopaedic Surgeons. Position Statement. Power lawnmower safety. Available at: http://www.aaos.org/uploadedFiles/PreProduction/About/Opinion_Statements/position/1142%20Power%20Lawnmower%20Safety.pdf. Accessed December 15, 2016.
2. Bull MJ, Agran P, Gardner HG, Laraque D, Pollack SH, Smith GA, Spivak HR, Tenebein M, Brenner RA, Bryn S, Neverman C, Schieber RA, Stanwick R, Tinsworth D, Garcia V, Tanz R, Katcher ML, Newland H; Committee on Injury and Poison Prevention. Lawn mower-related injuries to children. *Pediatrics*. 2001;107:1480–1481.
3. Rosenthal JA, Foraker RE, Collins CL, Comstock RD. National high school athlete concussion rates from 2005–2006 to 2011–2012. *Am J Sports Med*. 2014;42:1710–1715.
4. Smith GA; Committee on Injury and Poison Prevention. Technical report: Lawn mower-related injuries to children. *Pediatrics*. 2001;107:E106.
5. Wakefield MA, Loken B, Hornik RC. Use of mass media campaigns to change health behavior. *Lancet*. 2010;376:1261–1271.