

Arizona Trauma Program Managers' Workshop: Injury Prevention 101

March 20, 2015

Dan Judkins
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Dignity HealthTM

St. Joseph's Hospital and
Medical Center

INJURY PREVENTION 101:

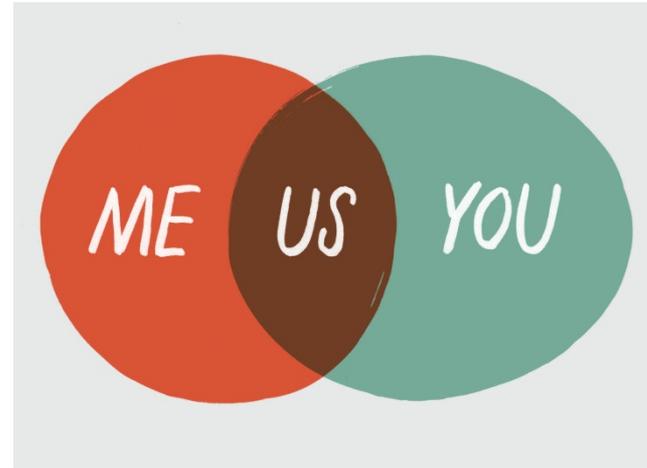
- PURPOSE FOR SERIES: Building proficiency in injury prevention.
- POTENTIAL OUTCOME: One or more collaborative injury prevention projects
 - Session 1 – Injury Prevention 101
 - Session 2 - Injury Prevention 102 (Policy intervention, Collaboration, Complementary Project Ideas)
 - Session 2 – Data, Evaluation, and Next steps
- TODAY’S PANEL:
 - DAN JUDKINS (MS, MPH, RN) – Everything you could possibly want to know about injury prevention in the shortest amount of time ever!
 - ERIN KUROIWA (MHI) – Secrets to effective educational interventions.
 - PAM GOSLAR (PhD) – Separate but equal – Examples of collaborative projects for any size facility

Collaborative Projects – Separate, but equal



Collaboration in health care is defined as health care professionals assuming complementary roles and cooperatively working together, sharing responsibility for problem-solving and making decisions to formulate and carry out plans for patient care.⁵

Key challenge is to take advantage of each other's approaches rather than to compete



Examples:

- **Child Passenger Safety Projects**
 - Safe Kids, County Health Departments, Tribal organizations, ADHS
 - Fire and Police Departments, City services
- **Battle of the Belts**
 - Expertise sharing
- **Elk Strikes and Sledding Injuries**
 - Material sharing
 - Potential joint project

QUESTIONS?

Injury Prevention 101: Framework and Focus on Evaluation

Daniel Judkins, RN, MS, MPH

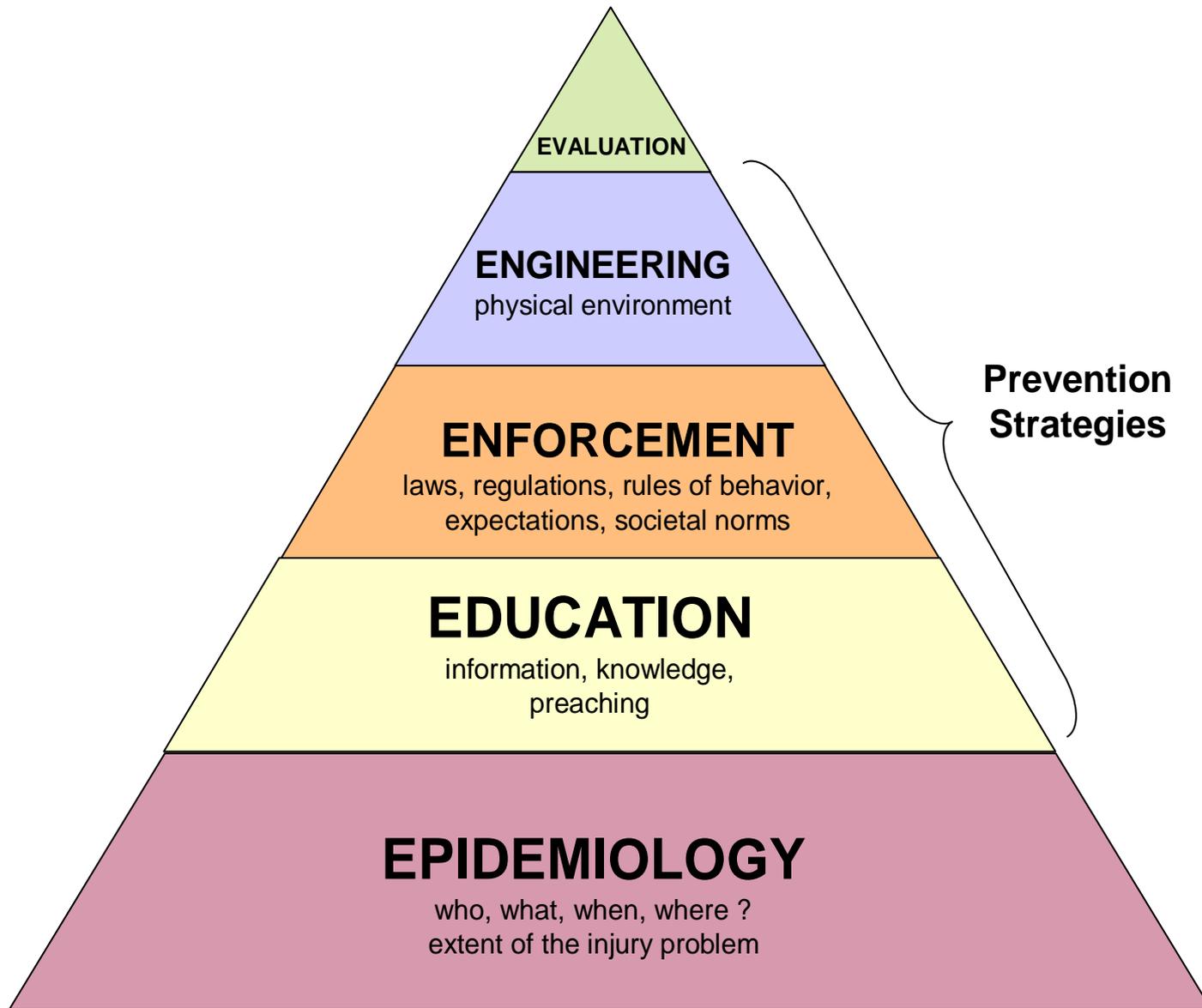
Trauma Educator & Injury Epidemiologist



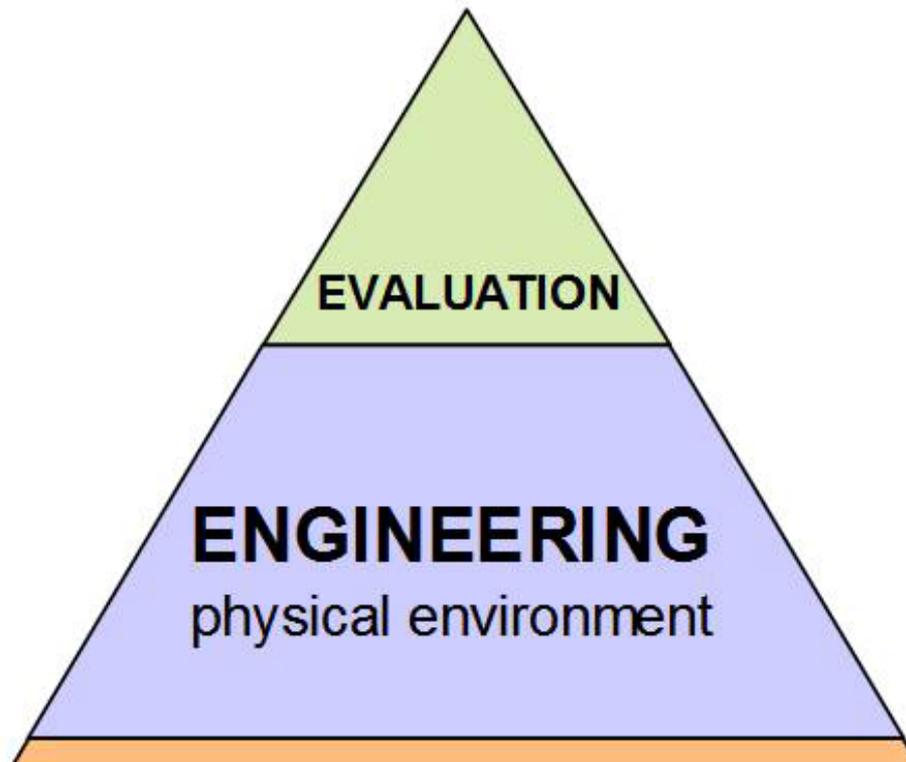
On the Escape of Tigers



William Haddon



Judkins, Daniel. "Developing A Model For Selecting Injury Control Strategies", *Developing A Bi-National Emergency Medical Service System: Conference Proceedings*. (June 1991) Arizona-Mexico Border Health Foundation, Tucson, May 1993.



Engineering

















35
M.P.H.

35
M.P.H.

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M.P.H.





Limits of Re-Alignment





Before:

mean of **26** crashes per year (for 5 years)
(130 crashes, 4 deaths)

After:

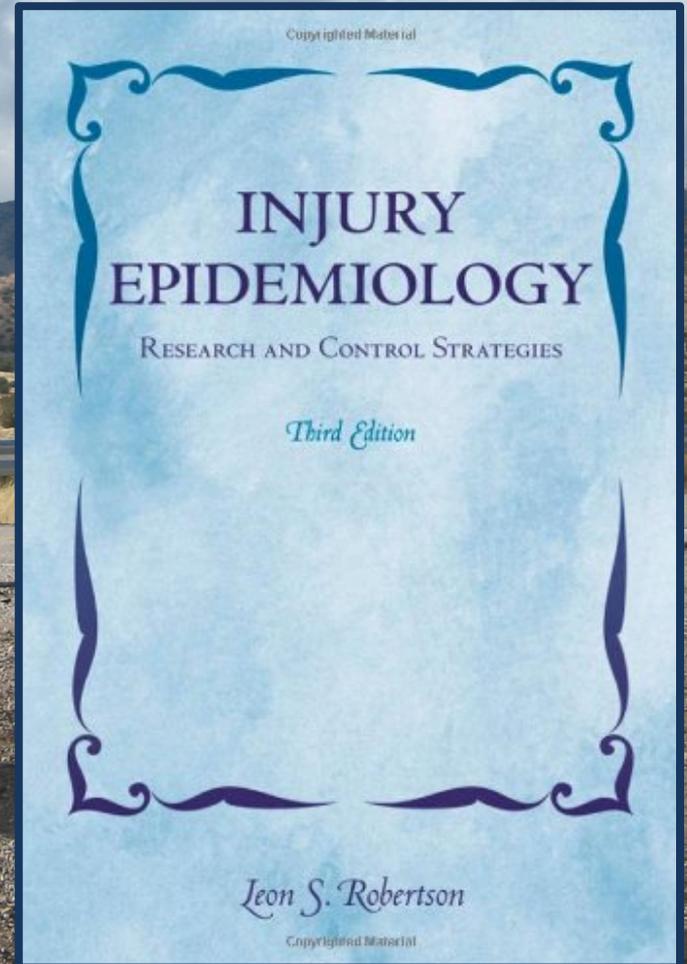
mean of **1.33** crashes per year (for 3 years)
(4 crashes, 0 deaths)

$P = 0.000001$

T-test comparison of means



Leon Robertson



Your program:

- 1) Pedestrians
- 2) Bicyclists struck
- 3) Red-light runners
- 4) Falls in a retirement community
- 5) ATV crashes in a defined population
- 6) ?

Before and after an intervention

Evaluation

Why Evaluate?

- Are the prevention strategies being used demonstrably effective?
- Have organizational or behavioral changes been made?
- Are you able to gauge your progress?
- How can you increase program effectiveness?
- Can you reassure your funding source that the project was worth it?

FORMATIVE Evaluation
program planning, fine-tuning,
pre-testing, pilot, focus groups



PROCESS Evaluation
implementation
management



OUTCOME Evaluation
knowledge
behavior
institutionalization
injury rates

FORMATIVE Evaluation

program planning
fine-tuning



PROCESS Evaluation

implementation
management



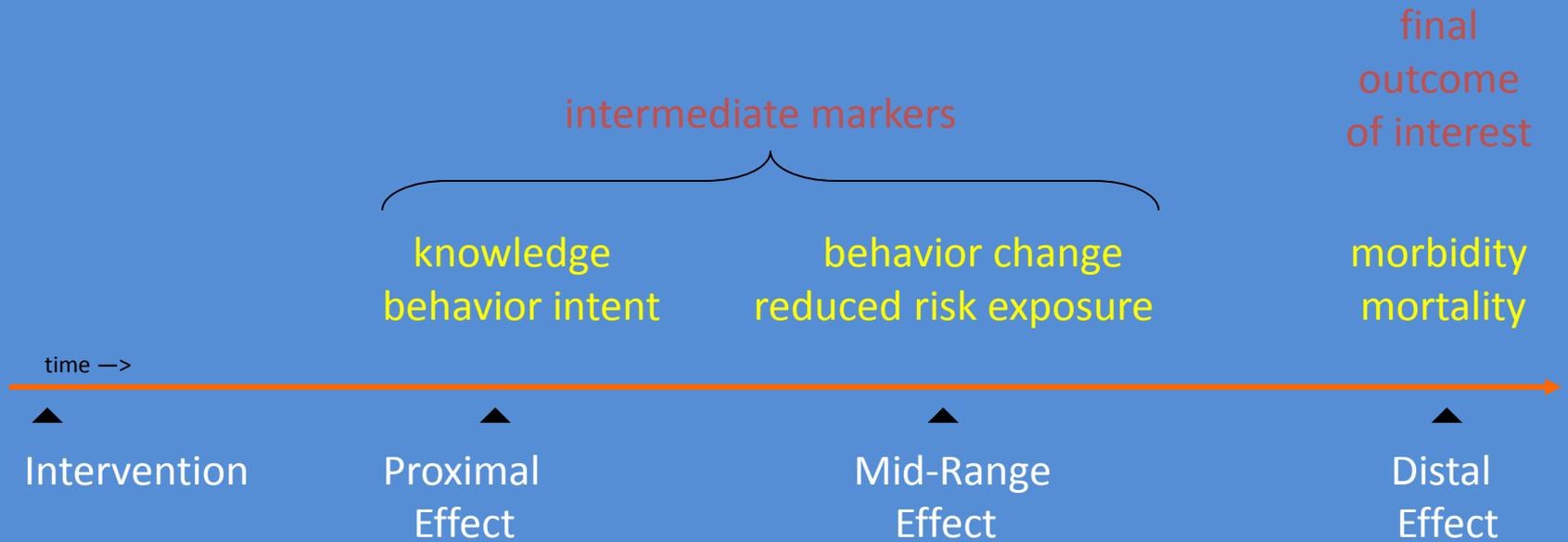
OUTCOME Evaluation

knowledge
behavior
institutionalization
injury rates

} intermediate markers

← true outcome

Economic Analysis



Intermediate Measures

- Intermediate markers  “rare” outcomes
- Surrogate or proxy measures
- Colon polyps → colon cancer
- Jaywalking → pedestrian injury
- Wearing bike helmet → reduced bike head injury
- Using seatbelt → reduced crash injury

More common, making it more manageable to evaluate

Injury outcomes → large samples and many years

Evaluation Steps

- 1) **Goals & objectives**
- 2) **Define activities to accomplish goals**
- 3) **List questions to be answered by formative, process, & outcome evaluation**
- 4) **Identify resources for evaluation**
- 5) **Set evaluation priorities**
- 6) **Identify person responsible**
- 7) **Select evaluation methods**
- 8) **Data sources and forms**

Evaluation Steps

- 9) Evaluation schedule
- 10) Conduct formative evaluation of materials
- 11) Do process evaluation & modify program
- 12) Collect baseline outcomes data
- 13) Analyze & interpret data
- 14) Findings → feedback → improve program
- 15) Communicate findings
- 16) Continue evaluation process

Formative Evaluation

- Used to refine a program plan before full-scale implementation
- Evaluate appropriateness and potential reception on a small, preliminary scale
- Fine-tuning
- Pre-testing
- Pilot studies
- Focus groups → opinions & reactions, recall, aesthetic appeal, message credibility, comprehension, relevance, acceptability, language style, readability, cultural sensitivity

Process Evaluation

- Degree that program is being implemented as designed
- Are program activities and delivery being carried out as planned?
- Exposure
- Materials & equipment
- Implementation
- Costs

Outcome Evaluation

- Objectives achieved?
- Change in number of injuries?
- Change in severity of injuries?
- Change in risk factors?
- Knowledge increase?
- Change in attitude?
- Policy change?

Outcome Evaluation

- Questionnaires
- Observations
- Pre- / post-tests
- Morbidity rates
- Mortality rates
- Policy change
- Cost-effectiveness

Outcome Evaluation

- **experiment; clinical trial**
 - randomization & controls
 - large samples, many years
 - ethical issues
- **rates**
- **case / control studies**
- **longitudinal time-series**
- **proportions**
- **raw counts of events**

And some more thoughts practical injury prevention



PERSONAL VIEWPOINT

Fifteen Tips for Success in Injury Prevention

Daniel G. Judkins, MS, MPH, RN

■ ABSTRACT

Fifteen tips for success in injury prevention include the following: (1) make a plan; (2) understand injury epidemiology; (3) read, learn, and get educated; (4) show me the data; (5) select prevention strategies thoughtfully; (6) define risk factors and understand risk taking; (7) evaluate; (8) schedule a lunch meeting; (9) use principles of health behavior change, adult education theory, and communication theory; (10) be friends with the marketing and public affairs people; (11) recognize the fact that people are more emotional about injury in children than in adults; (12) understand cost-benefits and payoffs; (13) get stuff; (14) report your results; and (15) be patient. Several useful tables for basic references to resources in injury prevention are included.

■ KEY WORDS

Injury epidemiology, Injury prevention, Injury risk factors

After 20 years as a trauma program manager and now as a trauma educator/injury prevention coordinator, I have had the opportunity to make plenty of false steps and misfires in my injury prevention work and have learned a few lessons along the way. I am in the habit of trying to step back and look at the big picture in my work, from time to time. Doing that now, looking at what bits of know-how and wisdom I have picked up along the way, I have come up with a list of tips for myself about how to do a better job in my injury prevention work. Perhaps this list of 15 tips may be of use to others doing the same type of work—so here is my list of “15 Tips to Success in Injury Prevention.”

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What is *success* in injury prevention? How are the best ways to do injury prevention? What works best? In fact, what are the real goals of this kind of work? What are we trying to achieve?

Most agree that trauma centers should be engaged in productive injury prevention work.¹ The ultimate goal of this work is to reduce the frequency and severity of injury in the population of interest. But serious injury is actually a “rare event,” although it certainly does not seem so at any busy trauma center. If a trauma center sees 3,000 cases a year, and 2,000 of them turn out to involve “serious” injury, and if the trauma center serves a population of 1 million, then there is one serious injury per 500 persons in the population. If your injury prevention program—all of the projects and interventions you do over the course of a year—reaches 1,000 people, and you are 100% effective in your efforts, then you can prevent only 2 injury cases per year. That will reduce your trauma center workload from 3,000 to 2,998. Even if your message got through to 10,000 persons, with 100% effectiveness, you would prevent only 20 injuries. And, it would be the rare injury prevention program that is 100% effective. This seems sort of hopeless.

Actually, a given injury prevention intervention can have lifelong effects in an individual. So that, if the intervention is fully effective, the individual may adopt a safety behavior that protects him for the rest of his life. And he may influence others, such as friends and family members, so that there is a multiplier effect. But this all plays out over very many years. Seeing clear results in the short term is unlikely. Positive change is slow.

Public attitudes, morally binding customs, or mores change slowly over time. In the 1960s, for instance, during a business meeting, several would light up their cigarettes. This rarely happens nowadays. Similarly, the term *designated driver* was not in common use in the 1970s but is today. The concept of taking a friend’s car keys from him because he has had too much to drink would not be out of line today but would not have happened years ago. The public attitudes have changed. That is what we are seeking by doing injury prevention.

There are a number of notable successes in the injury prevention world: seatbelts, airbags, child restraint seats,

?

Car Seat Education for Parents: DVD-based Social Learning vs Traditional Didactic

*E. Kuroiwa, R. Ragar, A. Baker, S. Moffat,
P. Garcia-Filion, D.M. Notrica*



100% FOR CHILDREN

Mission

To reduce injuries and promote safe, stable, and nurturing, families and communities.





Behavior change

Why didn't anyone tell me I was wrong? | mommyofanage51313's Blog

http://mommyofanage51313.wordpress.com/2014/11/23/why-didnt-anyone-tell-me-i-was-wrong/

23
Sunday
Nov 23, 2014

Why didn't anyone tell me I was wrong?

POSTED BY CAMERON'S MOMMY IN UNCATEGORIZED ≈ 413 COMMENTS

Have you ever seen someone do something that you know was wrong but were too afraid to tell them? For instance... let's say you know a good bit about car seats and you see a lady in the Wal-Mart parking lot that has her child in a forward facing car seat and you know that child should still be rear facing and buckled in properly. You don't know her so you decide it's best not to interfere because your scared she may get upset or think your crazy.



— Cameron all buckled in the WRONG way! (He should be rear facing and the straps should not be twisted.)

WRONG

I can NOT stress this enough....TELL THEM HOW TO FIX IT!!! I was that mom...

Download picture http://ib.adnxs.com/getuid?http://ums.adtechus.com/mapuser?providerid=1001;userid=810D...

12:30 PM

Facebook friends could have saved a 1-year-old's life, says devastated mother

Introduction

- Motor vehicle injuries are the leading cause of pediatric injury mortality in the United States.
- Properly installed rear-facing car seats are 71% effective in reducing infant death in a crash.
- 72%-82% of children ride in improperly installed car seats.
- The Phoenix Children's Hospital Kids Ride Safe staff recently adopted a DVD – social learning teaching method to teach parents proper car seat installation.

Objectives

1. To estimate the effectiveness of:
 - a) DVD for social learning teaching.
 - b) traditional didactic method for teaching.

2. To compare parent proficiency of child restraint:
DVD social learning vs traditional didactic

Methods

- Design: Blinded, randomized controlled trial
- Setting: Phoenix Children's Hospital Kids Ride Safe program
 - caregivers at a variety of community sites
- Sample: ~100 per group (47 classes of 8-10 caregivers per class)
- Time period: September 2011 – January 2013
- Randomization:
 - Traditional didactic (n = 102)
 - lecture format
 - verbal instructions about car seat installation
 - DVD – social learning (n = 110)
 - brief lecture
 - car seat video, *Simple Steps to Child Passenger Safety*
 - Interactive question and answer

Simple Steps to Child Passenger Safety



Measurements

- Pre- and post- class assessments
 - Confidence assessment
 - Car seat knowledge test
 - Car seat installation
- Compared pre vs post

Results

- Intervention groups were comparable on:
 - basic demographics
 - previous car seat education
 - previous car seat use

Table 1. Study sample demographics

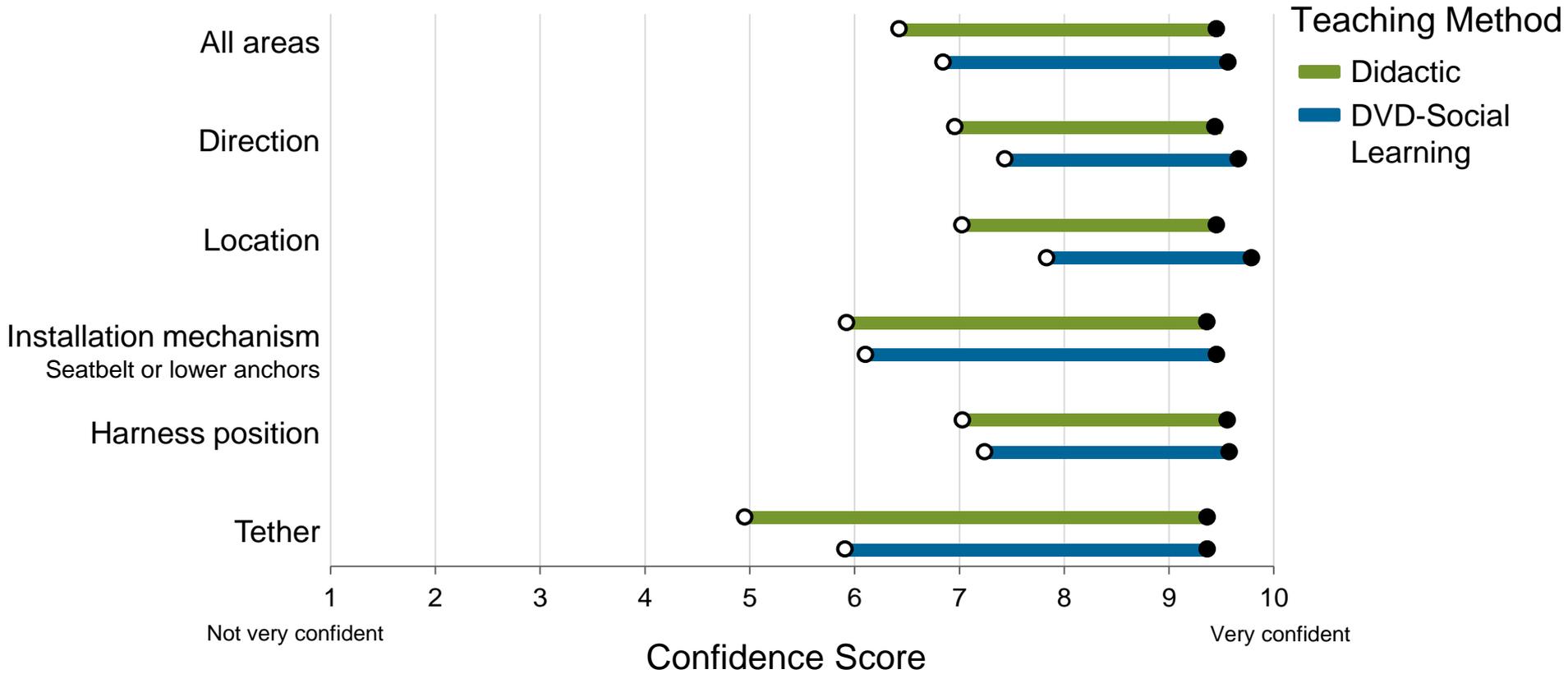
	Didactic n = 102 (%)	DVD-Social Learning n = 110 (%)	P Value
Sex			0.364
Male	7 (6.9)	4 (3.6)	
Female	95 (93.1)	106 (96.3)	
Age, years			0.643
< 18	0	1 (0.9)	
18 – 24	12 (11.8)	17 (15.5)	
25 – 29	24 (23.5)	29 (26.4)	
30 – 35	39 (38.2)	33 (30.0)	
35 – 39	15 (14.7)	13 (11.8)	
≥ 40	12 (11.8)	16 (14.6)	
Race/Ethnicity			0.203
Hispanic	77 (76.2)	85 (77.3)	
White	13 (12.9)	5 (4.6)	
Black	5 (5.0)	6 (5.5)	
Native American	4 (4.0)	9 (8.2)	
Other/Unknown	2 (2.0)	5 (4.5)	

Table 1. (continued)

	Didactic n = 102 (%)	DVD-Social Learning n = 110 (%)	P Value
Spanish speaking			0.337
Yes	65 (63.7)	63 (57.3)	
Education, years			0.853
< 12	32 (31.4)	33 (30.1)	
12	28 (27.5)	26 (23.6)	
> 12 – 16	37 (36.4)	44 (40.0)	
17 – 21	1 (1.0)	2 (1.8)	
# kids in home			0.418
1	12 (11.8)	16 (14.6)	
2	26 (25.5)	38 (34.6)	
3	26 (25.5)	29 (26.4)	
4	22 (21.6)	17 (15.5)	
5+	14 (13.7)	10 (9.1)	
Previous car seat education			0.527
Yes	27 (26.5)	25 (22.7)	
Previous car seat use			0.325
Yes	93 (91.2)	102 (92.7)	

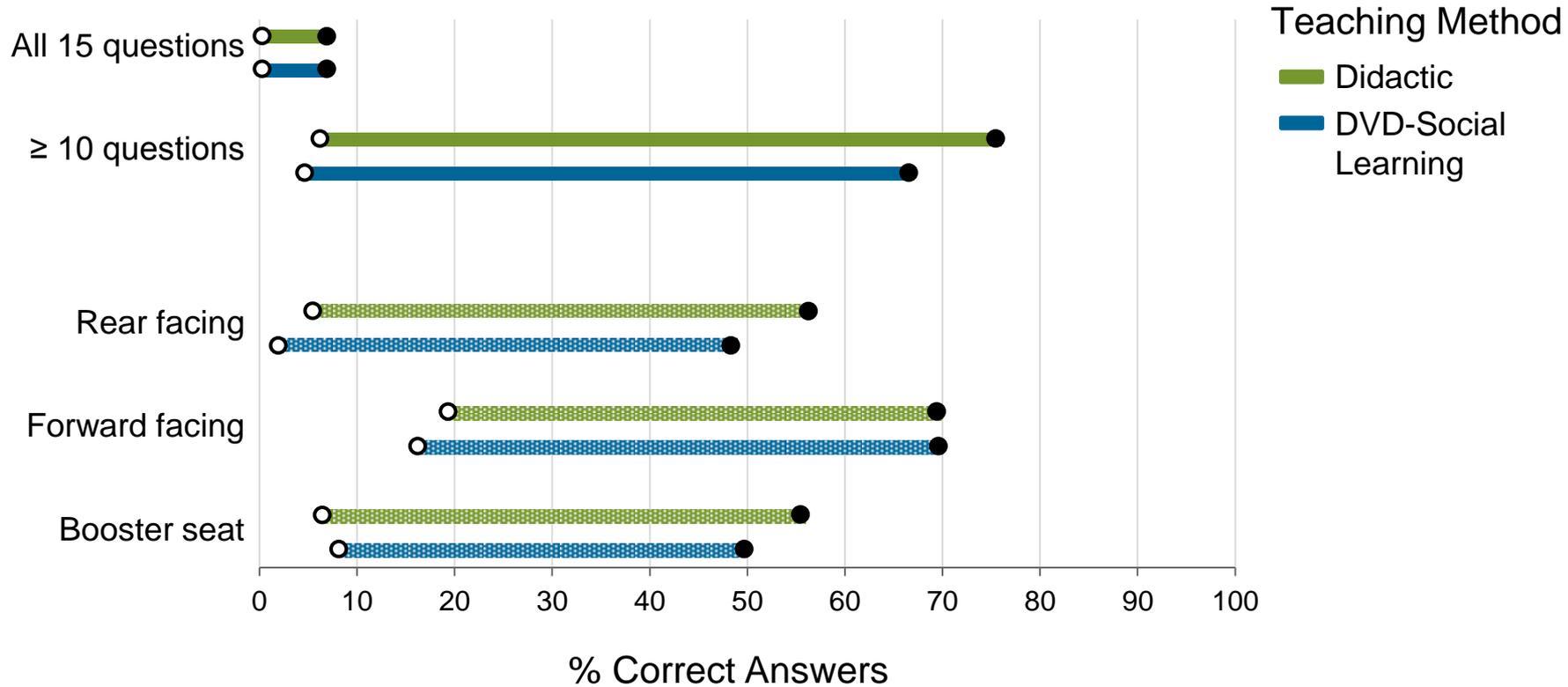
Results

Greater confidence in proper installation



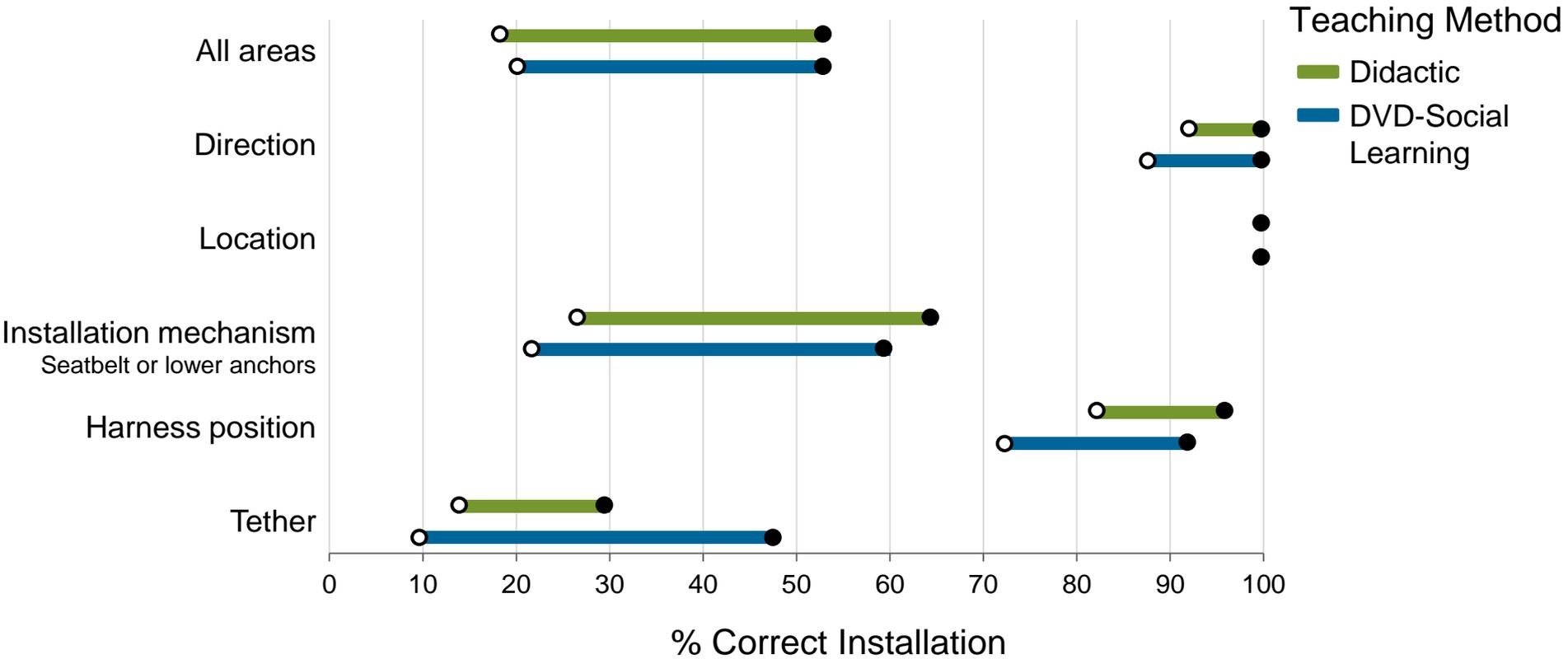
Results

Improved car seat knowledge



Results

Improved car seat installation



Conclusions

- Both DVD & traditional didactic are effective
 - Proper installation increased to 53% in both groups
- Fewer resources are necessary for the DVD teaching method
 - Personnel, staff time, financial resources, etc.
- Future studies necessary to refine components within DVD to maximize % proper installation
 - e.g., identify effective strategies to promote proper use of the LATCH system

Acknowledgements

- Study Partner Organizations
 - Native Health
 - Fresh Start
 - Golden Gate Center
 - Local schools
 - Community centers
- Injury Prevention Research Exchange

Thank You



References

1. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). National Center for Injury Prevention and Control Website. 2010. Available from: <http://www.cdc.gov/injury/wisgars/index.html>. Accessed March 6, 2014.
2. National Highway Traffic Safety Administration, Department of Transportation (US). Traffic Safety Facts 2008. Washington (DC): NHTSA; 2009. Available from: <http://www-nrd.nhtsa.dot.gov/Pubs/811161.pdf>. Accessed March 6, 2014.
3. Brixey S, Guse CE, Ngui E. Free child passenger restraints for patients in an urban pediatric medical home: effects on caregiver behavior. *WMJ: official publication of the State Medical Society of Wisconsin*. Oct 2009;108(7):352-358.
4. Macy ML, Cunningham RM, Resnicow K, Freed GL. Disparities in age-appropriate child passenger restraint use among children aged 1 to 12 years. *Pediatrics*. Feb 2014;133(2):262-271.
5. Safe Kids Worldwide. Motor Vehicle Safety Fact Sheet 2013. Available from: http://www.safekids.org/sites/default/files/documents/2013_global_final_0.pdf. Retrieved March 6, 2014.
6. Cease AT, King WD, Monroe KW. Analysis of child passenger safety restraint use at a pediatric emergency department. *Pediatric emergency care*. Feb 2011;27(2):102-105.

Car Seat Education: What Works Best?

Erin Kuroiwa, MHI; Rebecca Ragar, MPH; Angelica Baker, BA; Sally Moffat, RN, MSN; Pamela Garcia-Filion, PhD; David Notrica, MD;

Background

As many as 25-46% of children continue to ride unrestrained and up to 82% ride in improperly installed car seats. Research is needed to identify best teaching strategies to improve proper car seat installation. Study aims were to compare participant child passenger safety proficiency between the traditional didactic and social learning/DVD assisted teaching methods. The primary goal of this study was to demonstrate the effectiveness of the social learning teaching method.

Methods

A randomized controlled trial of 212 parents seeking car seat education. Parents were assigned to didactic (n=102) or DVD-social learning (vSL) (n=110). The didactic class involved live lecture; vSL included a brief lecture and a video utilizing social learning principles Simple Steps to Child Passenger Safety. Proficiency in child passenger safety was evaluated pre- and post- class via: (1) 5-part car seat installation demonstration; (2) 15-question objective test; and (3) 5-question confidence assessment. Data were summarized and compared between groups using nonparametric tests.

Results

A total of 212 participants were enrolled; 102 in the didactic and 110 in the social learning. Most participants (95%) were female, 76% were Hispanic, 60% Spanish speaking, and 56% had ≤ 12 years of education. Previous car seat use was reported by 92% of participants and 86% had ≥ 2 kids in the home. Before and after the class, each participant was asked to demonstrate proper car seat installation. Only one-fifth of the participants installed the car seat correctly. At the post-class assessment, percentage of correct car seat installation rose to 53%. Overall, there was not a statistically significant difference in post-class car seat installation ability between the two education methods. However, compared to the didactic class, the social learning class better demonstrated tether use (30% didactic; 48% social learning) and anchor hook installation (79% didactic; 86% social learning). Only 6% of participants in the didactic class and 4% in the social learning class were able to answer 10 or more questions correctly on the objective pre-class test. Post-class test scores increased in both groups ($p > 0.05$) rising to 76% of participants in the didactic class able to answer 10 or more questions correctly and 67% in the social learning class. Responses to a booster seat head support question produced discordant results (didactic: 57% post vs 32% pre, $p < 0.001$; social learning: 37% post vs 45% pre, $p > 0.05$). Confidence scores increased 2 to 4 units between the pre- and post- assessment. At post assessment, the majority of class participants (86-95% didactic; 84-93% social learning) selected a 9 or 10 indicating confidence in ability to correctly install a car seat.

Conclusion

Both teaching methods improved parent proficiency in child passenger restraint. A DVD-based social learning teaching method, which requires less time and resources, can be used in child passenger

safety community outreach programs. Methods should be evaluated to find ways to increase the percentage of participants demonstrating post-class car seat installation proficiency.

Key words

Car seat; social learning; community outreach

Objectives

1. To identify effective interventions to improve proper car seat use.
2. To compare teaching methods for child passenger safety outreach education.
3. To explore opportunities for further research to improve car seat installation proficiency.