The outcome of two injury prevention projects conducted by trauma specialists at the Montreal Children’s Hospital, MUHC

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Stats

- MVC is the leading cause of injury related deaths in Canadians aged 1-24 (PHAC, 2012)

- Significant decline in road related mortality since 1970 (PHAC, 2012)
E’s of injury prevention

- Education
  - Intended to increase awareness, knowledge and change attitudes
- Engineering/environmental modifications
  - Alter physical surroundings or modify safety of products
- Enforcement/Legislation
  - Laws and regulations require enforcement to ensure that they are carried out
Today’s Presentation

- Car seat verification clinics

- *Trauma…Surviving, But in What State? A Teen Driving Prevention Program*
Car Seat Verification Clinics
Each year in Quebec, ~1,200 passengers aged ≤ 9 years die or are injured in car crashes (INSPQ, 2011)
- ~ 80 hospitalizations
- ~ 5.6 deaths

When car seats are used correctly, the risk of death or serious injury are reduced by 70% (SAAQ)

50.3% of children ≤ 5 years are in an appropriate seat that is correctly installed (INSPQ, 2011)

Patterns of safety seat misuse include:
- Incorrect car seat usage based on age, height and weight
- Inappropriate location in the vehicle
- Premature transition to new safety seat systems
Quebec Regulations

- Children must be restrained in appropriate safety seats
- 4 stages of child restraints:
  1. Rear-facing infant and child seats
  2. Forward facing child seat
  3. Booster seat
  4. Seatbelt

<table>
<thead>
<tr>
<th>Infant seat</th>
<th>Child seat</th>
<th>Booster seat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>less than 10 kg (22 lbs)</td>
<td>10-30 kg (22 - 65 lbs)</td>
</tr>
<tr>
<td>Height</td>
<td>varies depending on seat</td>
<td>varies depending on seat</td>
</tr>
</tbody>
</table>

Background

- 89.9% of Canadian children are restrained
- 60.5% of these children are in the correct seat (Snowdon et al, 2009)
- Educational interventions alone are ineffective in preventing the misuse of car seats (Snowdon et al, 2009)
Quebec Permanent Provincial Verification Network

- Network of centres certified to verify car seats across the province
- Staff members must attend a 1-4 day workshop in order to receive certification
- This network ensures that anyone in Quebec can have their car seat installation verified by a certified person
Program Development

- Between 2009 - 2012 MCH Trauma’s Injury Prevention Program partnered with local police departments and/or SAAQ to organize several community based car seat verification clinics.

- The objectives of these clinics were:
  - To provide a free car seat verification service and make adjustments as necessary.
  - To educate parents of young children regarding road safety.
Car seat verification clinics
Participants and Settings

- Clinics were held at locations regularly frequented by parents and children:
  - Community fairs, Walmart, Toys r Us, Canadian Tire, daycares

- Participants were predominantly parents, but other family members also took part (grandparents and other caregivers)
Car seat verification clinics
Participants and Settings

- 395 car seats were verified in 6 separate verification clinics
  - 109 infant car seats
  - 221 child car seats
  - 60 booster seats
  - 5 seat belts
Car Seat Verification Clinics
Measures

- **2 questionnaires administered**

  a) **SAAQ Checklist**
  - Completed by the verifiers
  - Type of car seat
  - Whether it required adjustment
  - What types of adjustment
SAAQ checklist

Organisme
Nom de l'organisme:
Ville:
Date:

Rempilier une fiche par siège.

<table>
<thead>
<tr>
<th>Le siège de nouveau-né</th>
<th>On</th>
<th>Non</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Siège approprié en poids de l'enfant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Siège approprié correctement utilisé</td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Siège mal fixé à la transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Enfant mal attaché au siège</td>
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</table>

Installation complète:

<table>
<thead>
<tr>
<th>Le siège d'enfant</th>
<th>On</th>
<th>Non</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Siège approprié en poids de l'enfant</td>
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<td>2. Siège approprié correctement utilisé</td>
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<tr>
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</table>

Installation complète:

<table>
<thead>
<tr>
<th>Le siège d'adulte</th>
<th>On</th>
<th>Non</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Siège approprié en poids de l'enfant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Siège approprié correctement utilisé</td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Ceinture / siège</td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Ceinture utilisée correctement</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Le harnais de sécurité uniquement</th>
<th>On</th>
<th>Non</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. L'enfant repose sur morceau d'utilisation de la ceinture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ceinture utilisée correctement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Ceinture sous-abdomenale ou les hanches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Ceinture sous la clavicule</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Veuillez retenir la fiche à CAA-Québec :
Pouzoujourd'hui: Service à de l'assurance CAA-Québec, 445, rue Roseau, Québec (Québec) G2J 1E3
Pouzoujour: 418 826-3645
Pour courriel: service.consult@caqasqec.com

Avril 2011
2 questionnaires administered

b) MCH Trauma questionnaire
   - Administered by MCH trauma staff and/or volunteers
   - Who installed the car seat
   - Previous attendance at a car seat verification centre
   - Demographics
MCH Trauma Questionnaire

1. How did you hear about the car seat verification clinic?

2. Which person installed the car seat?
   - Parent
   - Verification centre
   - Other: __________________________

3. Have you ever been to a verification centre?
   - No. Why not? __________________________
   - Yes. If yes, have you made any further modifications? __________________________

4. What is the reason you came to the verification clinic today?
   __________________________

5. What are the first 3 letters/numbers of your postal code?
   __________________________
Car Seat Verification Clinics

Procedure

- Verification of car seat by police officer certified by SAAQ
- Trauma Centre staff and volunteers educate parents on road safety and car seat usage
- Each driver receives:
  - List of local car seat verification centres
  - MCH Trauma Road safety brochure
MCH Trauma Centre
Educational Component

- Trauma Centre staff and volunteers educated parents/caregivers about road safety:
  - The child should be facing backwards as long as possible (2011 Transport Canada)
  - Before obtaining a used car seat, check expiration date and ensure that it has not been involved in a car crash
  - Car seats should be verified regularly. Check the SAAQ or CAA Quebec website for the closest verification centre
  - Seasonal adjustment of straps is required
Program Evaluation

- MCH Trauma conducted an evaluation of the verification clinics to determine:
  - Whether car seats were being installed properly in the car
  - Whether young children were using the appropriate car seat and well secured
  - Whether parents were aware of the provincial network of car seat verifiers.
Results

- 98% of car seats were appropriate to the age, weight and height of the child.

- Only 40% (2/5) of children using seatbelts were appropriate for this type of restraint.
Results

Child Restraint properly secured in the car

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Infant</th>
<th>Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60%</td>
<td>50%</td>
</tr>
<tr>
<td>No</td>
<td>40%</td>
<td>50%</td>
</tr>
</tbody>
</table>
Results

**Infant/Child Properly Secured in Car Seat Restraint**

- **0%**
- **10%**
- **20%**
- **30%**
- **40%**
- **50%**
- **60%**

- **Yes**
- **No**

![Bar Chart: Infant/Child Properly Secured in Car Seat Restraint](chart.png)
Results

Proper Placement of Lap Belt across the Hips for Booster Seat and Seat Belt

Proper Placement of Shoulder Belt across the Clavicle in Booster Seat and Seat Belt
Results

Have you ever been to a Verification Centre?

- Yes: 0%
- No: 100%

Series 1: Response Percentage
Conclusions

- The majority of seats required adjustments highlighting the importance of verification clinics.
- The province has in place an elaborate system of verification centres, however, based on MCH study results, the majority of respondents who had never been to a car seat verification centre were unaware of their existence.
- This type of partnership is an excellent example of a pediatric trauma centre fulfilling its mandate with respect to injury prevention.
Trauma…Surviving, But in What State?
Teen Driving Prevention Program
Teen drivers account for 10% of drivers on Quebec roads, yet account for 23% of drivers involved in crashes (SAAQ, 2011)

Major causes of fatal and nonfatal crashes in Quebec teens are inexperience & recklessness

Teens engage in unsafe driving behaviors:
- speeding
- texting
- drinking alcohol
- drug use
- not wearing a seat belt
Background

- New drivers are 4X more likely to die in a car crash (The Center for Injury Research and Prevention, 2007)
- Speed is a major factor is > 50% of crashes involving teens (SAAQ, 2011)
- Texting while driving is like having your eyes closed for 4.6 seconds out of every 6 seconds (Virginia Tech Transportation Institute, 2009)
Background

- Young drivers with a BAC > 0.05 g/dl are 2.5 X more likely to crash than adults with same BAC (WHO, 2011)
- Marijuana affects alertness, coordination, concentration and reaction time (National Institute of Health, 2011)
- Wearing a seatbelt can reduce the risk of death in a crash by 61% (WHO, 2011)
Given that MVC remains the leading cause of death in teens, MCH Trauma partnered with 2 injury prevention organizations to develop a Program in order to:

- positively influence the attitudes of teens towards safe and responsible driving
- prevent injuries and their consequences caused by impaired driving and other risky teen behaviors
Description of the Trauma…Surviving, But in What State?
Program

COMMON THEME:
BE INFORMED
BE RESPONSIBLE
MAKE THE RIGHT CHOICE!
Acknowledgment

- ThinkFirst Quebec: Natalie Auclair, Sean Pothier, Nicolas
- SPVM officers: Jean-Pierre Levis, Hélène Jubinville, Liliana Bellucci
- Teens and schools who participated in the Program
Teen Program Description

ThinkFirst Quebec

Main presenter

- explains the effects of alcohol/drugs
- gives alternatives to impaired driving
- student interaction to educate about traumatic brain & spinal cord injuries
Teen Program Description

ThinkFirst Quebec

A trauma survivor talks about

- experience during the acute phase
- experience during the rehabilitation phase
- life altering consequences
Teen Program Description

SPVM officer

- defines what is impaired driving
- explains laws and penalties
- provides statistics regarding deaths & injuries in Quebec related to impaired driving, texting, and speeding
Teen Program Description

MCH Trauma expert

- describes the implications and consequences of impaired driving and being involved in an MVC
  - at the scene
  - in the ER
  - in the OR
  - ICU
  - impact on friends/family
  - intensive rehabilitation
Study Objective of the Program

- To evaluate the effectiveness of the Trauma... *Surviving, But in What State?* Program on the students’
  - knowledge
  - attitudes
  - behavior
towards safe driving habits before and immediately after the presentation
Methods

Students complete pre-questionnaire
Students complete post-questionnaire

PLEASE FILL OUT AFTER PRESENTATION

Please answer the following questions by checking the number that best represents what you think.

1. How much do you know about traumatic brain and spinal cord injuries?
   - 1 2 3 4 5 6 7 8 9 10
   - Not much
   - a lot

2. The legal blood-alcohol concentration permitted by a driver holding a license is?
   - □ 0.00 %  □ 0.01 %  □ 0.05 %  □ 0.08 %  □ 0.1 %

3. Based on what you learned today, how often **will** you?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear a seat belt</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Obey the speed limit</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Text while driving</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Get into a car knowing the driver drank alcohol</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<tr>
<td>Drive after I’ve drunk alcohol</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
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</tr>
<tr>
<td>Get into a car knowing the driver took drugs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Drive after I’ve taken drugs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Wear a helmet for wheeled activities</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
</tbody>
</table>

4. Based on today’s presentation, do you think that you can decide if you would be too impaired to drive?
   - □ never
   - □ sometimes
   - □ often
   - □ always

5. Would you recommend this type of presentation to other secondary 5 students? Why or why not?


6. How would you rate this presentation?

<table>
<thead>
<tr>
<th></th>
<th>Poor</th>
<th>Neutral</th>
<th>Fair</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Think First
Police department
Trauma Centre
Student interaction
VIP
Questions & answers
Results

- Questionnaires were filled out by 1149 secondary 5 students from 11 high schools in the urban Montreal area (2010 - 2011 school year)
Results

Knowledge:

- Increased by > 40% post-presentation
Results

Attitudes:
- Texting: Pre: >50% reported texting while driving
  Post: ~70% plan to NEVER text while driving
- The majority will NO longer drive impaired or be in a car with an impaired driver
Results

Attitudes:

- The number of students who reported that they planned to always obey the speed limit doubled.
Results

Feedback:

“Hearing about someone's life story makes it more realistic.”

“It really opened my eyes up and helped me understand the importance of making the right choice.”

“It really helped me to see that drinking & driving is very serious.”

“It opens the students' minds and makes them realize they are not invincible.”
Results

Feedback:

“It makes us realize the consequences for our actions.”

“Every teen should have these consequences put into perspective as clearly as it was this afternoon.”

“It could save many lives.”

“It was very informative and effective.”
Results

Satisfaction:

- Overall **satisfaction** with the project was very high: 99% found it relevant and would recommend it to other secondary 5 students
Conclusion

- This reality-based teen program had a short term positive influence on the attitudes and knowledge of adolescents towards safe and responsible driving.

- To reduce the number of MVC’s in young drivers, further work on the long term effectiveness of this program is necessary in conjunction with initiatives from other key players:
  - stricter driving regulations
  - parental guidance and structure
  - more vigilant law enforcement
  - environmental modifications
  - increased injury prevention awareness
Thank-you