Unit 4
Implementing specific interventions to prevent road traffic injuries
Objectives

By the end of this unit, the trainee should be able to:

- describe the basic principles of road traffic injury control;
- describe specific interventions that can be implemented in different settings to prevent road traffic injuries; and
- describe a specific road traffic injury problem for which the trainee can design and implement an intervention in the trainee's own setting.
Energy transfer is basic to road traffic injury control
Energy transfer is basic to road traffic injury control

- Injuries are due to transfer of energy between the human body and the environment.
- Damage and severity are proportional to amount of energy available and exchanged during a crash.
- Reduce and/or manage excess energy that may contribute to the occurrence of a crash and severity of injuries.
## Haddon's ten strategies for RTI prevention

| 1) Prevent the initial aggregation of the particular energy form: |
|---|---|
| → discouraging the use of vehicles |
| → encouraging alternative travel modes |

| 2) Reduce the amount of energy aggregated: |
|---|---|
| → setting speed limits |
| → making less powerful engines |
3) Prevent the inappropriate release of energy:
   → road users shouldn't be able to make mistakes easily
   → better brakes, safer intersections, roundabouts

4) Alter the rate or spatial distribution of release of the energy from its source:
   → make rounded and flatter surfaces
   → appropriate crashworthiness of vehicles
Haddon's ten strategies for RTI prevention

5) Separate susceptible structures from the energy being released by means of space or time:
   → separated lanes
   → daytime curfews for trucks in cities

6) Interpose a material barrier to separate the released energy from susceptible structures:
   → road dividers on highways
Haddon's ten strategies for RTI prevention

<table>
<thead>
<tr>
<th>7) Modify contact surfaces or basic structures that can be impacted:</th>
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<tr>
<td>→ softer car and bus fronts</td>
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<tr>
<td>→ breakaway poles on highways</td>
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<tr>
<td>→ use of helmets by two-wheeler riders</td>
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<th>8) Strengthen human beings who are susceptible by the energy transfer:</th>
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<td>→ treatment of osteoporosis in older road users</td>
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Haddon’s ten strategies for RTI prevention

9) Quickly detect and evaluate damage, and prevent its continuation or extension:
   → efficient systems for extraction of victims from vehicles
   → emergency care
   → management of crash sites

10) Carry out all necessary measures between the emergency period immediately following damage and ultimate stabilization of the process:
    → intermediate and long-term repair
    → rehabilitation
What interventions can be implemented?

- Reducing exposure to risk through transport and land-use policies
  - reducing the volume of motor vehicle traffic
  - providing efficient networks
  - encouraging people to switch to lower-risk modes of transport, e.g. mass transit systems in Curitiba, Sao Paulo, Bogota and Beijing
  - placing restrictions on motor vehicle users
  - promoting safety-centred planning, design and operation
What interventions can be implemented?

• Shaping the road network for road traffic injury prevention
  ○ classifying roads and setting speed limits by their function, e.g. the Dutch sustainable safety policy with different speeds for three road categories: flow roads, distributor roads and residential access roads
  ○ improving safety of single-lane carriageways
  ○ implementing traffic-calming measures, e.g. speed bumps in Ghana reduced crashes by 35% at a high-risk crash site
What interventions can be implemented?

- Improving visibility of road users
  - use of daytime running lights
  - use of reflective and protective clothing
  - illuminating crosswalks
What interventions can be implemented?

- Promoting crash-protective vehicle design
  - stronger passenger compartment
  - head-rests to prevent whiplash injury
  - collapsible steering column
  - laminated windscreens
  - padded instrument panels
  - door locks
  - crash-resistant roofs
  - side protection bars on doors
  - front end design
What interventions can be implemented?

- Setting and securing compliance with road safety rules
  - setting and enforcing speed limits
  - enacting and enforcing laws on alcohol impairment (e.g. alcohol law in Thailand)
  - enacting and enforcing laws on the use of seat-belts (e.g. in Costa Rica) and child restraints
  - enacting and enforcing laws on the use of helmets (e.g. Malaysian helmet law and programme)
Tools for action on helmets and alcohol

http://www.who.int/violence_injury_prevention/publications/
The role of education

- Education is a key component of road safety
  - it improves knowledge
  - it provides basic skills
  - it brings about a culture of concern
- but programmes providing highway safety education need to be linked and used in combination with other approaches
- there must be a balanced approach to the role of education and publicity
Key points

- Injuries are caused by a transfer of energy between the human body and the environment.
- There is no standard package of interventions suitable for all contexts and countries.
- Several good practices can be followed:
  - reducing exposure to risk through transport and land-use policies;
  - shaping the road network for road traffic injury prevention;
  - improving visibility of road users;
  - promoting crash-protective vehicle design;
  - setting and securing compliance with key rules;
  - delivering post-crash care.
Learning activity

Task

Study the picture on the slide on the next page. Explain the steps you would take to promote the use of helmets by two-wheeler riders in such a setting.

Expected results

The purpose of this exercise is to assist the trainees in identifying and discussing some practical issues that have to be examined when developing an intervention such as promoting helmet use. This exercise can be done in groups and results presented to the class.
Learning activity
Questions to think about

a) Choose one of the interventions presented in this unit that has been implemented in the country or city where you live. Discuss the results that have been achieved.

b) The local authority of your city is planning interventions to respond to increasing collisions involving children who live on one side of the road but have to cross this road to reach a school on the other side. What interventions would you recommend? What are the reasons for your recommendations?

c) The majority of people in a certain community do not wear seat-belts despite the existence of a law requiring the use of seat-belts. Discuss what you would do to address this problem.