



#### Study Designs for Assessing Risk Factors and Effectiveness of Interventions for Motorcycle Injuries

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# **Key Issues**

- > Local evidence about risk factors and effectiveness of interventions can be a powerful tool for advocacy
- > Well-designed and implemented research will require multi-sector collaborations... and significant resources
- > Building research capacity in RTI is essential if RTI is to be considered an important public health issue



Study Designs for Assessing Risk Factors for Motorcycle Injuries

#### > Case-control studies

> Compare risk factors in those with motorcycle injuries and those at risk of motorcycle injuries, but who have not sustained injuries

#### > Cohort studies

> Compare rates of motorcycle injury in those who are "exposed" to risk factors of interest and those who are not



# **Risk Factors for MC Injuries**

 Factors influencing exposure to risk
 Factors influencing crash involvement
 Factors influencing crash severity
 Factors influencing post-crash severity

World Report of Road Traffic Injury Prevention, 2004



#### > Case-control studies

- > Compare risk factors in those with motorcycle injuries and those who are at risk of injury, but who are not injured
  - > Identification and recruitment of those with motorcycle injuries through health care facilities
  - > Identification and recruitment of random sample of motorcyclists – e.g. roadside stopping



#### > Case-control studies

- > Compare risk factors in those with severe motorcycle injuries and those who sustain less severe injuries
  - > Identification and "recruitment" of those with severe motorcycle injuries
  - > Identification and recruitment of those with less severe injuries









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## Why assess effectiveness?

- > Efficacy of intervention is known e.g. helmets
- > Most effective modes of implementation are unknown
- > Most cost-effective modes of intervention are unknown



#### > Ecological studies

- > Examination of trends over time in relation to the introduction of interventions
  - > Other factors not examined may be responsible for observed changes



#### Trends in road deaths and major road safety initiatives, 1960 to 2003



> Pre-post study designs > Subject to same issues/concerns as ecological studies > Pre-post study designs with "control" group > Provides better assurance that intervention effects can be attributed directly to the intervention of interest



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# **China Seatbelt Study**



Aim: To determine whether a known effective intervention can be successfully implemented in China

Methods: Pre-post design with control group; major seatbelt campaign with social marketing, training and enforcement implemented in Guangzhou, China

Results: Seatbelt use increased by 20% up to 50-62% use; cost effectiveness ratio US\$418 per DALY saved

Conclusions: Seatbelt interventions from HIC may be transferred successfully to LMIC in a cost effective way



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Stevenson, Injury Prevention, 2008

> Randomised controlled trial (gold standard)

> Random allocation of individuals to receive – or not – the intervention of interest

> Cluster randomised controlled trials
> Random allocation of "groups" to receive – or not – the intervention of interest



for International Health

#### The SAFE study "a landmark trial"

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

#### A Comparison of Albumin and Saline for Fluid Resuscitation in the Intensive Care Unit

The SAFE Study Investigators\*

New Eng J Med: 2004: 350: 2247-2256

# **Summary Issues**

- > Local evidence about risk factors and effectiveness of interventions can be a powerful tool for advocacy
- > Well-designed and implemented research will require multi-sector collaborations... and significant resources
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