Injury Prevention 101
Strategic Thinking for Improved Outcomes

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We will not discuss

- Why injury is a major public health problem
- Types of injury
- Specific interventions

We will discuss

- STRATEGY
- How thinking critically about injury and violence can increase the potential for designing successful interventions
This is a very hands-on training

We ask you to contribute your skills and intellectual energy to the training.

Injury Prevention 101

Module 1: Understanding Injury

Review: Injury Terminology

- Unintentional Injury
  - “Accidents”

- Intentional Injury
  - Assaults and Homicide
  - Self-Inflicted and Suicide
What is Prevention?

- ACTIVELY making something unhealthy or harmful NOT happen
  - Can you think of an example?

- ACTIVELY making something healthy or protective happen
  - Can you think of an example?

If you want to:

- ACTIVELY make something unhealthy or harmful NOT happen
  - What must I understand?

- ACTIVELY make something healthy or protective happen
  - What must I understand?
Identifying a problem is important. But it is only useful if identification initiates a sequence of careful, considered actions.

We must learn to approach injury and violence in a critical, systematic way.
Is the Problem really “Obvious”?

- How did this event happen?
- What do we know?
- What have we assumed?
- What must be done to “fix” it?
- How can we accomplish this?

Key Injury Prevention Skill
Key Injury Prevention Skill

Learn how to ask the right questions
&
persevere until you get and listen to answers

What is the problem?
What is the solution?

The patient-focused biomedical model has limited value in injury control

Injury is a problem of populations

“No mass disorder afflicting mankind was ever brought under control or eliminated by attempts at treating the individual”

Dr. George W. Albee
1921-2006
Yes, but “What should we ask?”

- What do we want to know?
- What are the right questions?
- How can we guide our thinking?
- We need reference points
  - Conceptual models or frameworks

The Epidemiologic Triangle

Host

Disease

Agent

Environment

The Epidemiologic Triangle (basic)

Host

Malaria

Agent

Environment
Injury is an (acute) exposure to physical agents such as mechanical energy, heat, electricity, chemicals, and ionizing radiation interacting with the body in amounts or at rates that exceed the threshold of human tolerance. In some cases, injuries result from the sudden lack of essential agents such as oxygen or heat.
The Epidemiologic Triangle (basic)

Host

Motor Vehicle Injury

Environment

The Epidemiologic Triangle + Vector*

Host

Motor Vehicle Injury

Agent + Vector* Environment

* In the injury literature, this may also be referred to as the "vehicle" or "carrier"

INJURY

HUMAN AGENT

and ENVIRONMENTAL factors interact to produce an injury and its outcome.
IDENTIFYING these factors and ASSESSING their importance is crucial to the development of effective prevention strategies.

Problems seldom have a single cause.

Question: If causes are complex, how do we learn to ask the right questions?

Answer: Learn to look beyond the obvious.
What We See is Determined by WHERE and HOW We Look

Individual Human Factors

Agent & Carrier

Social Environment

Physical

How do we overcome this bias?

A Pioneer: William (Bill) Haddon, Jr., MD

✦ First “Highway Safety Chief”
  - National Highway Traffic Safety Administration

✦ Headed Insurance Institute for Highway Safety

✦ Developed a Framework for Understanding Key Determinants of Injury: The "Haddon Matrix" (1972)

Dr. Bill Haddon, 1926-1985
Bill Haddon was determined to expand our field of vision

The Haddon Phase-Factor Matrix

Factors

HUMAN
(Individual)
AGENT
& Carrier
ENVIRONMENT
Physical Social

The Haddon Phase-Factor Matrix

Phases

Pre-Event
Event
Post-Event
Phases of Injury Prevention

- **Pre-Event**
  Reducing the number of events with the potential to cause injury.
- **Event**
  Reducing the number & primary severity of injuries that occur.
- **Post-Event**
  Preventing secondary insults; improving the final outcome.

### Human Agent & Carrier Environment

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<tr>
<th>Phase</th>
<th>Human</th>
<th>Agent &amp; Carrier</th>
<th>Environment</th>
<th>Physical</th>
<th>Social</th>
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<td>Pre-Event</td>
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<td>Post-Event</td>
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<td>Human (Individual)</td>
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<td><strong>Post-Event</strong></td>
<td><strong>What will the outcome be?</strong></td>
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Haddon Matrix: next steps
Not all associated factors are Causal or Key

- Which factors are controllable?
  - The child pedestrian’s age-related developmental limitations are not
- Will changing these change the outcome?

Identifying an issue that must be changed is seldom enough to help you understand how to make the change

Factor 1 - ?
Factor 2 - ?
Factor 3 - ?

Issue to be changed

We Cannot Ignore the Many Determinants of Health

Determinants of Health
- Policies and Interventions
- Physical Environment
- Behavior
- Individual
- Biology
- Social Environment
- Access to Quality Health Care
Injury problems occur in a context. Prevention programs succeed ONLY if they address these factors.

Best-practices intervention planning requires that we understand the causal chain AND the factors that support or inhibit it … and address prevention using an ecologic approach.

An Ecological Prevention Approach Addresses Many Layers of Influence*
- Individual
- Family
- Peer Group
- Neighborhood
- Schools
- Organizational
- Community-level
- County/State/Regional/National

*The relative influence of each “layer” changes with developmental stage

Understanding context
- The Haddon Matrix does not work very well for complex injury issues (e.g., alcohol-related injury; lack of willingness to screen for IPV, etc)
- The Phased Environmental Influences Matrix* helps us understand the context in which this problem developed and how it may be changed.

* This is a working title; it may be changed when published.
During the first application session, we will analyze a scenario using the Phased Environmental Influences Matrix. To make it easier, we have suggested the levels of social influence you may want to consider:

- **Historic Phase Factors**
  - How did we get to the current situation? What is the history of this problem? Is there a history of previous attempts to address this or similar problems? Don’t assume there’s no historical baggage!

- **Current Phase Factors**
  - What are the factors influencing the status quo? Which are modifiable? Don’t assume there’s consensus about the need to change. Who benefits from preserving the status quo?

- **Future Phase Factors**
  - What are the factors influencing sustainability of this intervention/policy? What can we do in the current phase to anticipate and plan for opposing forces and challenges to the intervention/policy?

Hint: Don’t try to work box by box. Brainstorm in your group and then decide where your suggested factors belong.