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JOHNS HOPKINS
BLOOMBERG
SCHOOL *of* PUBLIC HEALTH

Optional Review Lecture

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Section A

Understanding Injuries

What Do We Mean by Injury?

- “Body damage resulting from acute exposure to excessive amounts of thermal, mechanical (whether kinetic or potential), electrical, or chemical energy or from the absence of such essentials as heat or oxygen”

Injuries on Host

- Etiology agent
 - Energy transfer
- Vehicles or vectors
 - Motor vehicles, bullets, people, animals
- Pathology
 - Fractures, dislocations, sprains, strains, concussions, contusions, lacerations, hematomas, bruises, abrasions, blisters, bites, open wound injuries, amputations, crushing, burns, poisoning

Injuries

- Treatment
- Prognosis

Classifying Injuries

- Injuries can be classified
 - By themselves
 - ▶ Nature of injury (e.g., fracture, laceration, contusion)
 - ▶ Body region affected (e.g., head, chest, abdomen)
 - ▶ Severity (e.g., fatal, non-fatal)
 - By consequences
 - ▶ Death, hospitalization, emergency department visit

Classifying Injuries

- Injuries can be classified by
 - Mechanism of Injury
 - ▶ Penetrating (knife, bullet)
 - ▶ Blunt (does not penetrate the body)
 - ▶ Burn (electrical, thermal, chemical)

Classifying Injuries

- Injuries can be classified by
 - The hazard that “caused” them
 - ▶ “Cause” (e.g., motor vehicle, falls, drowning)
 - ▶ Type of activity (e.g., work, sport, recreational)
 - ▶ Product involved (e.g., firearm, snowmobile)
 - ▶ Location of activity (e.g., school, outdoors, home)
 - ▶ Intent (e.g., intentional, unintentional)

Why Are Injuries Relevant at All?

- Mortality (death)
- Morbidity (non-fatal injuries)
 - E.D. visits
 - Hospitalization
 - Outpatient visits
- Disability (short-term, mid-term, and long-term sequelae)
- Cost

Severity of Injuries

- Severity of injuries depends on the following
 - Energy being dissipated (amount/time)
 - Shapes of the colliding objects
 - Rigidity of colliding objects
 - Tolerance (susceptibility) of host

Mortality

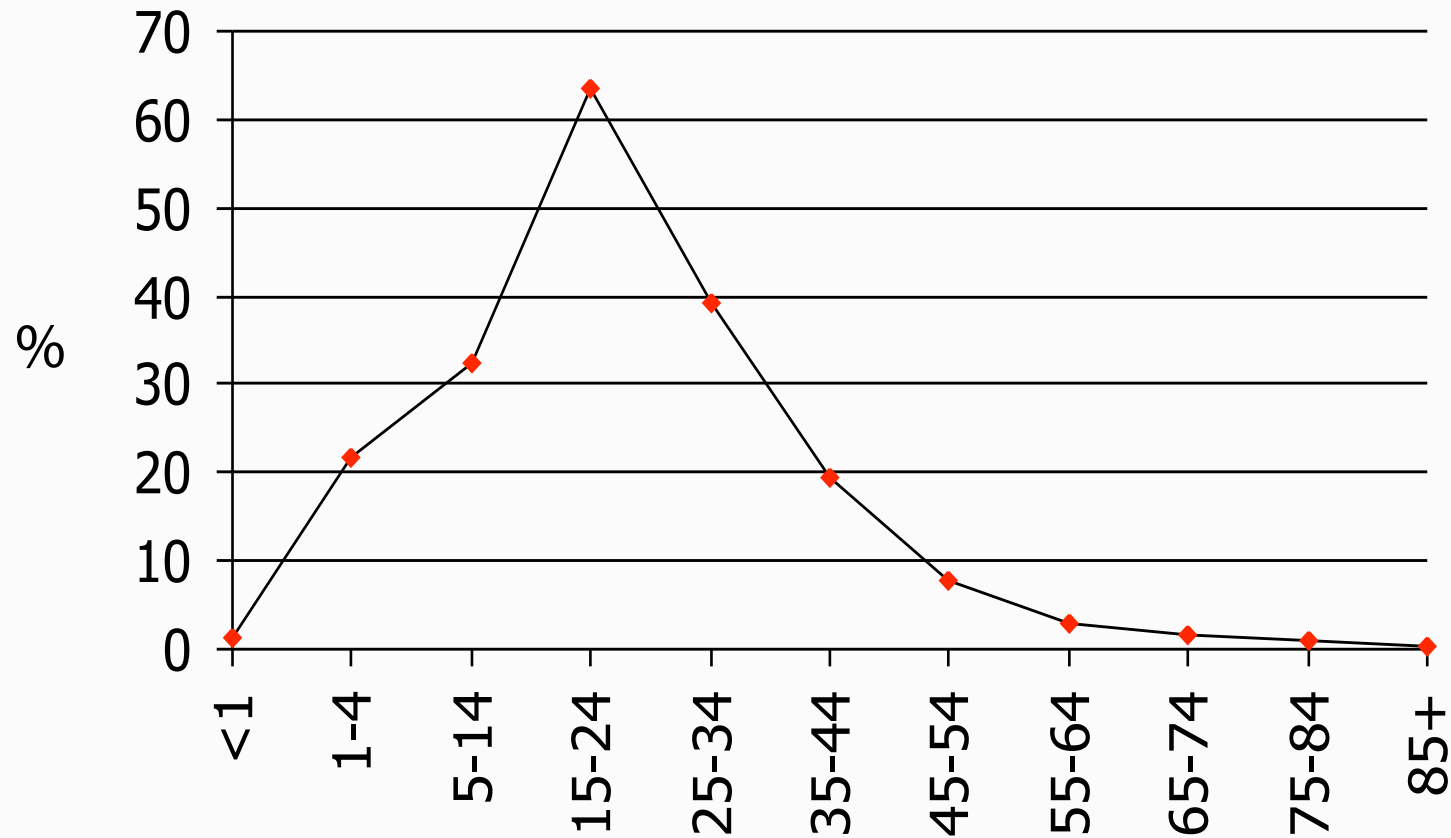
- Injuries are among the main causes of death for the U.S. population
- In 1998, 147,000 Americans died as a result of injuries
- Injuries are the single greatest killer of Americans between the ages of one and forty-four
- Injuries are responsible for 3.5 million years of potential life lost (YPLL)

Years of Potential Life Lost: USA (1995)

	Men			Women		
	Total	Injury	%	Total	Injury	%
White	6525.1	3160.1	48.4	3403.8	1127.2	33.1
Black	14186.5	5478.6	38.6	7431.5	1511.3	20.3
All	TOTAL 5979.5		INJURY 2307.4		% 40.6	

Note: numbers per 100,000 population under age 65

Proportion of Injury-Related Deaths by Age Category



U.S.A. (1989)

Age

Morbidity

- In 1995, approximately 40 million Americans required medical attention due to sustained injuries
- Every year, one in three persons suffers a non-fatal injury
- One in every eight hospital beds is occupied by an injured patient

Sequelae

- Every year, more than 80,000 people in the U.S. suffer a brain or spinal cord injury that would lead them to a permanent disablement

Cost

- In 1989, annual estimated cost of injuries was \$133.2 billion
- Some break-downs
 - Direct cost of alcohol-related crashes are estimated to be \$46 billion yearly
 - An additional \$102 billion is lost in quality of life due to these crashes

How Do We Count Injuries?

- Absolute numbers
- Rates
- If rates, what should be the denominator?
 - Population (=> proportions)
 - Others (e.g., exposure to events like number of vehicles or miles traveled or gallons of fuel consumed ...)