

Data linkage to study trauma mortality outcomes

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Outline

- Aim to illustrate the value of data linkage in injury studies
- Injury cohort study alcohol and trauma outcome and mortality
 - Background trauma recidivism
 - Data sources
 - Previous preliminary study
 - Methods and results
- Data linkage in international context

Background

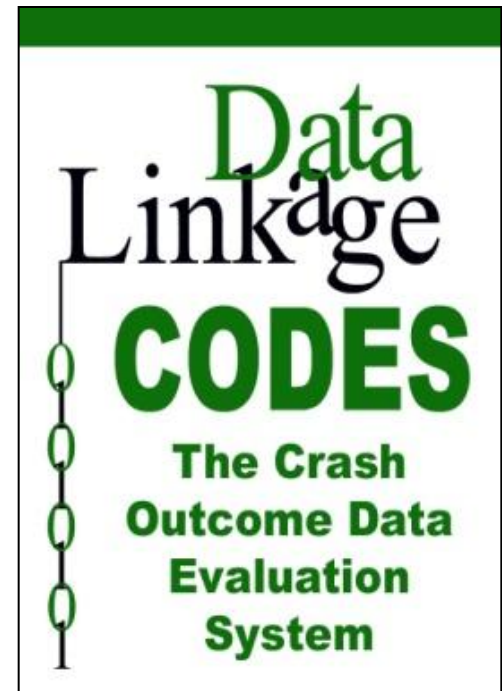
- 26-52% of men and 14-24% of women admitted to trauma centers test positive for alcohol at the time of admission
- 25%-50% of trauma patients have a diagnosis (DSM-III-R) of alcohol abuse or dependence at the time of admission
- Up to 50% of trauma patients test positive for another drug of abuse

Recidivism

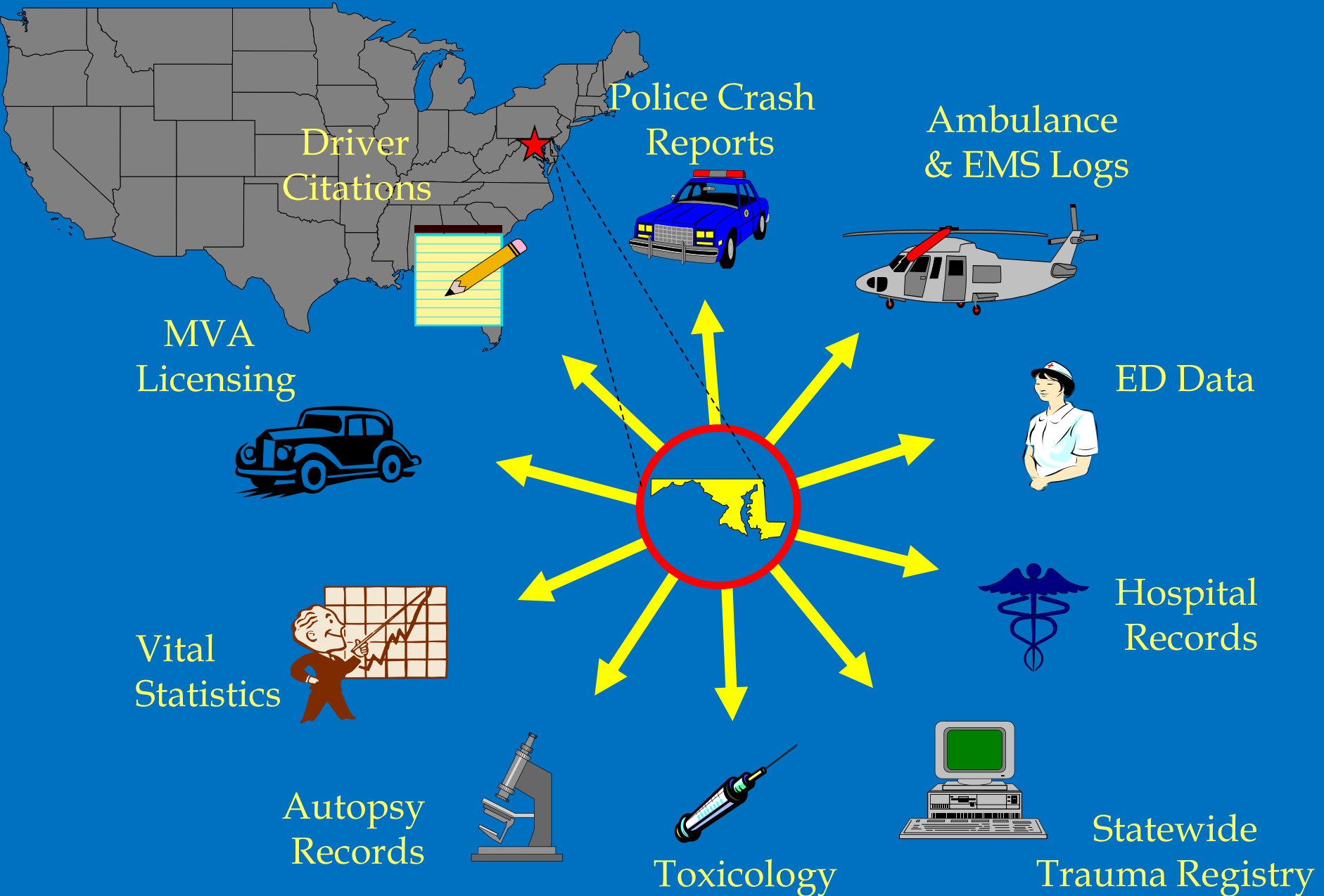
- *Patients with alcohol use problems are more likely to sustain repeat injuries:*
 - Kaufman et al. ('98) and Sims et al. ('89) found higher rates of substance abuse among patients with two or more admissions to the same hospital
 - Rivara et al. ('93) reported that patients testing positive for alcohol had a 2.5X greater risk of readmission to the same hospital for injury

Available Injury Data Sources

- Pre-Hospital
 - Police Crash Reports
 - EMS Runsheets
- Hospital
 - Emergency Dept. Data
 - Hospital Discharge Data
 - Trauma Registry Data
 - Toxicology Data
- Medical Examiner Data



Available Injury Data Sources in Maryland



Alcohol Involvement in a Cohort of Trauma Patients: Trends and Future Mortality

Hypothesis: Risk of subsequent mortality following trauma admission increases dramatically as BAC increases

- Link 25 years trauma admissions with National Death Index
- Over 1 million person years of follow-up
- Supported by: NIAAA Grant #1R01AA18707

A Longitudinal Study of Former Trauma Center Patients: The Association Between Toxicology Status and Subsequent Injury Mortality

Patricia C. Dischinger, PhD, Kimberly A. Mitchell, MS, Joseph A. Kufera, MA, Carl A. Soderstrom, MD, and Albert B. Lowenfels, MD

Background: Despite the current emphasis on injury prevention, little has been done to incorporate alcohol intervention programs into the care of the injured patient. The purpose of this study was to determine whether patients admitted to a trauma center with positive toxicology findings (TOX+) have a higher subsequent

such findings (TOX-).

Methods: We followed a cohort of 27,399 trauma patients discharged alive between 1983 and 1995 to determine subsequent mortality. Death certificates were obtained to identify the cause of death.

Results: TOX+ patients had an injury mortality rate approximately twice that of the TOX- group (1.9% vs 1.0%, p

< 0.001). Overall, 22.7% of the deaths were due to injury; the TOX+ rate was 34.7% versus 15.4% for the TOX-.

Conclusion: These data add strength to the premise that untreated substance abuse-related injury remains an untapped injury prevention opportunity.

Key Words: Injury, Mortality, Trauma, Substance abuse, Prevention

Mortality Experience of a Cohort of 27,399 Former Trauma Center Patients

**Grant support:
The Robert Wood Johnson Foundation
Substance Abuse Policy Research Program
(#034476)**

Dischinger, Mitchell, Kufera, et al
J Trauma 2001

Methods

- Study period: FY 84 - FY 95
- All patients discharged alive from trauma center and tested for alcohol (over 95% all cases)

Mortality follow-up

- Follow-up period: 1.5 - 14.5 years
- Mortality search based on name and SS#
- Death certificates obtained each state
- Abstraction of cause of death data

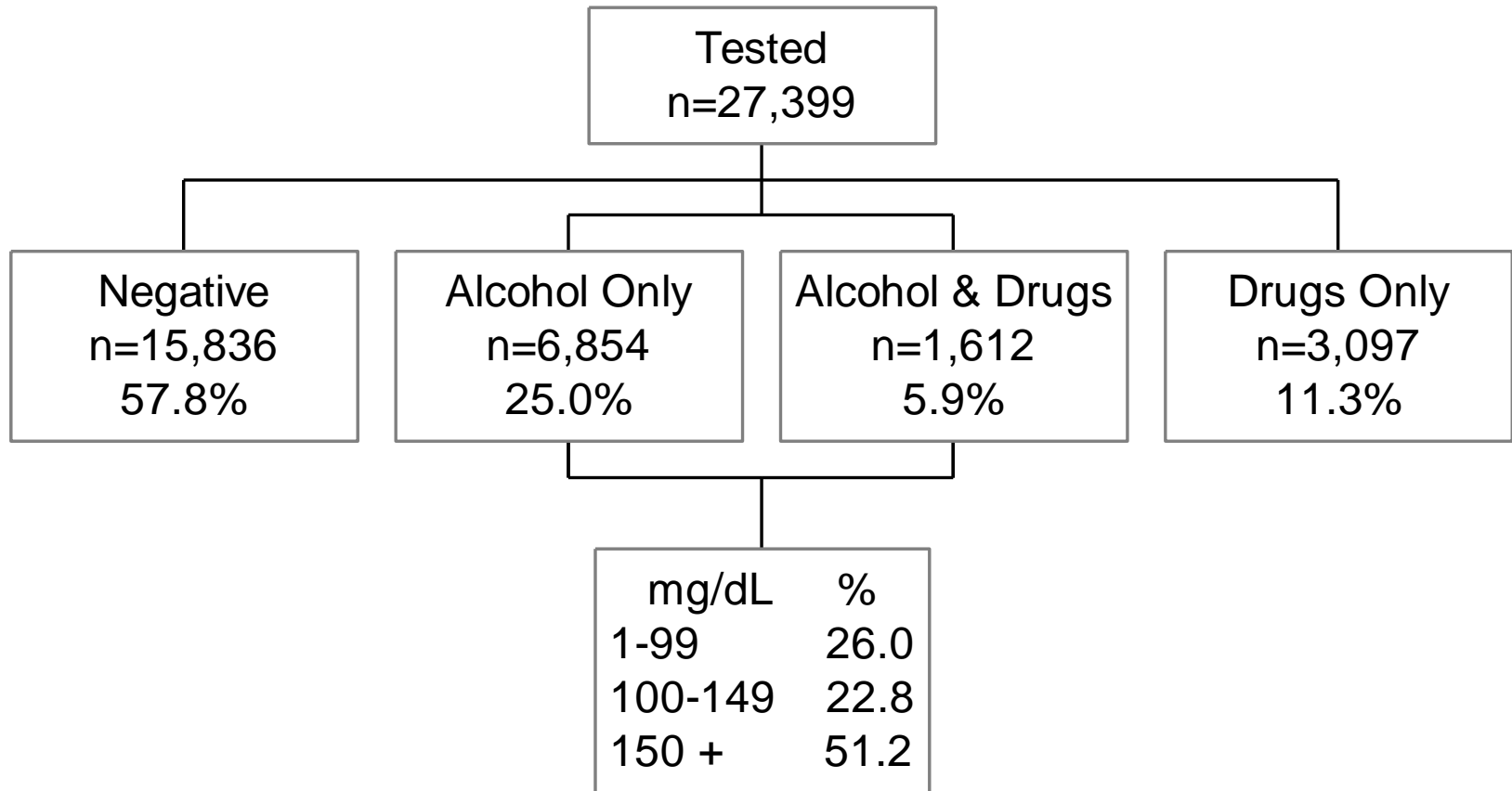
- Survival analysis

Results:

Overview of Study Population (N=27,399)

- Mean age= 34 years (80% < 45 years old)
- 72.6% male
- 68.5% white
- 80.7% unintentional injury
- 57.2% ISS 9 or greater
- 78.0% discharged to home

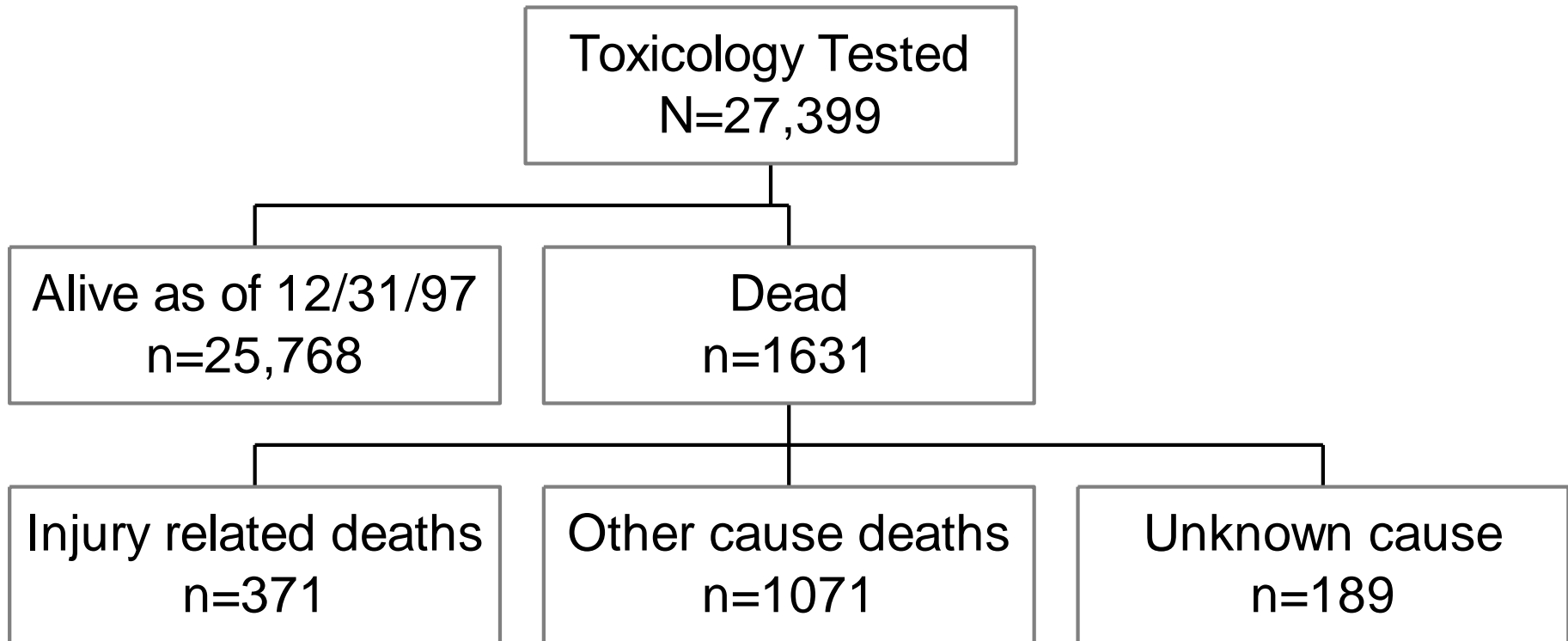
Toxicology Findings among the Cohort of 27,399 Patients*



* 93.5% of original cohort was tested

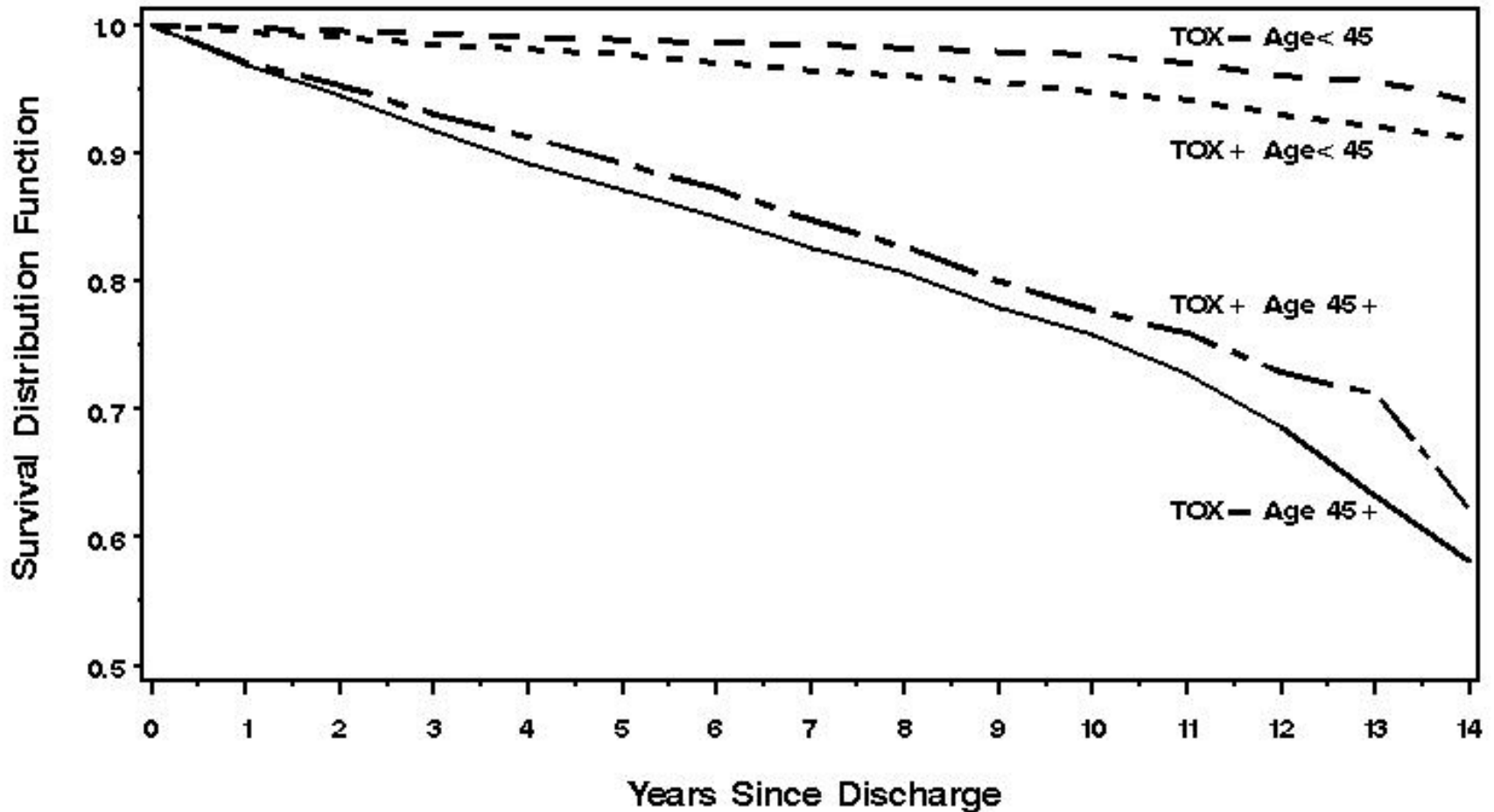
Follow-up of Cases

Figure 1. Toxicology Tested Patients



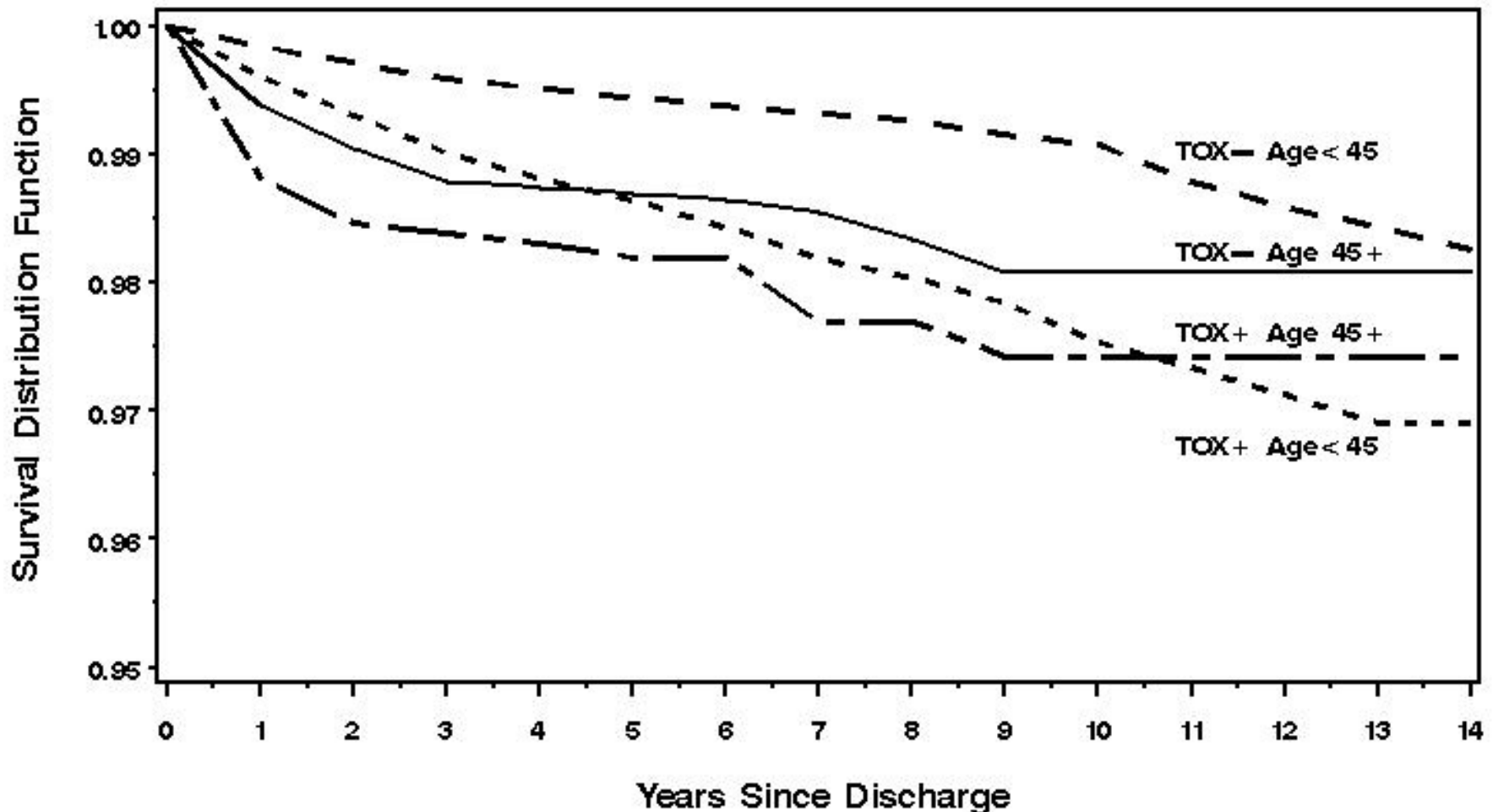
Survival Rates for All Cause Mortality

Stratified by admission toxicology status and age



Survival Rates for Injury Mortality

Stratified by admission toxicology status and age



Higher Risk of Injury Mortality in TOX+ Group Relative to TOX- Group

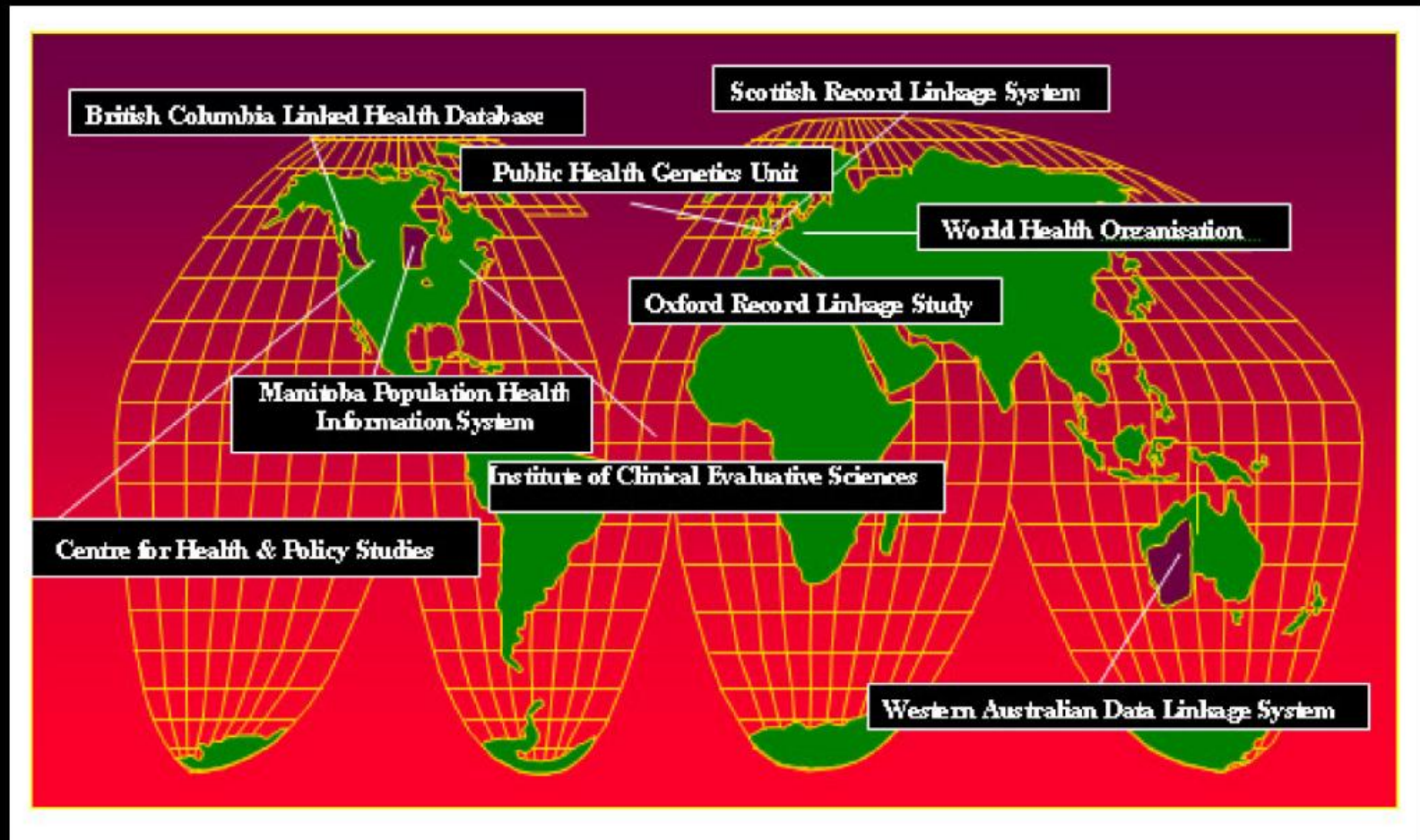
	<u>RR</u>	<u>95%CI</u>
Age < 45 years	2.33	1.83-2.98
Age 45+ years	1.40	0.90-2.19
Total cohort	2.07	1.68-
2.55		

Conclusions

- Patients with positive alcohol/drug tests at the time of trauma center admission were more likely to die a premature death as the result of injury
- Among patients <45 years old, those with a positive toxicology finding had a significantly higher injury mortality rate
- New study much larger study size (10X)
- Able to examine actual BAC levels
- National Death Index a more efficient way to identify deaths

The Lonely Planet Guide for Data Linkage

Emma Brook, University of Western Australia



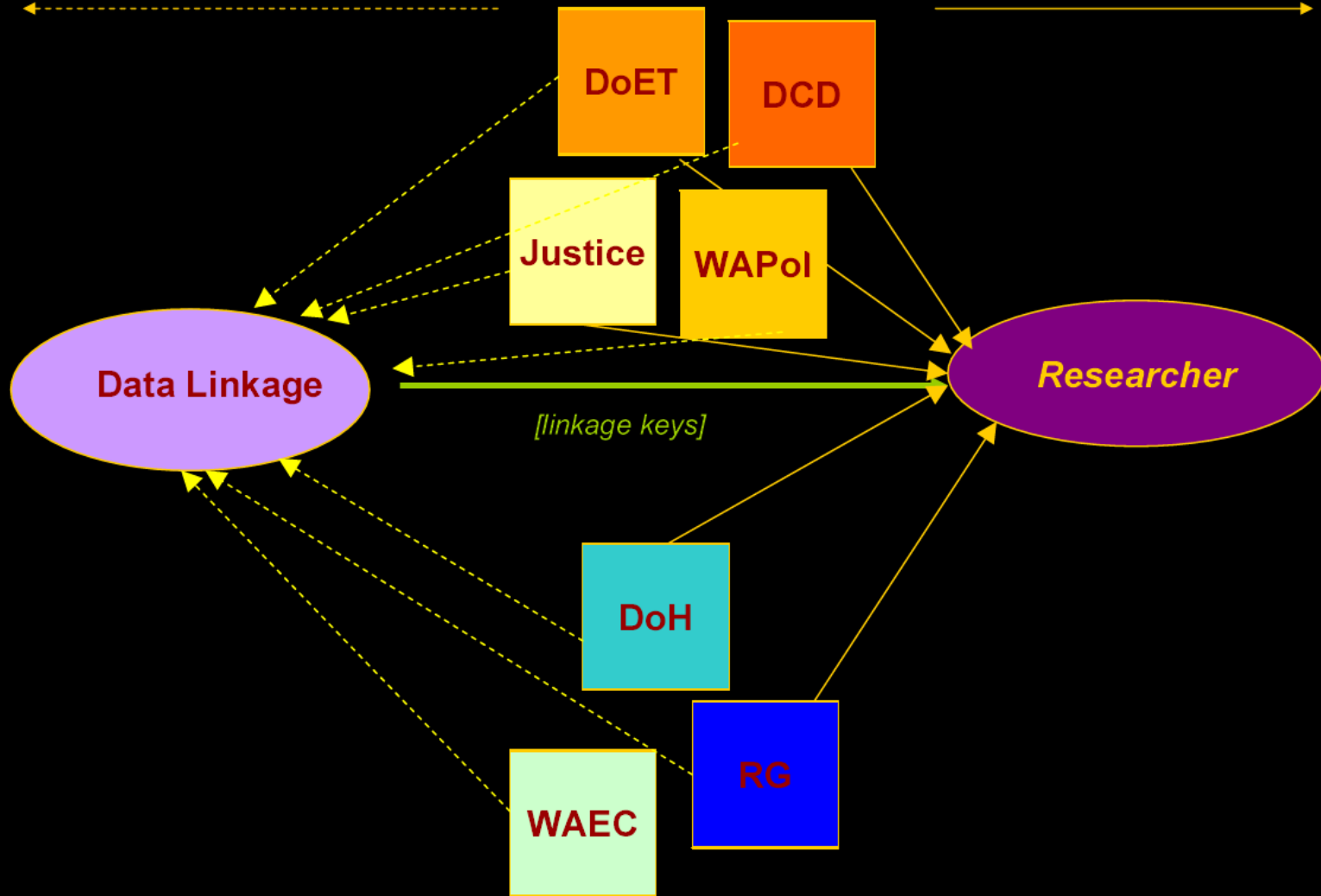
Activities down under

- Australia
 - Western Australia used data linkage since 1970s
 - <http://www.datalinkage-wa.org.au/>
 - SA-NT DataLink provides secure method of data linkage for research without linking data itself
 - <https://www.santdatalink.org.au/>
- International Health Data Linkage Network
 - <http://www.ihdln.org/>

Data linkage Western Australia

[id#, name, address, date of birth]

[health, education & behaviour]



New Zealand

- Health Identification number
 - Allows linkage of health data sources
 - Identify repeat admissions
 - Link prior hospitalization with mortality data
- Link hospital and traffic crash records
 - “substantial numbers of cyclist only crashes.. not captured in the TCR database. Langley Inj Prev 2003;9:376-379

INVESTIGATING THE IMPACT OF MAJOR TRAUMA IN CHILDHOOD

Findings from the Linkage of Trauma Registry and Accident Compensation Corporation Data

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Aims

- Determine the feasibility of linking trauma registry data with Accident Compensation Corporation (ACC) data
- Provides opportunity to link hospital data with long-term health data on injuries
- Similar to workers compensation for all injuries



Safety 2012 World Conference

11th World Conference on Injury
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Questions???

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Reasons for Alcohol/Other Drug Testing of Injured Patients

Clinical Management

- Identify patients at risk of withdrawal
- Pain management
- Identify patients at risk of substance use diagnoses
- Not done for legal purposes