Retrospective Cohort Study of Disease Incidence Among Residents of Naval Air Facility (NAF) Atsugi, Ayase, Japan

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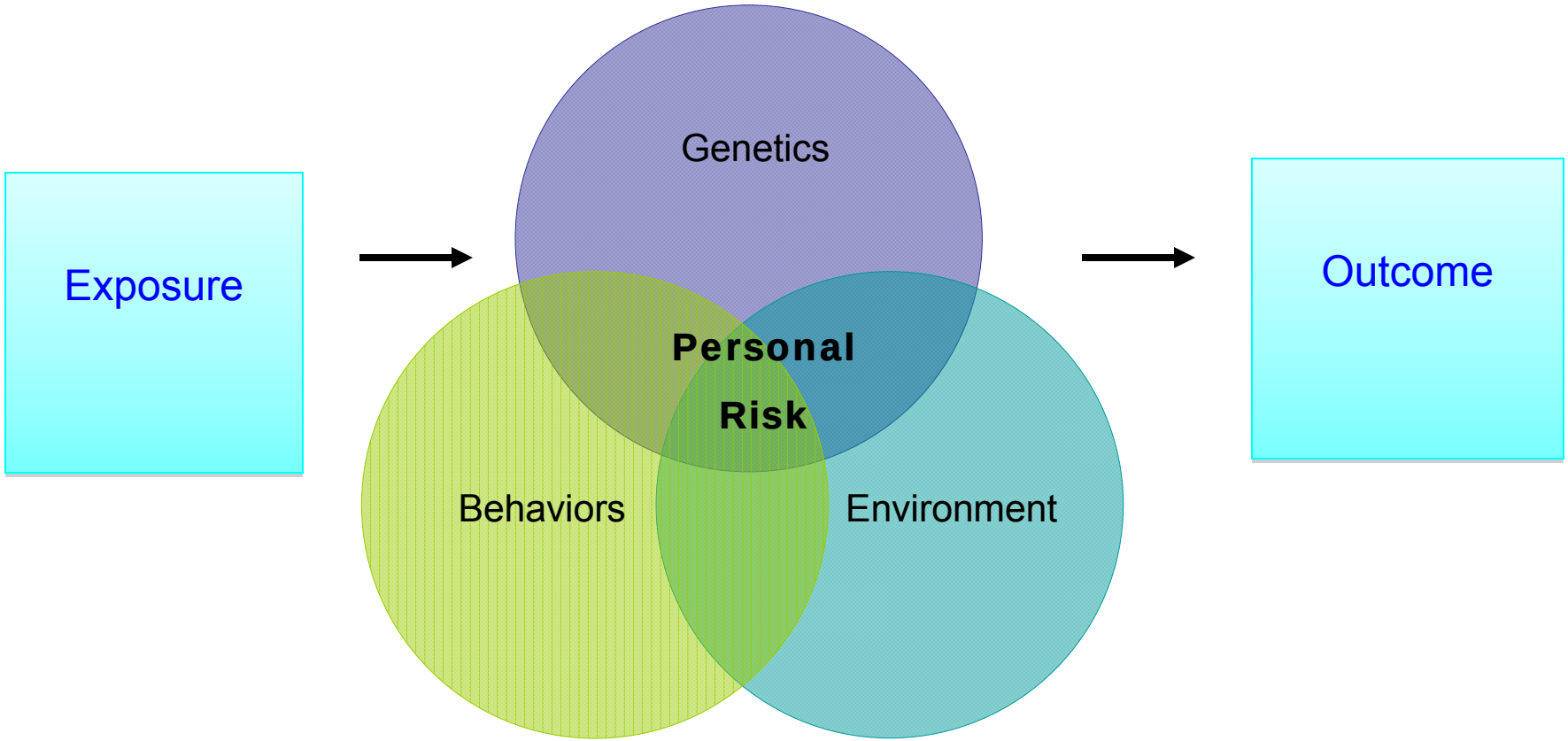
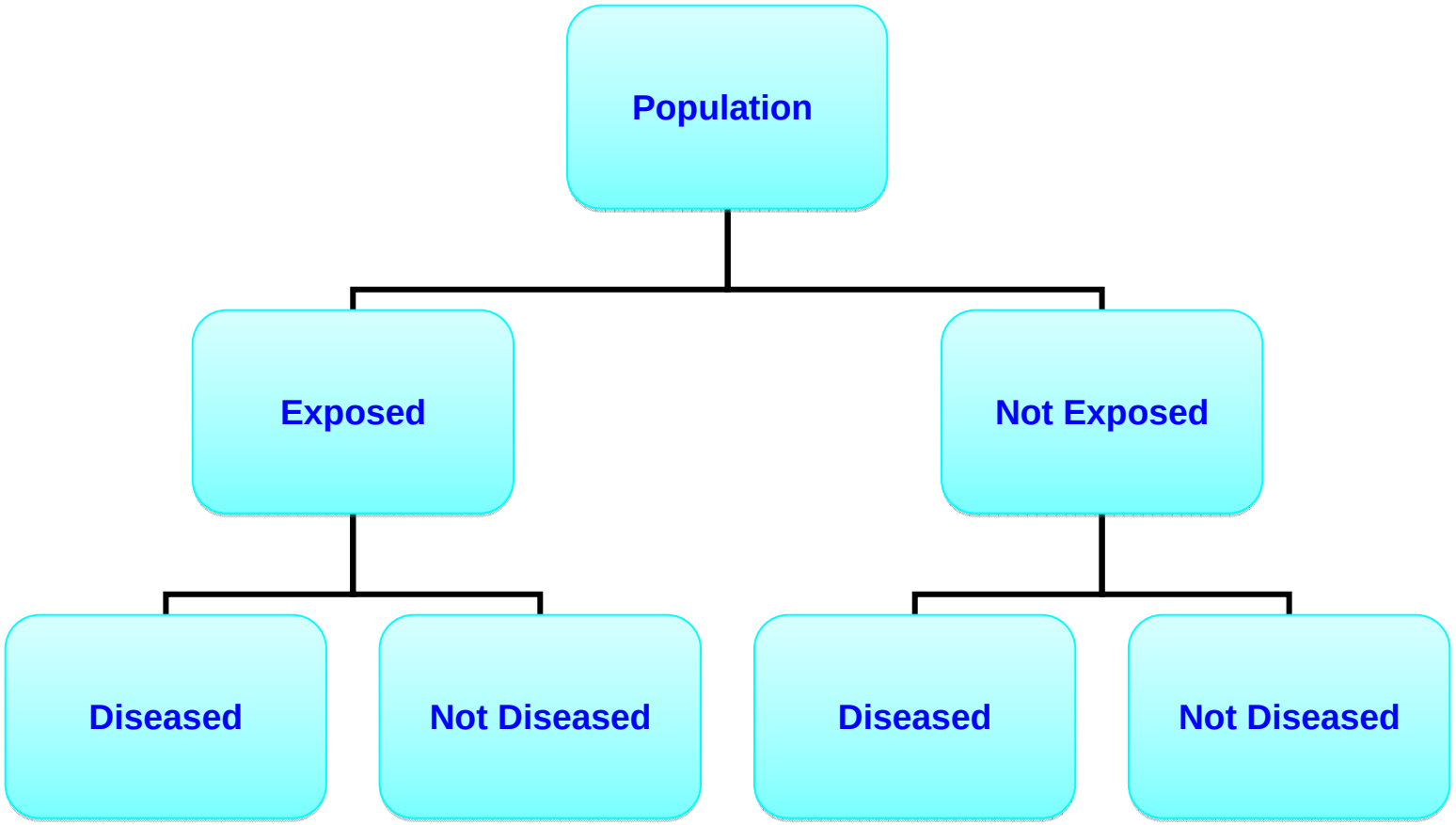
Objective

To determine if the incidence of diseases associated with exposure to emissions from the SIC was significantly different for residents of NAF Atsugi from 1985 to 2001 when compared to a similar population over the same time period.

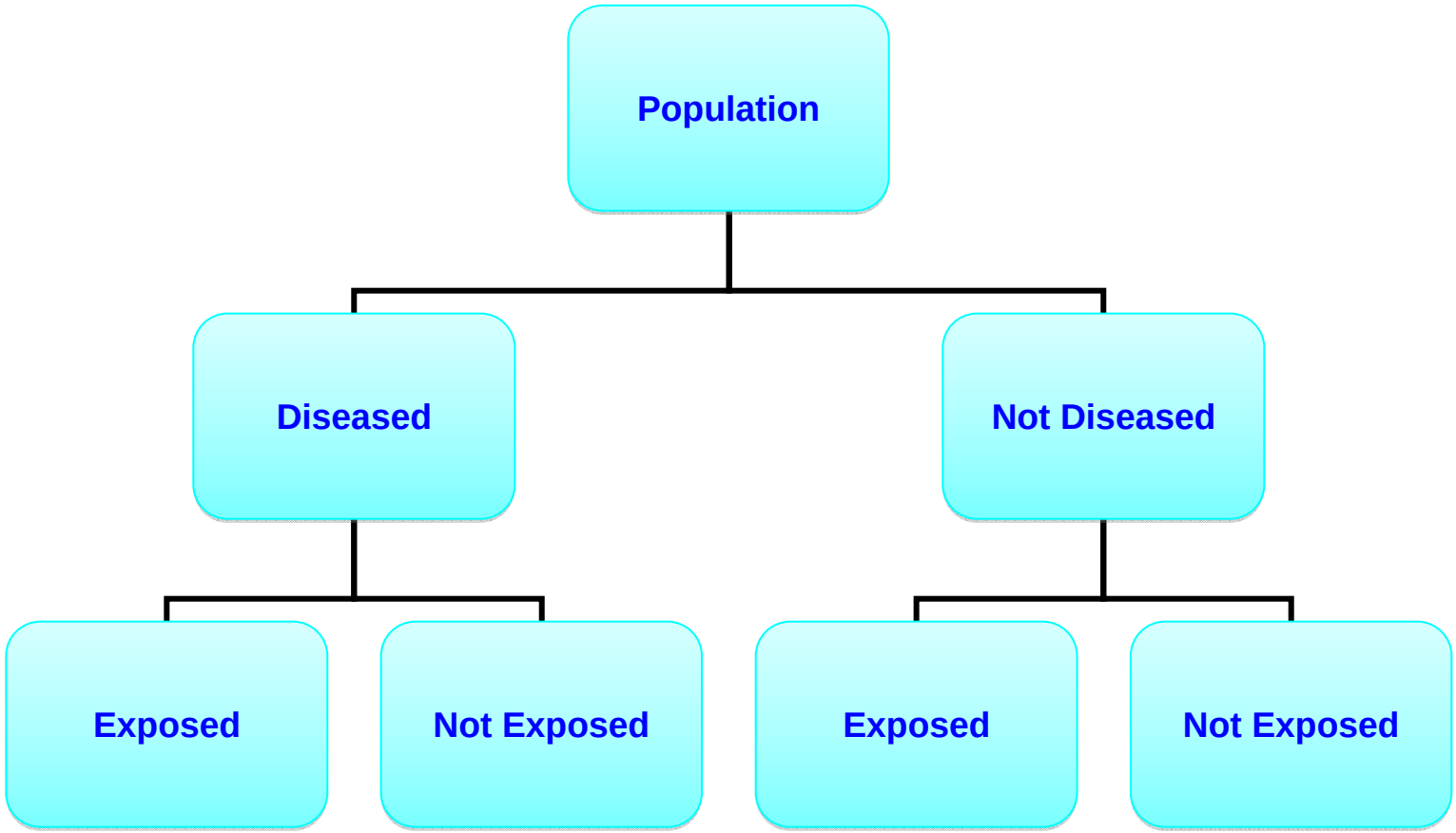
Interaction of Personal Risk Factors



Study Design: Cohort



Study Design: Case Control



Study Design

Type	Description	Pros	Cons
Cohort	Known exposure, follow to observe outcome.	•Difference in exposed and non-exposed populations.	•Loss to follow-up. •Difficulty identifying rare disease occurrences.
Case-Control	Known disease matched to control, look retrospective for risk factors.	•Evaluate a rare disease •Identify possible causes of adverse health outcomes.	•Requires memory of exposures and risk factors. •Bias introduced with control selection •More expensive, requires interviews

Comparison Population

- Fleet Activities Yokosuka selected as non-exposed comparison population
  - Overseas screening
  - General environmental conditions
  - Occupational differences
  - Misclassification of exposure

Population Selection

- Both populations selected using the same criteria
- Personnel records:
  - Zip codes
  - 180 day minimum
  - All family members
  - Loss dates

Medical Data

Starting dates for medical data files		
Patient Status	Type of Care	Start Date
Inpatient	Military	October 1988
	Purchased	October 1993
Outpatient	Military	October 1998
	Purchased	October 1993

Non-Cancer: Case Definition

- Target organs of SIC chemicals identified in health risk assessment
  - Significant, scientifically sound, human evidence to support association between chemical and cancer
- All cancer diagnoses included
  - Primary, Secondary, Uncertain Behaviors

Non-cancer outcomes by diagnosis code	
Disease Type	**Diagnosis Code (ICD-9-CM)**
Respiratory	473, 476-478, 493
Eye	372 (excluding 372.2 and 372.4)
Dermal	691-692 (excluding 691.0)

Non-Cancer: Time Periods

- All diagnoses considered
- Stratified analysis:
  - During exposure v. after first exposure
  - Before and after 1996 for respiratory

Cancer: Case Definition

- Target organs of SIC chemicals identified in health risk assessment
  - Significant, scientifically sound, human evidence to support association between chemical and cancer
- All cancer diagnoses included
  - Primary, Secondary, Uncertain Behaviors

Types of cancer included in the study by diagnosis code	
Cancer Type	**Diagnosis Code(s) (ICD-9-CM)**
All Cancers	140-195, 235-238, 239
Bladder	188, 236.7, 239.4
Colon	153 (excluding 153.5)
Kidney	189.0, 189.1, 236.91
Leukemia	203.1, 204-207
Liver	155.0, 235.3, 239.0
Lung	162, 235.3, 239.0
Lymphosarcoma	200.1
Nasopharyngeal	147
Prostate	185, 236.5
Reticulosarcoma	200.0

Cancer: Latency

- Typical Cancer Models: 15 years
- Promotion Model: 5 Years
- Leukemia Model: 1 Year

Methods: Case Identification

- Match Population to Medical Data
  - Diagnosis by person from any location

- Statistical Analysis
  - ≥ 5 cases
  - Risk Ratios
  - Confidence Intervals

Sources of Bias

- Missed cases
- Environmental awareness
- Healthy population effect

Questions?

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The views expressed in this dissertation are those of the author and do not reflect the official policy or position of the Navy and Marine Corps Public Health Center, Navy Bureau of Medicine and Surgery, Department of the Navy, Department of Defense, or the U.S. Government.

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