

Commission to Study Environmentally-Triggered  
Chronic Illness  
(RSA 126: A: 73)  
January 19, 2018  
Minutes of the meeting

IN ATTENDANCE: Kathleen Bush, Thomas Wold, Kerry Nolte, Joe Guthour, Rep. Mark Pearson, Rep. J.C. Salloway, Rep. Mindi Messmer, Michael Dumond, Rep. Bill Ohm, Tom Sherman

- I. Commission was called to order at 11:15 by Chairman Hon. Mark Pearson
  - a. The Chair reviewed an agenda
    1. He introduced Dr. Katie Bush
  - b. Next meeting will be February 9<sup>th</sup>.
  - c. He welcomed Katie Nolte, Nurse Practitioner.
  - d. Motion to approve minutes
    1. Wimsatt is misspelled
    2. Mr. Dumond does not celebrate a doctorate-yet.
    3. Minutes were moved, seconded and passed.
- II. Rep. Salloway presented on epidemiologic method.  
(See attached)
  - a. Rep. Ohm & Dr. Sherman and Rep. Messmer continued the discussion.
    1. Rep. Messmer summarized the goals of the commission to identify the most pressing risks to the public and recommendations.
- III. Dr. Katie Bush of DHHS spoke about sources of data from DHHS.
  - a. In particular she spoke of the need to inform the public of risks and resources
  - b. DHHS needs to author new reports from their data bases. They are working in this direction.
    1. She sees the need for community profiles.
  - c. Chairman Pearson recommended that the commission include the need for a department to continuously review data in search of unexpected health outcomes.
- IV. Meeting adjourned at 12:50

Respectfully submitted;

Jeffrey Salloway, Clerk



# Epidemiology and the Search for Certainty

## Casual Remarks by J.C. Salloway

- I. Introduction
  - A. The speaker's credentials
    - 1. Prof. Emeritus at UNH — teaching epidemiology
    - 2. Author of four books on epidemiology
    - 3. Author of dozens of published articles
    - 4. Award for total lack of humility and no sense of humor
  
- II. The Problem:
  - A. Determining
    - 1. What do we know?
    - 2. How confident are we that what we think we know is true?
      - a. Philosophy of Science, cf Kaplan, Conduct of Inquiry
  - B. Jacob's error
    - 1. The torn, bloody coat of many colors — a case
    - 2. Jacob concludes: An evil beast has killed my son.
    - 3. Assumptions
      - a. There has been a death
      - b. We know the cause of death
      - c. The perpetrator was evil — a killer rabbit [cf. Monty Python]
  - C. Our challenges in examining causes of disease in populations
    - 1. What is our evidence?
      - a. Are there biases built into our evidence? [cf. Jacob]
    - 2. What are the suspected chains of causality?
      - a. Can we demonstrate the causal chains?
    - 3. How confident are we of
      - a. Cases — are they real?
        - 1. Are there confounders?
      - b. Causes?
  - D. The importance
    - 1. Is our standard of proof agreed upon?
      - a. Scientists vs. the courts — the case of chlordane heptachlor.
      - b. In civil suit, the plaintiffs lost. In administrative action the government banned the possible pathogen.
    - 2. If we aim to intervene to reduce cases, we need to have full confidence in what we know.

### III. Types of Studies

#### A. Observational

1. Descriptive
  - a. Disease surveillance and surveys
    - i. Static and dynamic
  - b. Ecological
    - i. Comparing regions which are different in their exposures
2. Advantages of observational studies [retrospective or case-control studies]
  - a. Fast
  - b. Cheap
  - c. Intellectually appealing
3. Disadvantages of observational studies
  - a. There are no controls over duration of exposure, dose, time in the life cycle, migration of those exposed, etc.
4. Quantifying observational studies
  - a. Calculating risk
    - i. Attributable risk; attributable risk percentage
    - ii. Logistical regressions
5. Do observational studies prove causality?
  - a. No! They are indictments but not definitive proofs.
6. Do we reach hard conclusions from observational studies?
  - a. No!
7. Can observational studies be correct in their allegations?
  - a. Yes, they can!
8. How can we know? The power of statistics and the limits of proof.
  - a. A troubling tale of exposure and the search for truth — Sidney.

#### B. Longitudinal Studies

1. Most texts include studies which follow a population over time as observational studies. In a total lapse of of reason, I suggest that they are a better than pure observational studies and not as good as interventional studies. [cohort studies]
2. In a longitudinal study [prospective or cohort studies] rather than looking at data which has been collected, we follow two cohorts forward over time.
  - a. One cohort is exposed to a risk factor, the other is not.
  - b. At the end of the study, we examine the health outcomes of the exposed and the non-exposed to look for differences.
3. Advantages
  - a. This give us a much better look at causality.

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Casual Remarks by J.C. Salloway-3

4. Disadvantages
    - a. This is much more expensive and takes much longer to do.
    - b. Subject to biases in loss of subjects, subject migration, record-keeping.
  5. Overall this is a far more powerful tool to identify causality — if we have the time and money.
  - C. Interventional Studies — The Clinical Trial — the Double or Triple Blind Study
    1. The gold standard.
    2. We place people randomly in experimental or control groups.
    3. The investigator and the subjects don't know which groups they are in.
      - a. Real ethical concerns!
    4. We track the progress of both groups before and after exposure.
    5. Only at the end of the trial do we identify who got the experimental intervention and who did not. This is how clinical trials are done.
    6. Are they foolproof? No!
      - a. The Breast Cancer Intervention Trial.
- IV. So How Confident Are We That We Know What We Know?
- V. Policy Implications
- A. The Precautionary Principle
  - B. Public Health Professionals have developed the Precautionary Principle
    1. If we have some evidence that a risk factor is causal for a disease and if the disease has serious consequences and if the the risk factor can be mitigated at reasonable cost to society and if mitigation does not further damage society — we should act.
      - a. Even if we are not totally certain!
    2. However, if we are not certain and if there is substantial cost to mitigation — do we have the right to intervene and demand mitigation?
    3. And so, we are Jacob, faced with the torn and bloodied coat which is our current world.

