**Disease Investigation**

**Policy Issues**

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**Overview**

- The purpose of epidemiological research is to identify associations between exposures and outcomes, and hopefully determine ways in which disease can be prevented.
- The implementation of these prevention activities falls within the area of public health policy.
- Epidemiologists are able to obtain the data needed for policy decisions.

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**What is health policy**

- Plan or course of action that pertains to health that is intended to influence and determine decisions, actions, and other matters.
  - Set of laws, regulations, organizational practices, and funding opportunities that impact on the health of the community.
  - Policies have far reaching implications, and need to take into account not only epidemiologic research, but also culture and ethical considerations.

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**How epidemiology can be used in policy development**

- Can identify risk factors for disease
- Can evaluate the impact of disease prevention or treatment policies that have been enacted.
- The book states that epidemiologists can take an objective stance with respect to data collection
  - How data are collected, what is the exposure and the outcome may not be totally objective.

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**Example of second hand smoke**

- Early studies identified a risk of second hand smoke exposure.
- Suggestion that smoking be banned from restaurants and bars.
- Concern about the economic outcome
- Studies showed the economic outcome was minimal and the positive health effects were substantial
  - OR DID THEY????????

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**Smoking bans and heart disease**

- Studies supporting the claim that smoking bans reduce deaths from coronary heart disease are weak and questionable
  - Do not distinguish between smokers and non-smokers
  - Have limited information on actual exposure to environmental tobacco smoke
  - Differences they show in heart disease following the smoking bans could be due to secular declines in heart disease, small numbers of events, chance or other factors
- Large scale smoking cessation interventions don't show effects of this magnitude.

Conflicting results
- Ongoing challenge in epidemiology
- Early results tend to show stronger associations
- They are often based on more exploratory studies
- Followed by better designed, more focused studies
  - Generally show weaker results
- Studies occur within a political framework
  - Actions may be based on earlier research
  - Hard to back track and use newer, weaker findings

Health policies vs. laws
- Policies are not equivalent to laws as laws REQUIRE or PROHIBIT certain behaviors.
- Health policies are linked with the development of laws
  - Licensing of practitioners
  - Setting standards for environmental exposures
  - Controlling risk, seat belt laws
  - Disease monitoring

The policy cycle
- Includes several phases
  - Problem definition
  - Agenda setting
  - Policy establishment
  - Policy implementation
  - Policy assessment

Problem definition
- Problems chosen should be significant for public health
- May be a new problem (texting while driving) or reformulation of an existing problem (motorcycle helmets)
- Ongoing process to most clearly define a problem

Agenda setting
- Setting priorities
  - Consider timing, budgetary issues, resource restrictions, complexity of the issue
  - Policies need to be feasible, realistic, and workable
  - Based upon risk assessments which are difficult
  - Subject to political and news issues, what is “hot” at the moment

BPA issue
- [http://www.youtube.com/watch?v=kKSorz0HUfg&feature=related](http://www.youtube.com/watch?v=kKSorz0HUfg&feature=related)
- [http://www.youtube.com/watch?v=L1FyQfPq9r4&feature=related](http://www.youtube.com/watch?v=L1FyQfPq9r4&feature=related)
- Issues can be hard to really know well. Often we do not have sufficient information to make a fully informed decision.
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**Policy implementation**

- Focuses on achieving the objectives in the policy.
- Many potential barriers:
  - Political administrations
  - May need economic incentives
  - Advocacy groups, lobbyists
  - News reporting

**Policy assessment/evaluation**

- Determining if the policy has met its objectives.
- May be very difficult.
- Potential role for epidemiology.
- Review the Healthy People 2010 web site:
  - Obtain at least 5 HP 2010 objectives using the keyword search.

**Evidence-based public health**

- Adoption of policies, laws, and programs supported by empirical data.
- History of non-supported health measures:
  - Current issue – vetrebroplasty:
    - [http://www.youtube.com/watch?v=7Fp1HKJ1IrQ](http://www.youtube.com/watch?v=7Fp1HKJ1IrQ)

**Cost-effective analysis**

- Procedure that contrasts the costs and health effects of an intervention to determine whether it is economically feasible.
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Policies are based on risk

- Risk – likelihood of experiencing an adverse effect
- Risk assessment – process of identifying adverse consequences and their probability
- Risk perception – people’s perception of risk, often differs from reality

How do people perceive risk?

- Important factors
  - Choice
  - Necessity
  - Latency
  - Dread
  - Rare but catastrophic
  - Familiarity
  - Who is at risk
  - Trust

Choice

- Do we make the choice to expose ourselves to the risk or does someone else? ATVs are considerably more dangerous than cars but since their use is by choice the risk is not regulated, whereas cars are required to have certain safety features.

Necessity

- Some people feel compelled to take a risk (for example scuba diving) while others do not. Do you really have to run out to the store or could you get by until tomorrow?

Latency

- A delay between cause and effect is sometimes sufficient to decrease the risk perception. Many smokers discount the risk of smoking because they are not yet ill.

Dread

- A subjective evaluation of which risk is worse. Cancer by radiation seems worse to some people than cancer from smoking, probably because since radiation is invisible it is more dreaded.
Rare but catastrophic
- Although plane crashes are rarer (and have a lower risk per mile) than auto crashes plane crashes kill a large number of people all at once. For this reason airplane flights are seen as more risky.

Familiarity
- Strange risks appear more threatening than known risks. More people die in car wrecks per month than in all terrorist acts in the past 100 years yet the perception is that terrorism is more threatening.

Who is at risk
- High risks to small groups (for example coal miners) are not perceived to be as serious as smaller risks to large numbers of people.

Trust
- The perception of risk is lower if people trust the person or persons or agency in charge of that risk. As a converse example the perceived risk of nuclear power is much higher than the actual risk in part because of distrust of officials in charge of the nuclear power industry.

Hazard Identification
- Hazard - inherent capability of an agent or situation to have an adverse effect
  - Physical, chemical, environmental
- Dose-response
- Exposure assessment
  - Includes many factors
- Risk characterization
  - Estimates the number of unwarranted health events expected at different time levels of exposure

Risk management
- Actions taken to control risks
  - Environmental standards for chemicals
  - Recalls of unsafe cars, toys, etc.
  - Banning certain chemicals
- Review the Case Study of smoke free bar laws
- Refer you again to the book by Kabal examining the science behind these laws
Screening for Disease

- Presumptive identification of recognized disease or defects by the application of tasks, examinations, or other procedures that can be applied rapidly.
- Who should be screened?
  - Mass screening
  - Selective screening
  - Consider the ability of individuals to take preventive actions based on the screening results.

Two important terms

- Reliability – ability of a measuring instrument to give consistent results.
- Validity – accuracy of those measurements; often determined by comparing the measurement to a “gold standard”.

Classifying screening results

- Sensitivity – Of those with a condition, how many does a test accurately identify as positive.
- Specificity – Of those without a condition, how many does a test accurately identify as negative.
- Predictive Value Positive – Of those with a positive test, how many actually have the condition.
- Predictive Value Negative – Of those with a negative test, how many actually do not have the condition.

Challenges

- There are seldom perfect measures for sensitivity and specificity. Think of them as points on a ruler. Most of those disease free measure <6 and most of those with a disease measure between 6 and 12. But in reality, there are some people below 6 who have the disease and some over 6 who do not.
- Where do you make the cutoff?
  - It depends on whether the greatest harm is in missing a disease or falsely identifying a disease.
  - Issue with mammography screening.

Last thoughts

- Policy is complex.
- Epidemiology contributes to policy but studies are not always unbiased or are able to consider all aspects of the questions.
- Other political factors including the current political climate, risk perceptions, and financial issues play a role.