MS&E 290, Policy Analysis Assignment 1, Health Policy

1976 Swine Flu Immunization Program

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Assignment 1

- Due Start of Class, Tuesday, January 25, 2005
  - Two copies, please
- Follow paper guidelines
  - Structure from paper guidelines on course website
  - No more than five pages and 1500 words
    - not counting charts, appendices, and references
- Solo or in teams of two
  - Teams held to a higher standard
- Indicate whether you would be willing to present your work for extra credit on February 1, if asked

Paper Topic

- 1976 Swine Flu Immunization Program
  - Undertaken by President Ford in 1976
  - Primary information source
    - "The Swine Flu Immunization Program," by Stanford History Professor Barton J. Bernstein, *Medical Heritage*, July/August, 1985
    - We are distributing copies of the paper to the class

Background

- A soldier died from swine flu early in 1976
  - Raised fears of a pandemic that could kill millions
- Vaccine production and immunization plan
  - Motivated by presidential politics, public health altruism, self-promotion
  - Rushed into place to inoculate entire US population before the flu season that fall
- Vaccination program suspended late in 1976
  - Epidemic never happened
  - Fatal side effects from vaccine

Looking back on the Decision

- Anyone can make decisions after the fact after uncertainties are resolved
- Instead judge decision quality using information available to the decision maker at the time it was made
- Quality of decision based on framing, alternatives, preferences, information, logic, and commitment to action

Decision to be Analyzed

- Recommendation Dr. David J. Sencer, Director of the Center for Disease Control, made to his superior, F. David Matthews, the Secretary of Health, Education and Welfare
- Two different decisions
  - whether to produce vaccine for the swine flu
  - given it is produced, whether to distribute it before an outbreak is detected or stockpile it for distribution after an outbreak is detected

Assignment

- What recommendation Dr. Sencer should make
- Extensive insight from sensitivity analyses
  - Critical numbers are highly uncertain
- Value of clairvoyance on the type of outbreak
  - Before production decision or before stockpiling decision
  - Willingness to pay to learn earlier
- More ambitious extensions
  - value of imperfect tests
  - vaccinating high-risk groups instead of everyone
  - Be explicit about any assumptions

Assumptions: The Decisions

- Decision soon whether to produce vaccine
- If it is produced,
  - whether to vaccinate the population before an outbreak is detected
  - or to stockpile the vaccine and administer it after an outbreak is detected
- Assume there is no problem detecting the outbreak

Assumptions: Types of Outbreak

- Three possibilities for an outbreak
  - Major pandemic (with probability 0.02)
    - 200,000 deaths
    - $10 billion in health expenses and lost work
  - Normal outbreak (with probability 0.23)
    - 1,000 deaths and $100 million
  - Minor outbreak (with probability 0.75).
    - 50 deaths and $10 million

Assumptions: Vaccine Costs, Efficacy and Side Effects

- Cost of vaccinating 200 million people
  - $100 million to produce
  - $200 million dollars to distribute before an outbreak
  - $300 million dollars to distribute after an outbreak
- Efficacy of Vaccine
  - 95% before an outbreak--5% of deaths and costs
  - 90% after an outbreak--10% of deaths and costs
- Side-Effects
  - 0.2% will have costs averaging $2,000
  - 0.0001% (one in a million) will die

Assumptions: Value Model

- Consider all deaths and costs
  - Regardless whether deaths from flu or vaccine
  - Regardless who pays
  - In the spirit of cost benefit analysis
- Decision Maker would like to keep lives and dollars separate if possible
  - if necessary, value a life at two million dollars