MS&E 290, Policy Analysis
Assignment 1, Health Policy
1976 Swine Flu Immunization Program
Prof. Ross D. Shachter

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