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## Notes

1. For discussion of influenza types see the Technical Afterword.
2. *New York Times*, February 13, 1976, p. 33, col. 1.
3. Nic Masurel and William M. Marine, "Recycling of Asian and Hong Kong Influenza A Virus Hemagglutinins in Man," *American Journal of Epidemiology* Vol. 97, pp. 48-49, 1973.
4. Some weeks later some of them anonymously contributed their privately-held numerical probabilities to an academic study that applied a particular analytic technique, the so-called "Delphi" method, to the swine flu decision. Other experts also contributed numbers anonymously. See Stephen Schoenbaum, Barbara McNeil, and Joel Kavet, "The Swine Influenza Decision," *New England Journal of Medicine* Vol. 295, pp. 759-765, 1976.
5. For further information on the point, see the report of the General Accounting Office, "The Swine Flu Program: An Unprecedented Venture in Preventive Medicine," June 27, 1977, chapter 5; see also Joel Kavet, "Vaccine utilization: trends in the implementation of public policy in the USA," in Philip Selby (editor) *Influenza: Virus, Vaccine and Strategy*, Academic Press, New York and London, 1976, pp. 297-308.
6. Bureau of Biologics Workshop, March 25, 1976, Transcript p. 128.
7. Here and elsewhere we cite CBS coverage rather than that of NBC or ABC, where all reported the same happening, because only CBS retains transcripts of news stories as telecast or broadcast.
8. Officials of the Health Ministry in Ottawa told us that they had served as a "procurement agent" for the Provinces. As such they tried and failed to get vaccine from U.S. manufacturers; Washington took too long to release it for their use. They contracted eventually with firms in Britain, Germany, Australia and the Netherlands. (These new and multiple suppliers created special testing problems.) Obtaining vaccine only in October, the Canadians suspended shots when we did and like us still have abundant supplies of unused vaccine.
9. Transcript of CBS Evening News, June 22, 1976.
10. Minutes of ACIP-BoB Advisory Panels Meeting, June 22, 1976.
11. Transcript of CSB Evening News, June 22, 1976.
12. Letter from John J. Horan, President, Merck and Company (parent of Merck, Sharp and Dohme, the vaccine manufacturer), to Secretary Mathews, HEW, April 13, 1976. Comparable letters went to seven senators, four congressmen, two members of the White House staff and three

of Mathews' associates. The full paragraph in Horan's letter reporting what he had been told by his primary insurer (Federal Insurance Co., Chubb Corporation group) is as follows:

Our own insurance carrier has just told us that it is willing to insure us only against negligence or fault on our part. Moreover, because of the massive number of people involved, the carrier considers it not feasible to place any broader coverage in the existing world insurance markets at virtually any price. Thus, the carrier is willing to provide us with protection only against claims arising from our own negligence or failure to manufacture in accordance with government specifications, i.e., against those risks which are clearly our responsibility.

13. Secretary Mathews' press conference, HEW, Washington, July 13, 1976.
14. House of Representatives, Committee on Interstate and Foreign Commerce, Subcommittee on Health and the Environment, *Supplemental Hearings*, 94th Congress, 2nd Session, Serial No. 94-113, June 28, 1976, p. 19.
15. *Ibid.*, July 20, 1976, p. 208.
16. *Weekly Compilation of Presidential Documents*, Vol. 12, No. 30, July 19, 1976, p. 1180.
17. *Ibid.*, Vol. 12, No. 32, August 6, 1976, p. 1249.
18. See House of Representatives, Committee on Interstate and Foreign Commerce, Subcommittee on Health and the Environment, *Supplemental Hearings*, Serial No. 94-113, September 13, 1976, pp. 311-313.
19. The President made this comment September 2 to his Press Secretary who released it to the UPI wire service where it appeared. It was quoted by Marilyn Berger on NBC News that night.
20. Transcript, CBS Morning News, October 13, 1976.
21. Transcript, CBS Evening News, October 13, 1976.
22. *Ibid.*
23. Vanderbilt Television News Archives Index and Abstracts, NBC Evening News, October 13, 1976. The scientist quoted is J. Anthony Morris, who had been discharged in July, 1976 from BoB after a long proceeding involving his performance of research there. From then on he maintained that he had been fired in retaliation for his criticism of influenza vaccines and immunizations, up to and including swine flu. FDA officials vehemently deny the charge. The Civil Service Commission has since upheld their action. Morris continues his warnings.
24. Transcript, CBS Radio Archives, October 14, 1976.
25. Transcript, CBS Evening News, October 14, 1976.
26. Figures are taken from unpublished data compiled by the CDC. Percentages are based on populations 18 years of age and older, as of the 1970 census. This means that for 1976, percentages are overstated in areas of recent, rapid growth.
27. For full text see HEW press release, December 16, 1976.

28. Memorandum from the Secretary of HEW to the President, "Outbreak of A-Victoria and Formation of Ad Hoc Committee," February 4, 1977.
29. *Washington Post*, February 8, 1977, p. A2, Col. 1, continuation of article entitled "Limited Flu Shot Plan Urged" by Victor Cohn, p. A1, Col. 6.
30. *New York Times*, February 10, 1977, p. 38, Col. 1, editorial entitled, "The Califano Prescription for Flu."
31. *Washington Post*, February 13, 1977, p. C6, Col. 1, editorial entitled, "Swine Flu: Letting the Sunshine In."
32. United States Senate, Committee on Labor and Public Welfare, Subcommittee on Health, *Hearings*, September 23, 1976, p. 57.
33. Office of Assistant Secretary for Health, Contract 263-77-e-0076, *Reports and Recommendations of the National Immunization Work Groups*, "Research and Development," March 11, 1977, p. 4.
34. The trivalent vaccine recommended for use during the winter of 1978-79 was to include first, vaccine against Russian flu; second, vaccine against Victoria or Texas flu, and third, vaccine against the prevailing strain of mild, type-B virus. For discussions of nomenclature see the Technical Afterword.
35. See note 4.
36. In 1976 Carballo was human resources Secretary in the State of Wisconsin; Goldmark, who had held a comparable post in Massachusetts, was Director of the New York State Budget; Stevens was Goldmark's successor in Massachusetts as Secretary for Human Resources.
37. In the course of this study we screened tapes and read summaries of all relevant evening news shows on all three networks from February 1976 through March 1977. Tapes and summaries were made available by Vanderbilt University. We also read applicable transcripts of all CBS News coverage, evening, morning and radio. These came to us courtesy of CBS News. For press and magazine coverage we used clippings compiled contemporaneously for CDC. We subsequently interviewed reporters and others in both types of media.

Another view of coverage in the media is offered by David M. Rubin, "Remember Swine-flu?" *Columbia Journalism Review*, July/August 1977. Surveying samples of TV and press coverage for the week of excitement over temporally-related deaths in Pittsburgh (October 11-17, 1976), Professor Rubin finds reporting generally "... neither sensational nor inaccurate. On the contrary it faithfully reflected the confusion among public officials. . . ." This squares with our impression throughout the 13 months. Rubin is concerned for the profession of journalism. (He trains journalists at NYU.) He wishes *his* professionals had done much better than they did. We who train public servants feel we have to take the journalism "as is." For what it is worth, we think the swine flu coverage rather better than average. *Our* concern is with that confusion among officials.

Rubin has also put his findings before doctors with suggestions to

improve performance in their profession. See David M. Rubin and Val Hendy, "Swine Influenza and the News Media," *Annals of Internal Medicine*, Vol. 87, pp. 769-774, 1977.

38. For that matter, why stop with Federal programs? Deciding proper boundaries for a competition raises issues about Federal-state and public-private roles. This is one reason why such boundaries don't get set. Consider, for example, pneumococcal pneumonia, a frequent cause of death for aged persons and for others at high risk, including persons—many of them children—whose spleens have been removed after an accident. A newly marketed vaccine reliably prevents infection from the 14 common subtypes of the pneumococcus. These account for 80 percent of this pneumonia. The preventive is apparently both safe and lasting. It could prolong thousands of lives each year. The disease is not highly communicable, but it is far more serious for most of those who get it than is influenza. Does this argue for a Federal initiative? If so, at the expense of the flu program? We pose these questions not to answer them but to suggest the range of readily conceivable budgetary trade-offs. As this shows, however, a competitive arena is not easily established. In the case of influenza, none yet exists.
39. Sir Charles H. Stuart-Harris and Geoffrey C. Schild, *Influenza: The Viruses and the Disease*, Publishing Sciences Group, Inc., Littleton, MA, 1976, pp. 96-111.
40. Chien Liu, "Influenza." Ch. 27 in Paul C. Hoepfich (editor) *Infectious Diseases*, Harper and Row, 1977, pp. 271-276.
41. J. Housworth and A. D. Langmuir, Excess mortality from epidemic influenza, 1957-1966, *American Journal of Epidemiology*, Vol. 100, pp. 40-48, 1974. See also S. D. Collins, "Excess Deaths from Pneumonia and Influenza and from Important Chronic Diseases During Epidemics, 1918-1951," United States Public Health Service, *Public Health Monograph No. 10*, U.S. Government Printing Office, Washington, D.C. 1952, pp. 6-7.
42. Robert E. Serfling, "Methods for Current Statistical Analysis of Excess Pneumonia-Influenza Deaths," *Public Health Reports*, Vol. 78, No. 6, June, 1963, pp. 494-506.
43. T. C. Eickhoff, I. L. Sherman and R. E. Serfling, "Observations on excess mortality associated with epidemic influenza," *Journal of the American Medical Association*, Vol. 176, pp. 776-782, 1961.
44. Albert B. Sabin, "Mortality from Pneumonia and Risk Conditions During Influenza Epidemics: high influenza morbidity during non-pandemic years," *Journal of the American Medical Association*, Vol. 237, pp. 2823-2828, 1977. Epidemiologists from CDC published a response to Sabin's article criticizing his methodology, but acknowledging that CDC excess mortality estimates are likely to differ from those based on NCHS mortality data for the entire country. See Michael B. Gregg, Dennis J. Bregman, Richard J. O'Brien, J. Donald Millar, "Influenza Related Mortality," *Journal of the American Medical Association*, Vol. 239, pp. 115-116, 1978.

45. See, for example, Marc Lalonde, *Hospital Morbidity and Total Mortality in Canada*, Canadian Department of Health and Welfare, Long-range Planning Branch, Health Programs Branch, Ottawa, Ontario, October, 1973.
46. These are published as a series by the National Center for Health Statistics. See, for example, "Current Estimates from the Health Interview Survey, United States—1974," Vital and Health Statistics, Series 10—No. 100, DHEW Publication No. (HRA) 76-1527. September, 1975.
47. C. H. Stuart-Harris, G. C. Schild, *op. cit.*, pp. 38-39.
48. *Ibid.*, pp. 57-68.
49. This designation indicates a Type A influenza virus first isolated from man in New Jersey in 1976. It contains Hsw1 hemagglutinin (first identified in virus isolated from swine) and N1 neuraminidase.
50. W. I. B. Beveridge, *Influenza: The Last Great Plague*. Heinemann, London, 1977, p. 9.
51. C. H. Stuart-Harris, G. C. Schild, *op. cit.*, pp. 146-148.
52. W. I. B. Beveridge, *op. cit.*, p. 33.
53. Epidemic influenza has a predilection for winter yet most pandemics have begun outside the winter months. *Ibid.*, p. 46.
54. *Ibid.*, pp. 34-35.
55. *Ibid.*, pp. 24-38.
56. The theory was first espoused by Nic Masurel and William M. Marine, "Recycling of Asian and Hong Kong Influenza A Virus Hemagglutinins in Man," *American Journal of Epidemiology*, Vol. 97, pp. 44-49, 1973.
57. S. C. Schoenbaum, M. T. Coleman, W. R. Dowdle, and S. R. Mostow, "Epidemiology of Influenza in the Elderly: Evidence of Virus Recycling," *American Journal of Epidemiology*, Vol. 103, pp. 166-173, 1976.
58. C. H. Stuart-Harris, G. C. Schild, *op. cit.*, pp. 62-68.
59. W. I. B. Beveridge, *op. cit.*, p. 78. See also W. R. Dowdle, "Approaches to the Control of Pandemic Influenza," International Conference on the Application of Vaccines Against Viral, Rickettsial, and Bacterial Diseases of Man, Washington, D.C., 14-18 December 1970, pp. 86-87.
60. The 1950 virus was a further minor drift; it now has reappeared as Russian flu.
61. W. R. Dowdle, "Influenza: Epidemic Patterns and Antigenic Variation," in Philip Selby (editor), *Influenza: Virus, Vaccine and Strategy*, Academic Press, New York and London, 1976, pp. 17-21.
62. See, for example, J. Kavet, "A Perspective on the Significance of Pandemic Influenza," *American Journal of Public Health*, Vol. 67, pp. 1063-1070, 1977.
63. "Amantadine for High-risk Influenza," *The Medical Letter*, Vol. 20, No. 5 (Issue 500), March 10, 1978.

64. G. F. Jackson, "Sensitivity of Influenza A Virus to Amantadine," *Journal of Infectious Diseases*, Vol. 136, pp. 301-302, 1972. See also A. Chanin, "Influenza: Vaccines or Amantadine," *Journal of the American Medical Association*, Vol. 237, p. 1445, 1977.
65. Chien Liu, *op. cit.*, p. 275.
66. C. H. Stuart-Harris, G. C. Schild, *op. cit.*, p. 203.
67. *Ibid.*, p. 164.
68. *Ibid.*, p. 150.
69. J. Salk and D. Salk, "Control of Influenza and Poliomyelitis With Killed Virus Vaccines," *Science*, Vol. 195, 4 March 1977, p. 842.
70. J. W. F. Smith, "Vaccination Strategy," in P. Selby, *op. cit.*, pp. 277-78.
71. *Ibid.*, p. 278.
72. C. H. Stuart-Harris, G. C. Schild, *op. cit.*, pp. 185-193.
73. D. A. J. Tyrrell, "Inactivated Whole Virus Vaccine," in P. Selby, *op. cit.*, pp. 137-140.
74. E. D. Kilbourne, "Future Influenza Vaccines and the Use of Genetic Recombinants," *Bulletin of the World Health Organization*, Vol. 41, 1969, p. 643.
75. H. B. Dull and W. R. Dowdle, "Influenza," in P. E. Sartwell (editor), *Marcy-Roseman's Preventive Medicine and Public Health*, 10 ed., Appleton-Century-Crofts, New York, 1973, p. 74.
76. W. I. B. Beveridge, *op. cit.*, p. 95.
77. J. W. G. Smith, "Vaccination Strategy," in P. Selby, *op. cit.*, p. 280.
78. C. H. Stuart-Harris, G. C. Schild, *op. cit.*, pp. 148-159.
79. H. B. Dull and W. R. Dowdle, "Influenza," in P. F. Sartwell, *op. cit.*, p. 72.
80. C. H. Stuart-Harris, G. C. Schild, *op. cit.*, 175-6.