

So much for the swine flu story as we understand it now. The story conveys lessons large and small. Many of them leap out of the narrative. These we won't belabor. There is no need, for example, to suggest that Ford—or by extension Carter—should not have been out front. The thing suggests itself. But we *are* moved to offer further comment now on certain critical phenomena: program reviews, implementation analyses, media reactions, agency reputations, and slippery diseases.

Mindful of our charge, these five bear on decision-making at the level of the HEW Secretary.

### 1. *Building a Base for Program Review*

In its notable report on the swine flu program, presented to Congress June 27, 1977, the General Accounting Office made one major recommendation:

... when decisions must be based on very limited scientific data, HEW should establish key points at which the program should be formally reevaluated.

With some justice, Sencer, among others, says that this is nothing new, indeed was done in 1976, except for the matter of form. There *were* three reevaluations of a sort, one in June after the first field-trials, one in July, leading the President to push Congress, and the third in December, leading to suspension.

What more could anyone want? By way of answer, the GAO Report puts stress on form, on step-by-step review matching the steps in initial decision. December perhaps qualifies; June and July do not. We have no quarrel with this, but would go farther. As we see June and July, they demonstrate an aching need for something besides form.

The need is two-fold: first, a tracing out of the relationships between deadlines and each decision; second, an explicit statement of assumptions underlying each decision. As for deadlines, Sencer's action-memorandum of March 1976, with its two-week go-or-no-go, actually obscured, not clarified, relationships between deadlines and individual decisions. Argu-

ably the decision to *begin* manufacturing (prepare recombinants and purchase eggs) was under such tight timing. But the decision to institute a mass immunization program was not. These could, and we believe should, have been separated at the outset.

Still, no distinctions among deadlines could have contributed to subsequent review without explicit analysis of the assumptions on which Sencer's all-rolled-into-one decision rested. Explicit means detail, not just strong possibility of a pandemic, risking another 1918, and an available technology, but also *high-yield* eggs, *one* dose per person, *high* efficacy, *unparalleled* acceptance, *favorable* publicity, *sustained* congressional support, *wide* private involvement, *adequate* state operations, *three* months to complete vaccinations, *no* useful stockpiling, *no* liability legislation, *few* (if any) opportunity costs, etcetera. In short, we advocate a comprehensive definition and review of assumptions everyone can see and weigh before decision and remember after. The review thus should be public. This seems to us a proper base for formal reevaluation.

Without it, we doubt reevaluators will be any better off than Ford was in July and early August 1976. Having publicly expressed in March no "ifs" except uncertainty about the coming of pandemic—which did not distinguish likelihoods in spring from those in summer, or differentiate spread from severity—he had no grounds to think about a change. As long as Cooper told him "it" remained a possibility with probability "unknown," Ford was stuck. Anyone would be.

We can see two ways to derive the details and distinctions for a useful analysis of the decision. One is to get the issue posed according to its component parts and argued in probabilistic terms. The other is to hunt for answers to the question Sencer once was asked by Alexander, in effect:

What evidence on which things, when and why, would make us change the course we now propose, and to what?

We do not see these two as mutually exclusive, and we think both are of use. Either would allow for reassessment of earlier decisions. The first may be best but will be hard indeed to get from public health officials. If so, the second becomes the Secretary's recourse. It is the nearest substitute we can suggest for probability analysis.

For purposes of sharpening assumptions and distinguishing them, nothing beats an exercise in probability. Deciding on a swine flu program is like placing a bet without knowing the odds. A serious stake in the outcome ought to concentrate the mind on breaking down the issue and scrounging for anything that might inform judgment. If one has "scientific"

evidence from laboratory tests, one need not scrounge, but swine flu decisions are not like that. Expertise counts for a lot, but only by way of informing subjective judgment. To assign a number to the likelihood that something will occur is to expose one's judgment for comparison with that of others. This leads to explicitness about everyone's reasons. If two people assign different numbers, the question becomes, why? That starts them digging into the detail of their own—and each other's—reasoning.

But doctors, at least of the older generation, rarely think in probabilistic terms and, if asked, dislike it. Some of the scientists involved with the swine flu decision did participate in an exercise to estimate the probabilities of an epidemic and its severity. This was not done as part of any decision-making deliberation, but as an academic exercise, a favor for a colleague writing a paper.<sup>85</sup> As scientists accustomed to thinking about experiments and "truth," they were uncomfortable expressing subjective estimates, even if based on expert knowledge and experience. They resented having to quantify their judgments.

Indeed, they think that it is unprofessional to express judgments in terms they cannot call scientific, worse still to express them in the presence of laymen. They see placing precise numbers on uncertainties as an incitement to public misunderstanding. Sencer and Cooper were proud of their refusal to put numbers on the possibility of a pandemic, proud to refuse Mathews, still more Ford. That augurs ill for any Secretary's persuasiveness in this regard with their successors.

Doctors, like other people, often think simplistically when, as so often happens, they must judge despite themselves on grounds other than laboratory evidence. Stallones explained to us that in his view the logic of decision at the ACIP meeting, March 10, 1976, is best conveyed by a simple, four-cell matrix. A program curbing a pandemic equals public health, ditto a program without a pandemic, ditto neither; only in the fourth cell, a pandemic without a program, does the public health suffer avoidable harm. And health was an absolute value. This is as simplistic as Sencer's next step, bundling up all pieces of the issue into one decision with one deadline, and pressing it on his Secretary. "Strong possibility with probability unknown," once down on paper, leakable at will, is at an opposite extreme from the detailed definition of relevant assumptions we suggest that the decision-maker seek.

But turning around tendencies like these is probably best done without demanding numbers which offend professional pride and inclination.

The question ACIP left unanswered is the next-best source of the

explicitness and detail we suggest: "Which evidence would make us alter course to what?" Meetings of expert influenza panels can develop answers. Left to their own devices, this is unlikely to happen. Groundwork must be done in advance. What is needed is a preliminary breakdown of the decision problem, expressed as a set of derivative questions. Along with the questions there need be agreement on procedures which facilitate the asking and the answering.

On January 30, 1978, for instance, Califano's advisory group did have a set of specific questions. Although the chairman's report is intelligently organized according to the questions, nobody at the meeting forced a systematic and detailed airing of views on each question, one by one. That is the nub, and the rub.

Detailed answers are not treated as the purpose of such meetings. It is not in the tradition of the medical community. Details invoke disagreement. If one foresees a mild pandemic when another thinks that a pandemic, while remote, would be severe, both can agree on immunization without arguing spread or severity. Who wants the argument? Nobody, except perhaps the decision-maker. Even he is likelier than not to feel, when a mild flu impends, that he needs only a consensus on the most general conclusions. But if he wants to lay a base for later review, he will find he also needs the details. He has to insist on their pursuit. Nobody else can or will.

To illustrate the sorts of questions an insistent Mathews or a Cooper might have imposed on advisory committees in March 1976, we have taken a first cut at an appropriate set of questions for the next threat of a severe pandemic. These are included in Appendix E. We think them applicable to any pandemic, although in situations of apparent mildness, like Russian flu, one need not linger long.

The best of expert panels should be supplemented by separate scientific advice. In a swine flu case when evidence is thin—with unobserved phenomena vastly outweighing observations from the three pandemic years of 1918, 1957, 1968—it is not only the assumptions but appraisal of their scientific quality that top decision-makers need. Panels tend toward "group think" and over-selling, tendencies nurtured by long-standing interchanges and intimacy, as in the influenza fraternity. Other competent scientists, who do not share their group identity or vested interests, should be able to appraise the scientific logic applied to available evidence. In medicine, as in law, there are rules of evidence by which argument can be tested. A Califano needs an assured source of such review to do for him what a good science adviser does for the President. The Secretary may not need one designated "adviser." In medical fields

his Department has plenty of scientists. The problem is to make them scrutinize and check each other's logic for his benefit.

In the course of our study we have gained the impression that Califano and his present heads of CDC, NIH (the home of NIAID) and FDA (the home of BoB) have evolved collegial relations close enough and organized enough to test the logic of enthusiasms from below. The Assistant Secretary joins in as a counselor to all. This fivesome seems to work with mutual confidence. If a swine flu case with all its threats and doubts arose today, they probably would talk it out together before writing memoranda to each other. They would do so, at least, if they were not all equally inhibited by bureaucratic stakes or activated by the same professional agendas. Since three of them are linked from underneath, these are substantial qualifications.

This collegium depends on personal relationships. It cannot be a long-term means to give successive Secretaries the reviews they need. It may, however, work for Califano if he takes sufficient pains to induce candor from his colleagues independent of their institutional positions. Otherwise he needs an outside source.

Nowadays if Califano cannot get a check on scientific logic for himself, there is an OSTP to do it, not for him but for Carter. An issue should not rise that high without a test of logic. If it does, however, the President is now somewhat protected. In 1976, had there been an OSTP related to the OMB in current fashion, Ford would not have been dependent on a single, formal meeting of those improvised "advisers" in the Cabinet room. But Califano's needs are not the same as Carter's and cannot be satisfied by OSTP. It does not exist to serve him.

Thus far, advisory panels in the public health field, even including Califano's *ad hoc* groups, have not proceeded in a fashion to assure explicit statements of underlying assumptions, nor has the Secretary yet systematized the science advisory function. We think we understand why. Immunization issues thus far decided in this Administration are so much narrower than Sencer's program of two years ago as almost to defy comparison. The differences stand out: the argument has not run to implementing an unprecedented venture with a palpable effect upon 200 million people. Nor has it run to risking institutions and careers, or other programs. It has not been couched in terms to make senior officials glimpse themselves as heroes, neither has it hinted at a gun to Califano's head. So he has had it easy up to now. What he has seen so far is no assurance that advisory arrangements as they stand will be sufficient in a harder case like swine flu.

Influenza may not be the source of the next hard case. Indeed, it almost surely won't be, unless and until someone foresees another killer wave, another 1918. The flu-ologists have been cooled down. The next hard case is likelier to come from somewhere else and, superficially, seem different.

## 2. *Thinking About Doing*

Implementation is not only something to be done after decision, it is as much or more a thing to think about before decision, right along with substance. Of this there was but little in the swine flu case. If Cooper had a tendency to tell himself that he could "doctor his way through," so did almost everyone else.

Had Cooper paused to think about, to ask about, to probe, uncertainties in children's doses for example, or in production schedules, or in CDC relations with voluntary agencies (to say nothing of medical practitioners), he might have been less cavalier with Young, less content with Meriwether and more cautious about CDC's capacity to manage. Had he paused to contemplate the combination of far more intense surveillance than before with far more people getting shots, he might have promised the health subcommittees less and prepared them better for Legionnaire's Disease, coincident deaths, Guillain-Barré.

The lack of such forethought is no medical monopoly. Had Mathews paused to probe casual assurances that contracts would suffice for liability, he might have warned the President that they had legislation in their laps. This almost surely would have altered much about their consultations, timing and publicity. It also could have raised the spectre of delay in Sencer's schedule, encouraging a close look at his deadlines. It is too much to hope that Mathews might have foreseen the insurance strike (which had never happened before). It would have been enough for him to see that contracting meant foot-dragging by manufacturers, which Kennedy and Rogers had the means to cure—if they chose to cooperate—more surely than Barrett or Feiner.

Even Sencer, urgent as he was once he decided, might have shaped both his decision and his conduct rather differently had he paused to consider dosage problems, ghetto problems, skeptical physicians, media reactions, *and* the fruits of the most serious surveillance ever tried, *if* there were *not* a visible pandemic. The probability of no pandemic was always higher than the chance there would be one, as Sencer heard from almost everybody except Kilbourne. In combination with these other factors the more likely case held dangers for the credibility of CDC. That should have made Sencer keen to hear what Alexander, from the prov-

inces, was trying to convey. But Sencer seemingly allowed concern over the worst case to obscure thoughts about this likelihood.

In our view a version of Sencer's "minimum response"—with stress upon an idea like "we can't do more until we know more"—would have served the country well even if another swine flu outbreak had occurred. Or his "combined response," the one adopted, could have done it had he made the starting date for his mass immunization contingent on a trigger everyone could understand. If he feared subsequent decisions from a hostile OMB or an electioneering White House, he could have urged preparedness and devised an *automatic* trigger, say a second outbreak of a given size (verified, no doubt, amidst a hullabaloo like the first days of Legionnaire's Disease). Then would have come the time to "doctor through," aided and abetted by the ingenuity of the whole country.

Alternatives like these might have occurred to someone thinking in detail about the do-ability of an all-out response *absent* another outbreak. With no further sign of swine flu, skeptical states still were unprepared six months after Ford's announcement. Leading skeptics claim to us that they could have both planned and vaccinated (if supplied) within two months had swine reappeared. The tort claims bill that Congress put through in a week might still be pending save for Legionnaire's Disease. Tangibility makes many things more do-able. Its absence is a drag.

Thinking about doing does not happen in a vacuum. It occurs in people's heads and is unlikely to illuminate save as it intersects something already there. With 1918 in their heads, let alone 1957, 1968, Sencer and the others presumably would have gone forward anyhow. In March, 1976, a positive response of some sort was a sure thing. But more attention to the do-able would almost certainly have altered emphasis and scope. So at least the hopeful light of hindsight makes it seem.

Moreover, what could not be changed could surely have been watched. If not a call to action then a warning for the future would have followed from a look at *operational* assumptions, the assumptions about what, when, how, by whom. To pause over these, and to probe them, can do for implementation what probability analysis and Alexander's question do for substance: lay a base, provide a referent, give a time frame, sound alarms.

Sencer obviously gave *some* thought to do-ability. We argue only that it could have served his purpose (and the public's) to think farther ahead in more detail. His action-memorandum suggests plainly that he thought about the most immediate aspects of implementation: egg supplies, appropriations, planning. The first he sought to meet head on, the second called for circumventing OMB's accustomed stance. His memo shows

detailed concern for both. The third he meant to improvise with Millar, Seal and Meyer; all were at hand. Perhaps they were too handy. In retrospect, here's where he should have probed details but evidently didn't.

In immediate terms, Sencer gained a tactical advantage by attaching to the manufacturing decision, with its short deadline, the less tightly constrained decision to inoculate. But this deprived him of strategic opportunities to think through consequences of the likely case, the case of no pandemic. And it squeezed down to two weeks the time available for everyone from him through Ford to probe mass immunization before they embraced it.

There are both relatively fancy and quite simple ways to pause and probe the doing before doing it. Engineers learn project management techniques for specifying every forward step. Some schools for public service teach a course on "implementation analysis" which urges students to try mapping *backward* from the last act they intend, identifying prior actions needed as prerequisites. And one of PHS's senior staffers put that exercise to us in simpler guise:

Hell, the thing that was needed in planning the swine flu program was a day around the table brainstorming Murphy's Law: "If anything can go wrong it will"; and all the permutations anyone could think of. That would have done it. It certainly would have caught a lot of the things that went wrong—they weren't so hard to think of, after all.

There are two good times for this. One time is *after* the decision, customarily a period for implementation planning. That time is not at issue. In the swine flu case, Millar and his assistants from their vantage points at CDC did something of the sort (although they certainly were unimaginative about Murphy's Law). The other time, however, is *before-hand*, allowing one to weigh, *in* the decision, estimates of some sort about difficulties, likelihoods and costs of going wrong. But Sencer, though he did this in a way with his own staff, suffered from squinty vision on the public side of management. And Murphy's Law, or backward-mapping, or whatever, was distinctly not pursued by Cooper in advance of his decision. Once *he* decided, it became too late for others to weigh implementation issues very differently.

Cooper's own agenda when the program came along stressed voluntary agencies, practitioners, and parents. We argue that this should have made him sensitive indeed to manifold details of implementation, not least children's dosages, and keen to brainstorm troubles in advance of a decision. But that is an administrator's logic. Cooper was also a doctor. Sencer's validation, once checked out, invoked the absolute regard for life which argued a decision first and details after.



This strikes us as a crucial point. Cooper, the Assistant Secretary for Health, was better placed, by far, than Mathews or the White House to check out Sencer's action-memorandum in these managerial terms, thinking of the doing. But what would have lent weight to Cooper's thoughts was less a matter of administrative status (which could not have stopped insistent agency officials) than of professional standing as perceived in Congress and White House alike. Yet being an M.D., being indeed the only medical practitioner among Assistant Secretaries, he was almost bound to heed the same call Sencer heard: "If we believe in preventive medicine, we have no choice." Why then think farther ahead than Sencer about implementation issues in advance of choice?

Mathews, not a doctor, responded to the same imperative. This left Ford's staff to do the heavy thinking about implementation in advance. Time was short and they were just too far away. Had Mathews seen the issue and his own task differently, his staff might not have been much better off than Ford's.

This leads us to the view that HEW could use an advisory group of political administrators from which panels could be drawn to help Assistant Secretaries and their agency heads think about prospective public interventions. Imagine Cooper or Sencer being asked by Mathews to call in a panel of say, Manuel Carballo from Wisconsin, Peter Goldmark from New York, Jerald Stevens from Massachusetts, a couple of strong state health commissioners, a couple of local counterparts, one or two sophisticated practicing physicians, all spiced by a manager or two from private life, or even (shades of Rockefeller) from the Pentagon.<sup>86</sup>

This is not at all the sort of body others recommend for an immunization commission. Nor could a commission do what is intended here. The group we now suggest is not meant to be representative of scientists or interests. Neither is it meant to have a scientific mission, nor even a fixed area for oversight. Rather we suggest a reservoir of talent, selected for practical knowledge not representation, from which panels are drawn when wanted. The panelists should come from places where health interventions actually are carried out. Their purpose is to bring a feel for the intricacies of implementation. Their agendas should be far removed from the routine.

Granting that it would be hard to keep such a group well enough informed for use, and used enough, we think this worth exploring.

### 3. *Thinking of the Media*

In the swine flu program, perhaps the greatest defect in the plans for

what to do occurred when public health professionals tried thinking about newsmen. There was a glaring lack of institutional connections between medical professionals of every stripe and anybody knowing much of anything about the news profession, above all television news, the primary news source for most Americans. What was at stake amounted less to influencing coverage—in any event hard to do except for fleeting moments—than to anticipating it, preparing for it, weighing in the balance of decision both prospective benefits and costs. In a mass program this is crucial to the thinking about doing. It was badly done.

There was little expertise at hand about the trade of television journalism, to say nothing of production. The Public Information Officer at CDC came out of publishing, not any sort of journalism, although he was conscientious in his services to journalists, which is what he should be. Sencer and Cooper were part of a medical generation unused to having its motives questioned. Meyer and Seal looked back to 1957, the first year "television homes" began to rival "radio homes," a far-gone age in television's history. Cavanaugh and O'Neill, politicized bureaucrats both, had less than infallible instincts, and anyway did not have the *time* to sharpen them up; network news was televised during their working hours. Some of Mathews' aides may have had glimmerings; Cooper walled them off. The Information Officer in PHS is said to have been street-wise; he was not consulted.

Still, however thin the in-house expertise on media reactions, experts in influenza made almost no effort to secure it or improve on it. They evidently saw no need. They may not have conceived that there was anything they lacked. In all events, they acted as though journalists were (or should be) but conveyor belts for medical professionals, with no professionalism of their own or none, at any rate, worth deference from doctors.

There followed one egregious error after another. When Sencer shoved a technical consensus somewhat past its freely given limits, inside CDC and out, he was asking for leaks from insiders and defections from advisers. How could they resist TV? It was almost sure to come their way. Controversy spices life on television news, prized by producers, hence by reporters, built into their incentives, bound to be pursued on the occasion of White House announcements in election years. By the same token, Cavanaugh should have strained to assure himself of Sencer's troops, especially the younger generation closest to the lab, those likeliest to be in love with their experiments more than Sencer's policies.

In June, to take another instance, Sencer argued that Americans iden-

tify immunization with their children and that an announcement giving up on children was unthinkable so early in the day. Well and good, but better had the thought occurred in March when there was time to do something about it.

Later in the day, for a third instance, someone at CDC should have remembered early talk of temporally related deaths, and been prepared for Pittsburgh. A Pittsburgh almost had to come and surely should have been rehearsed in early consultation with the states. While negligent production, a "bad batch," was an alternative cause until ruled out, this only is to say that states should have been briefed on both alternatives. What was most damaging in news announcements were the hesitant and variable reactions in the states. These might have been blunted or avoided. They might, that is to say, had the anticipation of such coverage been anybody's business, or more precisely that of anybody with some talent for it.

Still later, the public problem posed by Guillain-Barré syndrome—inability to state the risk for a consent form—need not have taken unawares anyone who bothered to consider Hattwick's search for side effects, the unknowns he expected to trace. Some members of the public health community consider it a moral outrage that, with Hattwick's expectations, the program was allowed to proceed. Since the side effect discovered can be estimated now at one fatality in some two million, we ourselves eschew the moral issue. But the operational issue, what to do with something new while risks are under study, could have been faced earlier. The issue never surfaced in advance at CDC; not arising there it could not arise at higher levels.

A Califano should be able to build links between medical specialists and advisers who can help them come to better terms with television news. Their need is to stop thinking about "shoulds" (TV *should* convey our message as we conceive it) and to start thinking about what can reasonably be expected from the medium in given cases, assuming both reporters and producers do decent work in *their* profession's terms. On that standard we find relatively little to complain of and some things to admire in our sampling of the swine flu TV coverage.<sup>87</sup> As the Secretary deals with public health officials, he has either to make doctors appreciate electronic journalism, a hard job, or to help the Assistant Secretary and his agency chiefs instill some good sense about television into their advisory system. Daily news reporters and producers cannot serve. Corporate executives don't substitute. Trade associations are not in point. Thoughtful politicians or reporters once-removed from daily news are needed. Seeding one or two into the panels of political administrators

we propose might have a large effect. Could a Moyers be borrowed? Is a Severeid wholly retired?

Unlike most Federal departments, HEW because of size decentralizes press operations. The Assistant Secretary for Public Affairs and the press officer of the Department serve the Secretary. They review all releases nowadays (a change from 1976), but PHS and CDC still have their own press offices. In a swine flu case, unprecedented, urgent, national in scope, the departmental staff seems better placed than others to anticipate reactions by and through the media. It is better placed because it deals more regularly than others with reporters on the beat from networks, wire services and national newspapers. Although more sparsely covered than the Pentagon or White House, HEW is now a beat; the daily work of journalists on national news stories should be known there. But departmental staff—also that of PHS—was on the sidelines in the swine flu case. Judging from the early struggle over organization, this had not been Mathews' intention. It was, however, the effect of Cooper's preemption. The *ad hoc* press officer for swine flu became Meriwether, who had everything to learn.

#### 4. *Maintaining Credibility*

One of the things at stake in media relations was the credibility of Ford's expert advisers with attentive publics: medical, political and press circles alike, and influential citizens from other walks of life who helped to set the tone of wider groups. The President could offer visibility, but in his circumstances as a primary campaigner he had no credibility to spare; indeed his needs ran the other way, he had to borrow. Those he borrowed from were on the one hand individuals established in their own careers, like Salk or for that matter Cooper, and on the other hand the agencies established in the field of public health, like CDC.

The swine flu program put the latter's reputation on the line. This, remarkably, was not at Ford's initiative. Rather it was the doing of the agency's director. Still more remarkably, neither Sencer nor his bosses, Cooper, Mathews, Ford, seem to have considered whether there was need for this or what might be its cost.

Two years later, mortgaging the reputation of the CDC to swine flu does seem costly. As the science reporter for a TV network commented to us:

CDC was almost the last Federal agency widely regarded by reporters and producers as a *good thing*, responsible, respectable, scientific, above suspicion. This gave Sencer terrific clout. The Presidency after Watergate, the military after Vietnam, physicists, universities, to say nothing

of HEW or Congress for God's sake—none of them remotely in the same league! Even a hint that any one of them was blocking Sencer's urgent memo would have been a big story . . . human interest . . . good guys (the best) against bad. . . . Now CDC's lost its innocence. . . .

The innocence has gone, and with it clout, not for all time, as memories fade and new impressions take hold (if they do), but for some years. The loser is not likely to be CDC as such but rather new departures in preventive medicine. When it espouses these it almost surely will be tagged as crying "wolf."

If CDC should happen to foresee correctly the next public health disaster, then its loss of status may affect the lives of citizens. That was and is the reason for concern about its reputation in the longer run. What is to us remarkable is that, so far as we can find, no one from Sencer up gave this a thought (and those below who did, or now believe they did, were brushed aside).

Here, we think, was a missed opportunity, indeed two opportunities in one. Sencer concentrated on the worst case in the shortest run. So did his superiors. Had they thought equally hard about the likely case in the longer run—side-effects and suits but no pandemic—the issue of diminished credibility for CDC would have loomed large, hard to ignore. Or had they started at the other end by thinking about CDC's prospective reputation, this should have made the likely case stand out against the worst: the likely case might very well be harder on the agency. Either mode of thought leads toward the other. Both induce concern about the role of CDC. Both pile up doubts about the role that Sencer chose, the super-salesman's role.

Had Sencer posed the issues candidly, with the uncertainties spelled out, the likelihoods compared, deadlines unscrambled and production his immediate concern, the credibility of CDC would now be better than it is. Had he not sought control of operations it would be still better.

Cooper and the laymen in their turn performed just as had Sencer, buying his argument, selling the next echelon. This did not help CDC preserve its innocence, but does add to our sympathy for Sencer. Everybody *wanted* to be sold.

To tie the reputation of an agency to short-term fears (or hopes) was not Sencer's invention. On the contrary, it is an everyday affair, at least in Washington. Sencer has plenty of company, some of it presidential. Nixon risked the reputation of the White House itself. Others have been cavalier with institutions more removed—Johnson's escalation of the Vietnam war was classic in its consequences for the Army, one of many.

Presidents, of course, are at the center of the storm, struggling with irreconcilable expectations while claiming the legitimacy of national election. They and their fellow politicians on the Hill are supposedly responsible for balancing short-run and long. Their judgment, within limits, has the sanction of our constitutional system.

Sencer was not President. Yet as he did his work this may be a distinction without a difference. For he evidently thought it was his task to make his constitutional superiors do right no matter what they thought (and so he did). He also made them do it with but little time to think.

Legitimation by election, the embodiment of popular sovereignty, is a far cry from legitimation by professional training and consultation. The first is a political value, the second a scientific one. Not even *pro forma* is there any means to reconcile the two. Unlike the military, medical professionals do not have in their value system a ready rationale like "commander-in-chief." Sencer pushed his bosses without stint. They were his constitutional superiors but that gave him no pause. Cooper aside, they were laymen. Sencer evidently held the not uncommon premise that the boobs could not be trusted to decide right on their own.

This we believe is what made him a salesman. On that premise he could not afford to take the opportunity we say he missed, could not allow himself to dawdle over either of the questions we propose—neither what's the likely case over a longer time, nor what's the risk to CDC's reputation. Had he pursued them, either one, he soon would have been led to the more open stance of a technician serving up to his superiors the data for *their* judgment. We think this stance both prudent for his agency and proper in his role. Plainly he did not think so.

As a prerequisite to playing the technician's role, a man in Sencer's shoes has to accept the notion that the politicians may be boobs but it is they who were elected.

##### 5. *Thinking Twice About Medical Knowledge*

We have called influenza a "slippery" disease. Five features combine to make it so.

*First* is the changing character of the influenza virus, with spread and timing mortgaged to the processes of antigenic change about which there are painfully few documented observations. As for severity, the specialists are almost wholly in the dark. Nothing is sure, not even the reasons why 1918 was the worst flu of all.

*Second*, the effectiveness of influenza vaccine is relatively short-lived.

Its effectiveness may be compromised by minor antigenic drifts in the virus, which are frequent. Moreover, most experts believe that, even in the absence of drift, effective protection lasts only for about a year.

*Third*, influenza symptoms are widely misunderstood. Millions of Americans, and perhaps half the doctors in the country, use the term for a variety of gastrointestinal troubles, "stomach flu," which no flu virus causes and no flu vaccine cures. Influenza is found in the respiratory tract and there alone.

*Fourth*, although it resides in the respiratory tract, it is by no means the only virus likely to be lurking there and may not be the major source of flu-like aches and fever. If not, then immunization against influenza, even assuming that the vaccine fits the strain and that it actually immunizes, safeguards nobody from identical symptoms caused by other viruses.

*Fifth*, the multitude of causes of flu-like illness make it difficult to estimate the year-to-year impact of the influenza virus on the public health. Especially in non-epidemic years, the proportion of flu-like illness actually caused by the flu virus is unknown.

We elaborate on these five features in our Technical Afterword.

Without more evidence of swine flu's spread than Sencer had in March, 1976, consider how these features mock his objectives, and Cooper's. What a basis on which to build public consciousness and to seek support for preventive medicine! What a basis on which to risk the high repute of an establishment like CDC! What a basis, for that matter, on which to expose 40 million people to an unknown risk of side effects! And all this on the word of experts, overconfident in theories validated through but two or three pandemics, without any proper review of their logic by disinterested scientists. It is not that conclusions were inconsistent with evidence, but that the paucity of evidence belied the force with which conclusions were advanced.

Contrast influenza's features with those of well-established Federal immunization targets, measles and polio, or smallpox in its day. For the established targets, causes, symptoms, treatments, risks are understood alike by doctors and laymen. Immunization "immunizes": it prevents the symptoms for all time, or for several years at least. From decade to decade there are no antigenic shifts. Compared to the slippery flu, these are stable targets indeed. Medical and public health professionals, congressmen, administrators, parents, children, journalists and citizens at large all know what they are shooting at.

The comparative aspect is critical. All diseases are slippery in some degree. All interventions risk, to some degree, the credibility of institutions. But to treat swine flu as though it were the polio of twenty years ago is to beg for trouble. The two diseases have some tempting likenesses but in these key respects they are at opposite ends of the spectrum. When this country started on its campaign against polio it confronted a well understood disease with methods that worked as advertised. Contrast the swine flu program. It oversold a method of ostensible protection from the paradigm of slippery diseases. The risk to credibility was rendered as extreme as was the combination of its five slippery features.

Up to 1976, the Federal government had drawn a line, perhaps unconsciously, between stable and such slippery diseases. Swine flu represented the first Federally sponsored and financed mass immunization at the slippery end of the spectrum. Diseases at the stable end had been an exclusive company. Its members shared an inferential base of medical knowledge, public understanding, and support, far beyond that now accorded influenza. On the evidence of swine flu, it is tempting to propose a restoration of the former line, and consciously bar slippery diseases, flu included, from Federal immunization initiatives. The stress would be on research until they were rendered less slippery.

This may fit other slippery diseases, but not flu. In contrast with the common cold and possibly some cancers, influenza has one very solid facet: specific preventives that precisely match some demonstrable risks of death. Where risks are high and counter-measures readily available, exceptions must be made to any bar against the slippery diseases.

Still, we would hedge such exceptions tightly. The risk should be of death. The preventive available should be effective for those people most at risk. It should substantially increase their chances of survival. For flu vaccine this means the right strength, matching the right virus with the right number of doses, deliverable in good time, and properly administered to those whose risk of death is so severe as to outweigh the disadvantages of public intervention. With flu as slippery as it now is, those disadvantages are weighty. Countervailing risk of death should not be assigned loosely to large populations.

Workers who are not at risk of death may be greatly inconvenienced by the same vaccine. At this stage of medical knowledge, they and their physicians and employers are the ones we think should judge whether benefits of vaccination outweigh disadvantages. They, not public health officials, should decide and their budgets, not those of public health, should bear the cost (except perhaps for local services like fire or police).



Under national health insurance this judgment might change. But it would then be a judgment for the health authorities to make in allocating limited dollars among competing treatments for different diseases. As in the Canadian case two years ago, influenza treatments might be limited. But national insurance is another story.

The proposed Federal program directed against Russian flu strikes us as not far out of line with our exception and its stated limits. Including everybody over 65, however healthy, has an odd ring in the first year of a raised retirement age, now 70. Age alone, apart from other illnesses, may prove a lesser factor in flu deaths than has been thought. Aside from this the program seems appropriately modest. But its very modesty may be in part an accident of circumstances. So long as liability issues are unresolved, Federal policy can scarcely go beyond financing state procurement of vaccine for limited numbers of people, few enough to keep down fears of lawsuits in the skittish minds of manufacturers and insurers. The risk of death is such a natural, traditional criterion, appealing to and understood by all, that we are confident it will prevail whenever numbers must be limited. But if and when a comprehensive liability solution comes to pass, then all too easily the definitions of "high-risk" could be progressively relaxed, and we would lose our tight tie between preventive and risk of death.

Judging from the swine flu story this is precisely what one should expect to follow upon liability legislation.

Thus we do not think that our criterion of matching risk to preventive will suffice for long to limit influenza's claims upon the once exclusive club of Federal immunization initiatives. How then maintain the limit while researchers try to improve understanding of flu's other facets?

The obvious answer is budgeting. Federal expenditures for purchase and delivery of flu vaccine should stand on their own merits, in competition with other Federal programs. But which other programs? We are not now in a position to advise on the appropriate arena for that competition. It clearly would be wrong if CDC alone were made to fund progressive intervention in the influenza sphere out of the other programs in its budget. At the other extreme it may be wrong for influenza to compete with everything else in Federal health.<sup>88</sup> Yet some competitive arena ought to be delineated. What is assuredly wrong is to have no competition at all.

That is the current condition, fortuitously veiled by liability.

In general, restricting the exceptions for a slippery disease to risk of death limits the scope of Federal intervention. However, in one circum-

stance, this same criterion would open the door wide to virtually unlimited immunization against influenza. That is the coming of another "killer" wave, another 1918. This is what was feared in 1976. But the threat was never established. We believe that in the absence of *manifest danger*, all-out action was a mistake. One can, of course, start manufacturing more vaccine at the first hint of a killer. But one cannot reasonably stick it into people without more concrete evidence than anybody had at any time in 1976. To do so is to court medical dissent, to spread public confusion, and to provoke suspicion in the Washington community. Since research has not yet found a good predictor of virulence, one may have no means to establish in advance the severity of a presumed pandemic. Establishing that 1918 has come back again means waiting for manifestations somewhere in the world, maybe here. There is no way around it. Somewhere in the world, some people have to die. That is a challenge to medical research: how to predict virulence before the virus strikes.

For influenza, virulence and many other technical questions are important not only for future research, but also because current policy decisions turn on answers, or at least on expert guesses at the answers. Our next task, and the last in this study, is to sketch some of the technical dilemmas posed by flu; first, those related to the virus and disease, and second, those related to prevention and control. This we do in our Afterword. To the degree research unravels these dilemmas, influenza will become a far less slippery disease.