

THIS WEEK



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Contaminated food for thought

If it is to deal effectively with outbreaks of infectious diseases, Germany must streamline its convoluted systems for reporting and communication.

Some six weeks after the first cases of potential food poisoning were reported, diners in Germany are still contemplating their side salads nervously, spooked by the confused information and warnings that have been issued over the past few weeks. Which item of greenery might be home to the deadly *Escherichia coli* bacterium known as EHEC O104:H4? By 13 June, the microbe had infected 3,325 people and killed 36.

The German public has been traumatized. It took weeks for the probable source of the bacterium to be named as an organic-beansprout farm in Lower Saxony. And, inevitably, accusations of crisis mismanagement are starting to fly.

These critical fingers, rightly, are not pointed at the scientists in Germany (and elsewhere), who rose admirably to the challenge of identifying and analysing the culprit. Instead, they are directed, with some justification, at the bizarrely complicated system Germany uses to handle disease outbreaks and track their sources — and at an alarmingly outdated way of transmitting information between physicians and agencies.

Ultimately responsible for disease control and prevention is the Robert Koch Institute in Berlin. However, Germany's federalized structure means that the institute receives its information indirectly, through many tiers of hierarchy.

The clinical laboratories that investigate samples sent to them by physicians and hospitals must promptly report notifiable diseases to their district health office, of which Germany has more than 400. Each of these offices passes the information on to its respective state ministry, which then transfers it to the federal health ministry, which then passes it onto its Robert Koch Institute. Days can elapse at transfer points and, scarcely credible in 2011, some of this information is still sent by post.

There is more. Responsibility to track the source of food-borne infections lies not with the Robert Koch Institute, but with the Federal Institute for Risk Assessment, part of the Ministry of Food, Agriculture and Consumer Protection. So, together there are two federal ministries, two federal technical institutes and 16 state ministries that can each pronounce on progress. Inevitably, confusion emerges — as demonstrated by the rushed and false fingering of Spanish cucumbers as the source late last month by Hamburg's state health minister, Cornelia Prüfer-Storcks.

Two things need to be done. First, Germany must eliminate the information-transfer chain and introduce a centralized electronic database that district health offices feed information into directly. Ideally, this would be supplemented by mandatory electronic reporting of individual cases by physicians. The US Centers for Disease Control and Prevention in Atlanta, Georgia, operates such a system, and the idea was discussed in Germany after the 2009 swine-flu pandemic. However, the proposal lost political support because it threatens the autonomy of the states.

This takes some explaining. Germany's post-war constitution was

designed to keep centralization to a minimum, and many responsibilities, including health, were devolved to the states. Introduced to prevent another dictator like Hitler, this principle is hard to attack. But it was never intended to hinder Germany from controlling politically illiterate microbes with no respect for state borders. Clearly, a way must be found to make an exception to the devolved-responsibility rule, at least when it comes to infectious diseases.

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The Robert Koch Institute, which has proven itself extremely competent in handling its part of the *E. coli* crisis given the blocks put in its way, needs much more power. Second, when disease threatens, Germany needs to be able to speak to its people with one voice — no matter how many authorities are involved in the process. This should be the Robert Koch Institute.

EHEC O104:H4 has proven to be a particularly evil enemy. Current agricultural practices are likely to generate other microbes of equal virulence or worse, and these will inevitably spread as people travel. Authorities in Germany and elsewhere must be able to keep control. ■

Full transparency

Nations should release global nuclear-monitoring data to academics and the public.

Under the auspices of a proposed international ban on all nuclear-weapons tests, scientists have built a system that can detect an illicit explosion anywhere in the world. The monitoring network stretches from Antarctica to Siberia and captures a wealth of useful data — not just on infrequent atomic bangs, but also on other types of explosion, earthquakes, underwater shocks and radiation releases.

Yet access to these data is restricted to contributing governments and selected allied scientists, who are largely prevented from sharing the information with the public. The diplomatic excuses offered for this unwise and unnecessary secrecy no longer wash, particularly in light of the March meltdowns at the Fukushima Daiichi nuclear power plant. At a meeting in Vienna next week, scientists who used these data to inform their governments about the scale and dangers of the Fukushima accident, but who saw the results kept under wraps, will push for change.

Their move deserves support. Data from the network, run by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), should be freely available to scientists everywhere, for study in their own right and to inform the public in times of crisis. Governments

may be nervous about such openness, but the benefits far outweigh the risks.

The CTBTO has proved its worth in recent years. It detected North Korean nuclear tests in 2006 and 2009, and has captured detailed seismic data on major earthquakes, including the 2004 Sumatra–Andaman event that sparked a devastating tsunami.

This spring, the organization's 80 radioisotope-monitoring stations offered the clearest global picture of low-level fallout released from the Fukushima plant. Government-accredited scientific institutions were given access to provide politicians with valuable information about how the radiation was spreading and whether it posed a national threat. But most were told not to talk about the results in public, or to share the data with others in academia. The reason was diplomatic: governments such as the United States did not want to embarrass the Japanese, nor pre-empt their announcements about events unfolding at Fukushima Daiichi.

More generally, governments worry that radioisotope data are too sensitive to share. Politicians fear that, should a nuclear test occur, full access to incriminating data could somehow allow the offending nation to contest charges of weapons testing. Or perhaps that others could glean sensitive nuclear secrets from the isotopes in the atmosphere.

These fuzzy fears must be weighed against the impact of the information vacuum that followed Fukushima. Scientists everywhere were asked to give assessments, yet few had access to data that would allow them to do so. Providing open access to the CTBTO's network would

have given experts the information they needed to make important statements about Japan's reactors and the threats these posed to Tokyo and beyond. The data would also have lent credibility to the Japanese government's own statements on radiation levels in the region.

Moreover, such data are scientifically useful in their own right. Atmospheric scientists use radioisotopes widely and the CTBTO

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network is gathering a unique data set that could be used to improve climate models or to refine meteorological studies. Scientists with access to the data might also find some new use for them. Thus far, nations have paid a combined US\$1 billion for the network, and they might as well put it to good use.

The network has already taken tentative steps towards openness. Following the 2004 tsunami, member states agreed that its seismic and hydroacoustic data could be used by accredited tsunami-warning centres around the world. In the immediate aftermath of the

Fukushima Daiichi accident, it was allowed to share data with the International Atomic Energy Agency.

These are positive developments, but nations should go further: the CTBTO data are valuable in times of both calm and crisis. Contrary to the concerns of some, the more people who see them, the more valuable they will become. ■

Great ape debate

Researchers should contribute to a US analysis of the case for chimpanzee research.

The historical value of the chimpanzee as a disease model is indisputable. It was important in developing the Sabin polio vaccine; instrumental in discovering the infectious nature of the spongiform encephalopathies; and essential to both the creation of a vaccine against hepatitis B and the identification, in 1989, of the hepatitis C virus (HCV).

Humankind has benefited handsomely. Since the United States instituted universal childhood vaccination for hepatitis B in 1991, there has been a 98% decline in the disease in children under the age of 15 years. And with the identification of HCV, screening of donated blood for the virus reduced the risk of transfusion-associated hepatitis in the United States from 4% in 1989 to almost zero in 2000.

Today, chimpanzee research is still bearing fruit, especially for hepatitis C, a disease that infects at least 170 million people globally and often results in permanent liver damage or cancer. No approved vaccine yet exists. A study published in 2002 put the annual economic costs of the disease in the United States at more than US\$750 million.

The chimpanzee is the only animal model in which human strains of HCV can replicate, making it especially important in work to develop a vaccine. And studies in this animal have propelled at least one hepatitis C vaccine into human trials. Other chimpanzee experiments are making inroads in developing better therapies for the disease. The case for chimpanzee use in some other circumstances — such as the effort to develop a vaccine against respiratory syncytial virus, which mainly affects infants and young children — is less strong, but is at least arguable.

But chimpanzee studies are under fire (see page 268). Public discomfort over the use of chimpanzees in research has reached a historic high, with the result that the United States is now the only country save Gabon in which invasive experiments are conducted. Legislation has now been introduced in the US Congress that would prohibit invasive chimpanzee research. Although the bill is unlikely

to become law any time soon in a Congress distracted by wars, debt and a moribund economy, the Great Ape Protection and Cost Savings Act is nonetheless a sign of the times.

So, too, is the fact that the National Institutes of Health (NIH), facing public pressure after proposing to return nearly 200 semi-retired chimps to active research, has commissioned a study by an Institute of Medicine (IOM) committee, which convened last month. The committee's task, to culminate in a report planned for the end of the year, is to determine whether chimpanzee studies are necessary to answer current and future biomedical and behavioural research questions, or for drug and vaccine testing — and, if so, why.

The purview of the task that the NIH has set the IOM is troubling. It contains no mention of ethical aspects of the research, and the NIH has publicly stated that this omission was deliberate. Of the 12 current members of the committee, just one is a bioethicist. The agency may wish to divorce the science from the ethics, but society at large will not accept such a distinction. Nor is it intellectually defensible: a moral choice to use intelligent, emotionally complex creatures to their detriment, for the benefit of human welfare, is intimately related to what can be achieved scientifically. It would be wrong for the NIH to make any change in its support for chimpanzee research — or indeed to maintain the status quo — solely on the basis of the scientific report from the IOM.

Still, the work of the committee will provide a valuable starting point by defining the scientific case for chimpanzee research. Working from this, ethicists, the public, the animal-protection lobby, scientists and regulators could then engage in the much-needed, wider-ranging debate. An ideal convener for such a discussion would be the Presidential Commission for the Study of Bioethical Issues.

One thing is almost certain: if the NIH and scientists do not engage with the ethical and animal-welfare issues that are so clearly at the forefront of the public mind, Congress will do it for them, and the result may well be to shut down virtually all research using great apes, as happened in the European Union in 2010.

The committee plans to gather public input at a meeting in Washington DC in August, on a date yet to be announced.

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Researchers would do well to make their views known to the IOM committee, which will receive and consider all public comment at go.nature.com/5tdgkt. ■