

ON THE CONTRARY **Tony Delamothe**

Fukushima: lightening the darkness for next time

The challenge now is to learn as much as possible about the medical effects of radiation

The *BMJ*'s editorial board met in London last month, but one board member, Ryuki Kassai, wasn't there. As head of the Department of Community and Family Medicine at Fukushima Medical University he was busy elsewhere. On *bmj.com* you can read his blogs and listen to his podcast about facing the unimaginable triple whammy of earthquake, tsunami, and radiation leak (details below).

Coastal towns near Fukushima now look like Hiroshima after the bomb, and Dr Kassai began his first blog by quoting the writer Kenzaburo Oe's *Hiroshima Notes*, about falling again into the darkness after having once known the light.

What surprised me was Dr Kassai's claim that high quality, standardised, evidence based information on how to respond was lacking. "We experienced the disasters in Hiroshima and Nagasaki, but despite this there are many misunderstandings regarding radiation," he wrote. "We need information on immediate, short, and long term effects of radiation, and interventions and strategies to alleviate the effects."

But surely after the atomic bombs in Japan and the radiation leak in Chernobyl there was nothing much left to learn. And then I remembered a session I attended at the annual congress of the International Physicians for the Prevention of Nuclear War in Hiroshima in 1989. It was devoted to the medical effects of radiation, with most data coming from follow-up studies of atomic bomb survivors that had begun in 1950—five years after the bombs were dropped.

As I recorded at the time, some participants were unhappy about what they regarded as statistical and methodological shortcomings of these studies—beginning with the decision to use as a control group people living in Hiroshima some distance from the hypocentre. Some of these "controls" were known to be living in districts where radioactive black rain fell soon after the explosion, and others were exposed to high doses of radiation when they entered the worst affected parts of the city to help (*BMJ* 1989;299:1023).

Soon after that conference the world's attention shifted to the medical effects of the 1986 radiation leak at

Chernobyl (equivalent to 200 Hiroshimas and Nagasakis). Here the news was reassuring, at least initially. Five years after the leak "there was no evidence of health disorders at this stage directly attributable to radiation exposure," concluded the International Atomic Energy Agency (*BMJ* 1991;302:1293). A spokesman for Friends of the Earth, however, was not impressed. "They didn't even look at the 100 000 people living around the Chernobyl site who were evacuated," he said. "These people received the highest doses. They also didn't examine the liquidators—these were the soldiers and miners brought in to clear up the mess."

Ian Munro (a previous *Lancet* editor) and Mary Brennan listed further reservations about the assessment in a letter to the *BMJ* (1992;304:254-5): the total sample size was under 1700 and in many studies was very much less. Control villages were selected from areas very near the contaminated zones. In other words the limitations alleged of the Chernobyl study were sounding similar to those alleged of the Japanese studies.

Ten years after the Chernobyl nuclear accident it was clear that the early, disquieting rumours were true: the incidence of childhood thyroid cancer had risen 100-fold (compared with the background rate of 0.5 cases per million per year) in areas most affected by the leak (*BMJ* 1996;312:1052). In an editorial marking the 15th anniversary of the incident Dillwyn Williams, of the Strangeways Research Laboratory, Cambridge, summed up the unsatisfactory state of affairs:

In 1990 the World Health Organization was given \$20m by Japan to investigate the health effects, but expenditure was effectively controlled by one official, much of the money was spent inappropriately, and little of value resulted. Also in 1990 the International Atomic Energy Agency carried out a separate investigation. Though informed of cases of childhood thyroid cancer, it was generally reassuring about possible health consequences. The United States and the European Union signed separate treaties with the governments involved, allowing them to investigate the health effects. Initially the European Union



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and WHO Europe played a major part in drawing attention to the increase in the incidence of childhood thyroid cancer but then set up separate studies, as did the Sasakawa Memorial Health Foundation of Japan. Unesco, the International Red Cross, and several individual countries and organisations all became separately involved." (*BMJ* 2001;323:643)

This didn't look like a good model for the next Chernobyl, he argued. To study the health consequences of a nuclear disaster he thought that WHO should be the obvious lead agency. And, to avoid confusion, "planning must consider the potential conflict between the sovereignty of the country in which the event occurred and the importance to the rest of the world of ensuring an impartial investigation."

So where does that leave Japan and the world and our collective need to learn as much from this disaster as we can? Should the ultimate responsibility rest with WHO or Japan? Japan's studies of atom bomb survivors are the main source of knowledge about the effects of radiation on human health. They're run by the Radiation Effects Research Foundation, funded jointly by the Japanese Ministry of Health, Labour, and Welfare and the US Department of Energy. You have the sense that after 60 years' practice they know what they're doing. But should we be concerned that the US Department of Energy has an Office of Nuclear Energy that "promotes nuclear power as a resource capable of meeting the Nation's energy, environmental and national security needs"?

On the other hand, WHO hasn't exactly covered itself in glory in managing another international health emergency—the swine flu pandemic—which was similarly complicated by the conflicts of interests of some of its major players.

Whoever takes on the job, we will have failed the Dr Kassais of tomorrow if they're left to bewail the absence of high quality, standardised, evidence based information on how to help the next tranche of victims. Fukushima is a serious crisis that shouldn't be let go to waste.

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