Editorial

Fukushima Disaster: Public Health Issues

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The nuclear age began with the discovery of X-rays by Wilhelm Roentgen at the University of Würzburg in Germany in 1895. He was awarded the very first Nobel Prize for physics. Like Pierre and Marie Curie in Paris, he refused to patent his invention believing in science for the greater good of humanity. Knowledge of other forms of radioactivity grew rapidly in the early 20th century. In the years since, the application of nuclear technology has brought many benefits to humanity, but has also unleashed many dangers. The technology of X-rays spread rapidly to Asia and in 1896, only a year after Roentgen’s discovery, in Japan, Genzo Shimadzu succeeded in producing an X-ray image.1 In 1909, he developed the first medical X-ray device made in Asia.2

Early doses of X-rays were very large as they required extremely long exposures due to the insensitive photographic plates or fluoroscopic materials. Can you imagine sitting perfectly still for 30 minutes for a dental X-ray?2 Reed3 has highlighted the dangers faced by the early pioneers of the use of medical radiation, many of who died from the effects of large radiation doses. Marie Curie received a Nobel Prize in 1903 and again in 1911, but then tragically died of aplastic anemia resulting from radiation exposure.3,4 Museums in Hiroshima, Würzburg, and Paris, which tell the history of these discoveries, are worth a visit by public health workers (and politicians) to understand the “double-edged sword” nature of radiation, the amazing progress in medical imaging and therapy and the devastating, hideous effects of radiation gone wrong. The medical hazards of radiation are now well known, both acute and long-term chronic exposures. For example, recently, an increase in cardiovascular deaths has been found in astronauts spending time in space.5 Radiation from natural sources may be increasing with climate change and bring an increased risk of morbidity.6-8 The development of nuclear technologies for industrial use and particularly power generation brought a new set of public health advantages and disadvantages. The reduction of greenhouse gas generation from nuclear power is a major plus, but this needs to be set against the risks of nuclear accidents as outlined in this supplement. The potential of nuclear warfare brings its own set of horrors. Spending a night in the Hiroshima Nuclear Museum should be compulsory for all national leaders and their advisors.

It is hard to imagine medicine and public health without the benefits of radiation. Modern low-dose radiation is an essential part of screening, diagnosis, and treatment. For public health, where our first goal is equity, it remains a challenge to make the newer low-dose technologies available in low-income countries and particularly in rural areas.

The Fukushima disaster was a public health crisis of almost unprecedented size. The destruction was massive as the tsunami was followed by the slow realization of the severity of the

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simultaneous nuclear accident. There was a major problem with information suggesting that one of the main lessons to be learned is the importance of real-time monitoring and the availability of accurate information to public health authorities and the general public. It is estimated that 110 000 persons evacuated the area within 2 days and 4 years later almost 50 000 were still living elsewhere.9 A large number of health professionals left the area and because of the level of trust in health professionals much of the rest of the population followed.10 The lack of health professionals created a major problem for recovery of the population level.

This supplement consists of 19 articles describing public health issues related to the Fukushima accidents, the dual impacts of the tsunami and radiation accidents. There have already been a number of publications related to the health effects of the Fukushima accident. This special issue of the APJPH contains a number of original articles on the public health effects of the accident. All authors have confirmed that their material has not been published elsewhere. This collection of important articles will assist in further rehabilitation and in the establishment of improved monitoring and response to future disasters.

References