effects of nuclear and conventional power generation. It is made difficult both by exaggerated claims of the health consequences of Chernobyl and by the errors and cover ups of the nuclear industry itself.

Chernobyl is unlikely to be the last major nuclear disaster, and doubtless other events also requiring an international response will occur. International agencies faced considerable difficulties in dealing with an event of worldwide significance occurring in a world power with a history of scientific isolation, which itself underwent enormous political and economic change. To avoid a repeat of the 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. For the health consequences the WHO, which has changed considerably since 1986, is the obvious lead agency. It might more appropriately facilitate rather than direct studies, which could be controlled by an independent group of experts selected by the relevant international scientific organisations and by countries directly involved or funding the studies.

We need to learn from Chernobyl and decide how to coordinate international involvement in the investigation of a major disaster in a way that benefits both the country most affected and the world as a whole. That way we can reduce the risk of future disasters and improve our ability to deal with their consequences when they do occur.

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40 years of methicillin resistant *Staphylococcus aureus*

MRSA is here to stay—but it can be controlled

Staphylococcus aureus is well adapted to the human body, capable of spreading from person to person, hiding in intracellular compartments,[1] and, most importantly, inducing various forms of human disease. During infection the bacterial cells produce a large variety of virulence factors, among which, for instance, are molecules that subtly interfere with the chemotaxis of neutrophils to the site of infection.[2] Adding to the complexity of the infectious process is the fact that the host also responds in a variety of ways immunologically, sometimes producing a certain degree of resistance to infection.[3] *S aureus* has remained among the top three clinically important pathogens over the past few decades, and a particular worry has been the rise of methicillin resistant strains.

The clinical need for an effective vaccine against *S aureus* is clear, but since infections caused by *S aureus* are complex and as yet largely undefined (from the perspective of both the pathogen and the host) strategies for developing vaccines are scarce.[4 5] In addition to the organism's incompletely understood biology, the acquisition of resistance to antibiotics has contributed to its pathoclinical potential. Methicillin resistant *S aureus* (MRSA) emerged rapidly after the introduction of this particular antibiotic, and the primary route of spread of the MRSA bacteria was soon shown to be through clonal dissemination. Although the gene inducing the resistance has been discovered in various genetic backgrounds, colonisation and infection were mainly caused by rapid spread, sometimes even between continents, of relatively small numbers of epidemic bacterial strains.[6] Therefore, our efforts should be directed towards elucidating the mechanisms underlying staphylococcal epidemicity, a phenomenon that remains largely unexplained. These studies should take environmental, human, and microbial characteristics into account.

Hospitals have to invest in maintaining an adequate level of microbiological hygiene—and in this respect combating MRSA has received much attention. The success of attempts to maintain microbiological hygiene depends heavily on antibiotic use in individual institutions. Studies have shown that the rate at which MRSA colonises and infects patients is significantly correlated with the amount and nature of the antibiotics prescribed in clinics.

At the turn of the millennium the conclusion has to be that Europe is still strongly divided. In southern and middle European countries the prevalence of MRSA in medical institutions is alarmingly high. The apparent attitude in these countries is that its spread is inevitable and preventive measures are inappropriate. However,

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success stories have been documented: in many northern European countries an aggressive "search and destroy" policy combined with prudent use of antibiotics has resulted in clinical environments that are essentially free of MRSA.

In the Netherlands, for instance, the annual number of MRSA strains submitted for epidemiological typing to the National Institute for Public Health and the Environment has risen from less than 200 in the early nineties to about 500 to date.[7] The number of index patients has also increased, but less steeply. However, the overall percentage of MRSA among clinical *S aureus* isolates is still well below 1%, and no additional resistance features, such as reduced susceptibility to glycopeptides, have emerged. Infections with resistant strains are commoner in patients without a recent history of foreign travelling, which suggests that local MRSA strains, mostly of known epidemic types, are encountered more frequently. The situation in relation to MRSA in nursing homes and hospitals is still under control, however. It is clear from the Dutch experience that MRSA elimination should combine both infection control and policies to control the use of antibiotics.

It is unclear what the future will bring: countries bordering nations reporting successful anti-MRSA policies are faced with increasing incidences of MRSA, which in turn increase the pressure on the countries with limited MRSA endemicity. In addition, MRSA used to be primarily a problem of nosocomial spread, but recent reports indicate significantly rising numbers of MRSA in populations outside hospital.[8] Thus it seems that MRSA is here to stay and that modulation of antibiotic policies alone will not ultimately be sufficient to eliminate MRSA from clinical settings.

We therefore need to find alternative strategies for eliminating MRSA carriage. Von Eiff et al have recently shown that *S aureus* cells can be killed in vitro by the shock waves that are used for extracorporeal lithothripsy.[9] Whether this approach will turn out to be helpful in eradicating this sophisticated bacterial pathogen is doubtful, however. Osmolyte stimulation of innate antimicrobial defence systems might be a more promising approach,[10] but bacteriophage therapy[11] or bacterial interference strategies, which could lead to elimination of the "weakest" strains, should also be explored further (J Nouwen et al, unpublished).[4]

In the meantime, however, there are useful actions that clinicians can take. Strict hand hygiene policies may already be achieving some success in the battle against nosocomial transmission of MRSA.[12] Furthermore, Von Eiff et al have recently shown that most infections caused by staphylococci can be traced back to prior nasal carriage by certain patients,[13] which suggests that elimination of nasal carriage still is a useful intervention.

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More randomised controlled studies in speech and language therapy

Complex behavioural interventions can be evaluated

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Randomised controlled trials remain the most widely accepted way of evaluating new treatments. Clinical services such as speech and language therapy, however, have been particularly reluctant to produce randomised controlled trials as evidence of efficacy of treatment.[1 2] An evidence base is emerging for the efficacy of a number of speech and language therapy interventions, especially in dysphasia, stammering, laryngectomy, and dysphonia.[3] Most interventions, however, have been evaluated by uncontrolled before and after comparisons. One of the first randomised controlled trials in speech and language therapy to evaluate voice therapy in dysphonia appears in this issue.[4] This trial shows that it is possible to design and carry out randomised controlled trials to examine complex behavioural interventions.

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