to heart disease by 30%," which sits uneasily with the report's own acceptance that the Medical Research Council's hypertension trial found "no significant effect on heart disease" from the reduction of mild to moderate hypertension. To have maximum impact such reports should surely offer no unprotected flanks to their critics and should concentrate on limited and attainable targets for which unimpeachable evidence exists?

The problem of overkill in preventive medicine is hinted at, but the report's words are not as telling as those of Richard Doll, who said: "A stitch in time may save nine but if 100 people each need one stitch to save a single person having nine, then the equation is much more complex." Unless such issues are faced squarely—as they were in the Medical Research Council's mild to moderate hypertension trial, in which 850 people had to be treated to prevent one stroke—the public reaction to such preventive measures may echo that of Eubie Blake, the jazz musician, who said on his 100th birthday: "If I'd known I was going to live that long, I'd have taken better care of myself."

How to change public and private attitudes has been the challenge to propagandists throughout the ages. The authors hope to influence "individual citizens" and to help "public agencies and organisations in formulating policies and decisions that affect the public health." In this task they would do well to remember Engels's observations on England in the early nineteenth century: "the national character of the English is essentially different . . . the English have no common interests, only *individual* interests. . . . Only out of individual interests do they act together as a whole. In other words, only England has a *social* history. Only in England have individuals as such, without consciously advocating general principles, promoted the advance of the nation." If one substitutes "retreat" for "advance" the truth of Engels's statement is shown by the report's comment on the decline in immunisations against whooping cough, in contrast to the steady uptake of those against diphtheria and tetanus. This reinforces Engels's point, in that any number of worthy, truthful, but non-charismatic reports and exhortations may be instantly negated by pronouncements on the television by respected or eye catching public figures. Following Engels's thoughts, could we make faster progress by remedying scientific illiteracy in the few who catch the public eye, ear, and imagination rather than by preaching to the many who are already converted, which is what I fear *The Nation's Health* will be doing?

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1 Smith A, Jacobson B, eds. *The nation's health. A strategy for the 1990s.* London: King Edward's Hospital Fund, 1988.

Big bang for vaccination

Eliminating measles, mumps, and rubella

Next week a combined vaccine against measles, mumps, and rubella (MMR) will be introduced in Britain for young children of both sexes with the aim of eliminating these diseases.

Rubella contracted during the first nine weeks of pregnancy causes multiple defects in up to 90% of fetuses.[1] When rubella vaccine became available in 1970 the aim of all rubella vaccination programmes was to protect pregnant women. Two strategies were tried. In the United States infants of both sexes were vaccinated with the aim of eliminating rubella in children and thus the source of infection. The British elected to protect women before they reached childbearing age by selectively vaccinating girls aged 10-14 and non-immune women who had escaped the net. Uptake of vaccination in schoolgirls in Britain has reached 86%, but 2-3% of pregnant women are still susceptible to rubella, and among them infection continues.[2,3]

In England and Wales in 1986-7, 372 pregnant women had confirmed rubella infections, nearly half of which were in the first trimester (PHLS Communicable Disease Surveillance Centre, unpublished data). Most such pregnancies are terminated, but about 20 cases of the congenital rubella syndrome are notified yearly.[4] Because rubella still circulates freely among young children non-immune women who have children are at a greater risk of infection during pregnancy than those who do not.[1,2] We now understand that vaccination of only girls and women cannot eliminate the congenital rubella syndrome while the circulation of rubella among children continues. The Joint Committee on Vaccination and Immunisation has therefore decided to augment the present policy with the mass vaccination of young children of both sexes.

Rubella vaccination for schoolgirls and non-immune women will continue, and it is essential that the present target of 95% uptake of vaccination should be achieved and maintained. In addition, children aged 1-2 years will receive the combined vaccine instead of single antigen measles vaccine. Rubella is most common in children aged 4-9, and to eliminate rubella speedily from this age group preschool children aged 4-5 will also be given the combined vaccine for the next few years. The vaccine may be given at any age, but the maximum effect on all three infections will be gained by vaccination between the ages of 1 and 4.

The mumps component is included in the new vaccine because of the considerable morbidity caused by the disease, including sensorineural deafness that is often permanent.[5] Over 1000 children a year are admitted to hospital with mumps, which is the commonest cause of meningitis and encephalitis in children under 15.[6] The full vaccination policy is included in the new edition of *Immunisation Against Infectious Disease*; the recommendations are given on p 780.

The combined vaccine against mumps, measles, and rubella has been used routinely in the United States since 1975 and in Europe and Asia for the past four years. In Britain vaccines from two manufacturers have been used for over a year in three districts, where over 10 000 children have been vaccinated and followed up. The vaccines have been well accepted by parents; indeed, their uptake has been appreciably higher than that for measles vaccine despite the requirement for mothers to keep a daily health diary for three weeks.

A study, which will be reported later, showed that in children aged 1 to 2 years the most common symptoms—malaise, fever, and rash—occurred about a week after vaccination. The symptoms were similar in nature, time of onset, and duration to those seen after measles vaccine.[8,9] The

incidence of febrile convulsions was also similar,[9] but it is worth remembering that in children of this age convulsions are 10 times more common with natural measles than after vaccination.[10] An additional symptom to be reported after the vaccine was parotitis, which occurred in less than 1% of children—usually between two and three weeks after the vaccine. Some of these cases may have resulted from natural infection, but the appreciable clustering suggests that they were probably caused by the vaccine. Many of the symptoms reported were trivial, but parents should be warned about the possibility of a reaction a week after vaccination and reassured that the child will not come to harm and is not infectious.

In 1987 three cases of meningoencephalitis were reported from Canada after the combined vaccine.[11] All recovered without sequelae.[11] This was calculated to occur in one in 100 000 doses of vaccine, which might mean six cases a year in Britain if uptake of the vaccine is as high as we hope. At the moment there are about 1000 cases a year of meningoencephalitis caused by mumps, some of which have an unfavourable outcome.

To assess the impact of the new vaccine a comprehensive surveillance programme has already been set up. Uptake of vaccination by age and district will be monitored; susceptibility to rubella and infections in pregnancy, cases of congenital rubella syndrome, and terminations of pregnancy for rubella will continue to be recorded and investigated. Rubella and mumps will be notifiable. A scheme to monitor prevalence of antibodies to measles, mumps, and rubella by age in about 800 yearly serum specimens from public health laboratories began in 1987 (p 770). This surveillance should identify susceptible cohorts to allow their selective vaccination if necessary.

A few years ago doubts were expressed about changing our rubella vaccination policy.[12,13] It was feared that an uptake of vaccination of around 60% in the second year of life—the figure then for measles vaccine—might increase the age incidence of rubella and thus the risk of rubella in pregnancy. In England and Wales, however, the uptake of measles vaccine reached 71% in 1986, and further steps have been taken to achieve the target of 90% by 1990. Immunisation is now included in the review process of regional health authorities and the Department of Health and Social Security. Each district now has a named immunisation coordinator who is responsible for immunisation by both general practitioners and clinical medical officers. The coordinators' duties include training medical and nursing staff, investigating and remedying poor local immunisation rates, and establishing a positive attitude towards immunisation in professionals and the public.

In some districts uptake of measles vaccine has already reached 90%, but in others it is still unacceptably low. In 1987 around 42 000 cases of measles were notified in England and Wales; this was the lowest yearly figure recorded, but in the first half of 1988 notifications already exceeded 52 000 and by May six children had died. Since then three more have died, which may result in 1988 having more than the average 20 deaths a year. After 20 years of measles vaccination this is a poor performance. Britain lags behind most developed countries—and, it must be said, many developing countries. The introduction of the new vaccine must provide the impetus to improve our record. Every child without a valid contraindication—and this means 98% of all children—is entitled to vaccination against three preventable diseases and their potentially disastrous consequences.

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1 Miller E, Cradock-Watson JE, Pollock TM. Consequences of confirmed maternal rubella at successive stages of pregnancy. *Lancet* 1982;ii:781-4.
2 Miller CL, Miller E, Sequeira PJL, Cradock-Watson JE, Longson M, Wiseberg EC. Effect of selective vaccination on rubella susceptibility and infection in pregnancy. *Br Med J* 1985;**291**: 1398-401.
3 Miller CL, Miller E, Waight PA. Rubella susceptibility and the continuing risk of infection in pregnancy. *Br Med J* 1987;**294**:1277-8.
4 Holzel H, Jones G, Smithells RW, Sheppard S. National congenital rubella surveillance programme report: 1987. *Communicable Disease Report* 1988;No 15:3-4.
5 Hall R, Richards H. Hearing loss due to mumps. *Arch Dis Child* 1987;**62**:189-91.
6 Noah ND, Urquart AM. Virus meningitis and encephalitis in 1979. *J Infect* 1980;**2**:379-83.
7 Joint Committee on Vaccination and Immunisation. *Immunisation against infectious disease.* London: Department of Health and Social Security, 1988.
8 Measles Vaccination Committee. Vaccination against measles: a study of clinical reactions and serological responses of young children. *Br Med J* 1965;ii:817-23.
9 Measles Vaccination Committee. Vaccination against measles: a clinical trial of live measles vaccine given alone and preceded by killed vaccine. *Br Med J* 1966;i:441-6.
10 Miller CL. Severity of notified measles. *Br Med J* 1978;i:1253-5.
11 Champagne S, Thomas E. A case of mumps meningitis: a post-immunisation complication? *Canada Diseases Weekly Report* 1987;**13**:155-6.
12 Knox EG. Strategy for rubella vaccination. *Int J Epidemiol* 1983;**9**:13-23.
13 Anderson RM, May RM. Two-stage vaccination programme against rubella. *Lancet* 1983;i:1416-7.

Silent myocardial ischaemia

A lot around but not easy to suspect

We have known for years that patients with coronary artery disease may have no symptoms[1] and that the electrocardiographic features of ischaemia may be induced by exercise without accompanying angina.[2] Nevertheless, such "silent ischaemia" has only recently been recognised to be an important feature of ischaemic heart disease.[3-6]

Silent ischaemia is defined as "objective evidence for myocardial ischaemia in the absence of angina or equivalent symptoms," and its prevalence is unknown,[7] although over a quarter of myocardial infarctions are unrecognised and half of them cause no symptoms at all.[8] Deaths from ischaemic heart disease (over 150 000 yearly in England and Wales) are often sudden and occur in people without previous symptoms.[9] Cohn has estimated the frequency in the North American population of three categories of people with silent ischaemia who may be at such a risk.[10] People of type 1 have no symptoms and no history of myocardial infarction or angina (1-2 million middle aged men); those of type 2 are symptomless survivors of myocardial infarction (50 000 a year); and patients of type 3 have angina together with episodes of silent ischaemia (around 3 million). Presumably the proportions in Britain are comparable, although the mortality from ischaemic heart disease is higher here.[11]

Silent ischaemia may be elicited during standard stress testing such as electrocardiographic exercise tests,[12] atrial pacing,[13] thallium stress redistribution scintigraphy,[14] and exercise radionuclide ventriculography.[15] Ambulatory electrocardiographic monitoring of changes in the ST segment during normal activities has, however, provided some of the most important data.[16-24] Such electrocardiographic changes have been validated by comparison with measurements of myocardial perfusion by using positron emission tomography with rubidium-82.[18,25] None the less, the selection of patients is important[4] because false positive responses may occur in those who are apparently healthy.[26,27] Therefore validated equipment must be used to reproduce the ST segment