stereotyped as a male disease, men display a high degree of ignorance and avoidance of both coronary heart disease and the risk factors associated with it. For instance, though women may avoid considering their risk of developing coronary heart disease by assuming it is a male disease, men too delay in seeking medical help when experiencing chest pain.[5 14] Thus coronary heart disease is the greatest cause of premature death in men, yet it is relatively unresearched from the perspective of men's health behaviour.

Though the aims as set out in the national service framework are laudable, the fact that the framework does not include male and female specific standards makes it harder to create the environment for research and health strategy development that addresses men and women's separate needs. This is already evident by the relative dearth of social research into gender and coronary heart disease. Both women's health groups and the Men's Health Forum (www.men'shealthforum.org.uk) have noted that only a few practitioners have set up gender sensitive initiatives.

Gender must be seen as an important factor in health care planning and delivery. Coronary heart disease is a prime example of where there are known gender differences. We need investment in research and inclusion of gender within educational programmes, without which health professionals will remain ignorant of the problems created by gender neutral health care.

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Prophylactic treatment of anthrax with antibiotics

Indiscriminate use of antibiotics will lead to resistance in organisms

Bacillus anthracis has long been considered a potential biological weapon. The Scottish island of Gruinard was contaminated with spores for 45 years and the Aum Shinrikyo terrorists made unsuccessful attempts to release aerosols of anthrax and *Clostridium botulinum* spores in Tokyo.[1] In addition, anthrax spores were inadvertently released from a microbiological facility in Sverdlovsk in the former Soviet Union, resulting in at least 79 people getting anthrax and 68 deaths.[1] In response to the recent anthrax attacks in the United States, the US and other governments have bought large amounts of ciprofloxacin, and in the US many potentially exposed individuals have started prophylactic treatment. Unofficial use of ciprofloxacin will be common in the light of the worldwide panic. Ciprofloxacin has been chosen to treat anthrax for its ease of administration, good safety profile, and predictable activity. The alternatives are amoxicillin or doxycycline, but these too have side effects and can induce resistance. The important thing is to ensure that prophylactic treatment is given only to those who really need it, and to discourage its mass use by an understandably alarmed public. Indiscriminate use of antibiotics can induce resistance in *B anthracis* and other organisms. To induce antimicrobial resistance on a mass scale would be an even greater triumph for the terrorists.

Anthrax is a zoonosis, accidentally transmitted from herbivores to humans with no onward person to person transmission. The clinical presentation and outcome depend on the route by which anthrax is acquired.[1] Cutaneous anthrax, which is the commonest form (95% of patients), follows inoculation of spores into damaged skin and has the best outcome, with less than 1% mortality. Eating badly cooked meat contaminated with anthrax spores leads to oropharyngeal or gastrointestinal anthrax. This is the least common form but has a high mortality. Inhalation of spores leads to pulmonary anthrax, which is usually fatal.

B anthracis, including the strains isolated from the recent cases in the US, is sensitive in vitro to a range of antimicrobials, including penicillin, amoxicillin, doxycycline, tetracycline, clarithromycin, clindamycin, and ciprofloxacin. Benzylpenicillin is the treatment of choice, but treating anthrax after inhalation of spores is particularly difficult since the disease progresses rapidly to death. This has led to the introduction of chemoprophylaxis for individuals at risk.[1 2]

In animal models, penicillin, ciprofloxacin, or doxycycline given 24 hours after exposure to a lethal aerosol provided significant protection against death, but combining antimicrobials with vaccination provided optimal protection.[3] Currently oral ciprofloxacin is recommended after known exposure to spores.[1 2] Disease can present 50 days or more after exposure,[1] so prophylaxis should continue for 60 days unless exposure has been excluded.

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Using antimicrobials prophylactically could induce side effects in users and resistance in bacteria. Antimicrobials need to be used according to national guidelines after appropriate assessment of risk,[1 2] especially when such prolonged use is intended. Although generally safe, ciprofloxacin is associated with rupture of tendons and neuropsychiatric disorders, especially in elderly people.[4 5] In most countries it is not licensed for use in pregnancy or children. In children the concern is damage to the cartilage in weight bearing joints—seen when treating juvenile beagle dogs. This concern has not been realised yet,[6] although treatment for 60 days will have been used in only a small number of patients with cystic fibrosis. Few data exist on use of ciprofloxacin in pregnancy, and here amoxicillin might be safer.

Fluoroquinolones such as ciprofloxacin are useful drugs with broad spectrum bactericidal activity. Their value has already been compromised by the development of resistance through overuse.[7] Humans have a rich and varied normal bacterial flora—only 10% of the cells we carry are human. With antimicrobials our expectation is that the infecting pathogen will be killed, but the myriad normal bacteria are also exposed. For example, ciprofloxacin is excreted on to skin and mucous membranes, and strains of *Staphylococcus epidermidis* resistant to ciprofloxacin have appeared on skin at a mean of 2.7 days after start of treatment[8]; they showed co-resistance to many other classes of antimicrobial.

Treatment with fluoroquinolone is also associated with development of resistance in enteric coliforms[9] and oral viridans streptococci.[10] The new fluoroquinolones (for example, levafloxacin, moxifloxacin, gatifloxacin) have a spectrum that includes *Streptococcus pneumoniae* and are used as empirical treatment in bacterial pneumonia. They too are part of the normal flora, and similar mutations that induce resistance to ciprofloxacin induce resistance to the new agents. *Str pneumoniae* is highly transformation competent, and our current problems with penicillin resistant pneumococci have resulted from acquisition of mosaic resistance genes from commensal viridans streptococci. Similar transfer of resistance to fluoroquinolones has been described in pneumococci.[11] This raises the possibility of fluoroquinolone resistance arising in some pneumococci or viridans streptococci during prophylaxis with ciprofloxacin, which could then spread horizontally to other perhaps more virulent pneumococci.

We have little information on the stability of such resistance once treatment with ciprofloxacin has stopped, but in vitro, ciprofloxacin resistant clinical isolates of *S aureus* have retained resistance for over 500 generations in antibiotic-free media.[12] Prolonged administration of ciprofloxacin to many individuals may lead to emergence of resistance in commensal bacteria which could be stable and transferable to other potentially pathogenic bacteria, thus limiting the usefulness of these important antimicrobials. Finally, we cannot exclude the possibility of the development of fluoroquinolone resistance in *B anthracis*—multidrug efflux pumps have already been detected in *B subtilis*.[13]

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School based programmes on obesity

Increase knowledge about nutrition but do not change eating habits by much

The prevalence of obesity has increased dramatically in the past 20 years, and the World Health Organization has declared obesity a global epidemic.[1] The increase in prevalence of childhood overweight and obesity is a particular worry. To combat this epidemic, educational programmes and policies in schools would seem to be a logical response. Two articles by Sahota et al in this issue examine the Active Programme Promoting Lifestyle Education in School, which was instituted in 10 schools in Leeds, England, over one year (pp 1027, 1029).[2 3] Their result reveal a paradox: cooperation by parents, teachers, administrators, and children was very good, and their knowledge and awareness about

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