The British media's recent preoccupation with Myra Hindley and Rosemary West, two now infamous convicted female serial killers, both reflects and reinforces the public's fascination with such crimes. Myra Hindley was jailed in 1966 for the murder of five children and has recently made a public plea for understanding and forgiveness. Rosemary West was convicted last year of the murder over a period of 16 years of 10 young women, including her 16 year old daughter. The press reports express our anxiety that such a person could have lived undetected in the community for so long, our abhorrence at the nature of the crimes, and our confusion about how anyone, particularly a woman, could commit them. It is easy to condemn serial killers as monsters. However, it is important to explore beyond the stereotypes and consider what we can learn from the research literature about women and men who kill repeatedly.

Hickey defines a serial killer as "someone who, through premeditation, kills three or more people over a period of time."¹ His descriptive study of over 200 serial killers, identified over a period of more than 100 years, found that offenders tended to be about 30 years old and that 90% were white. On average, the murderers killed between eight and 14 victims over a period of four to eight years. As with single homicides, 12-17% of offenders were women.¹ Women tended to commit the murders over a longer period than men, probably because they escaped suspicion during the early stages of police investigation.

Because of the rarity of serial killings, there are few empirical studies examining their aetiology. Speculation outweighs valid and reliable research data. The media stereotype of a serial killer is of a male psychopathic sexual sadist.² However, descriptive classifications identify four subgroups: serial sexual killers, team killers, family killers, and institutional killers.¹³ Recent typologies have systematically assessed killers' geographic mobility, the methods they used to kill their victims, and patterns of attack.¹⁴⁵ Three patterns of mobility are recognised: travelling killers, local killers, and killers whose attacks are limited to a specific place. From reviews of the methods of murder and patterns of victimisation, four combinations have been identified, from killers who select specific victims and use specific methods (such as ritualised torture then strangulation of young women) to killers who murder a variety of victims using a variety of methods.

Compared with female serial killers, male serial killers are more geographically mobile (50% are local killers),¹ show a greater tendency to include torture or mutilation as part of the process of killing, and more often report a sexual motive (50%). Female serial killers are more likely to report personal gain as a motive,⁶⁷ carry out place specific murders (60%),¹³⁷ and poison their victims (60%).¹³ While most male serial murderers kill strangers, women mainly kill their husbands or relatives. Consecutive filicide (murder of one's own children) is usually associated with mental disturbance.⁶ A fifth of female serial killers murder people in hospitals or nursing homes where they are employed.¹⁷ When women are implicated in sadistic sexual homicides, they have usually acted in partnership with a man. About 35% of all serial killers have accomplices.¹³ In two thirds of mixed couples involved in "team killings," the man is the dominant partner.¹ The extent to which the woman is involved may range from awareness the murderer's behaviour through to active participa-

tion in the abduction, torture, and killing of victims.

One of the most disturbing aspects of these crimes is the individualised nature of the killings. While most serial killers have severe personality dysfunction (usually psychopathic disorder²³⁸) this alone cannot explain their behaviour. On the basis of information from interviews, Burgess *et al* suggest that serial killers tend to have experienced impaired childhood attachments, formative traumatic experiences, and a private internal world of violent thoughts and fantasies.⁴⁹ This combination leaves the individual isolated, preoccupied, and lacking awareness of socially accepted constraints on behaviour. Support for this model comes from studies of male sexual killers and sadistic offenders.⁸⁹ In a retrospective comparison with 17 killers who had committed single sexual murders, 25 male serial killers showed an intrusive fantasy life as evidenced by higher rates of paraphilias and violent fantasies.⁵ The scenes of their crimes were also more likely to be organised, suggesting more premeditation and planning.⁵

However, intrusive violent or sexual fantasies are poor indicators of potential involvement in serial homicide. Other factors must be involved to translate fantasy into actual behaviour.⁵ Pornography, alcohol, and drugs may act as facilitators, but in many cases the factors that contribute to initial disinhibition are unclear.¹³ Once restraints are removed, serial killers frequently engage in increasingly more accurate behavioural rehearsals of the fantasised murder. After the first homicide has been committed, the subjective experience of domination and control of a victim becomes a powerful reinforcer of the behaviour.¹³⁹ Also the reality never perfectly fits the fantasy, so the murderer may repeat the activity to try to achieve a match between real and fantasised outcomes.

We do not know whether this model of fantasy driven behaviour, derived from interviews with male serial killers, can be applied to female serial killers. Interview data give tentative evidence linking female serial killers with high rates of severe parental deprivation, childhood abuse, personality disorder, low self esteem, and a sense of personal inadequacy.¹ The lower prevalence of sexual killings by women is compatible with the notion that women tend to experience power and control through other methods. Women who commit consecutive filicide and some who commit murder in institutions may be labelled as suffering from Munchausen syndrome by proxy.⁶¹⁰ However, little research is available.

The low prevalence of multiple homicides means that current theories will take many years to test. Epidemiological principles exploring time, place, person, and individual risk factors have been used successfully in investigating serial killings in hospital settings.⁷ This model could provide a useful framework for examining multiple homicides occurring in other settings. Retrospective analysis cannot prove cause and effect. However, this research is important in developing profiles of a group of offenders who are more heterogeneous than previously realised. If we are even to contemplate preventing serial homicide we must move beyond rhetoric and try to understand why such crimes occur.

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The Internet's challenge to health care provision

A free market in information will conflict with a controlled market in health care

See p 49

The unprecedented growth of the Internet presents a defining moment at the end of the millennium.¹ The information age, long predicted, seems at last to be upon us. Yet the speed of its arrival has left most of the medical profession ill prepared to participate in it and unable to foresee its consequences for clinical practice.

Through the Internet, the public has access to a growing supply of information on health and disease, often of variable quality and relevance.² As a result, providing information on health will no longer be the exclusive remit of health care professionals. The quantity of information on the Internet will continue to grow over the next few years, as will the proportion of people with access to it. Access is already widespread in some populations. In 1994, 46% of patients in one Californian clinic had access to email, 89% of them through their place of work.³ In some areas, proportionately more patients than doctors will have access to the Internet.

Health care information on the Internet has potential major benefits for patients. Numerous electronic discussion groups already allow patients to share experiences and some health related Internet sites offer email advice on a fee for service basis. Other organisations, including the *BMJ*, provide free access to information.⁴ But despite the obvious benefits, the Internet presents many challenges, both to users and suppliers of the information (p 49).⁵

Firstly, the Internet is accessible from most parts of the globe, and access and dissemination is largely uncontrolled and uncontrollable. Even the proposed NHS network, with built in security measures to protect patient confidentiality, cannot be completely isolated from the outside world.⁶

Secondly, the quality of information varies widely, from the most up to date practice guidelines produced by leading clinical bodies to out of date or inaccurate recommendations. In countries where patients can participate in the choice of treatment the Internet could potentially be a rich source of information on treatment options, but meeting patients' expectations and managing their requests presents an important challenge for providers of health care.

Thirdly, in countries in which health care is more centrally managed, widespread use of the Internet is likely to aggravate existing conflicts between patients' expectations and provision of health care. Patients will soon have access via the Internet to information on best practice from a variety of sources and will increasingly demand such information. But the health service's resources are limited, and it must attempt to ration treatment.⁷ Treatments that have been shown to be the most cost effective for a particular disease in population terms may be favoured over treatments with greater efficacy. This could cause conflicts between the informed desire of patients to obtain the best treatment for themselves as individuals, and the system's ability to deliver. Will people who have an almost unlimited access to information but limited access to health care resources tolerate suboptimal care? The recent case of Jaymee Bowen ("child B") in Britain, in which a regional health

authority refused to provide a second bone marrow transplant for a child with leukaemia, is a prime example of the type of conflict that could arise where there is a free market in information and a controlled market in health care.⁸

Fourthly, doctors may be exposed to more frequent legal challenge. While patients may be motivated to seek out the most recent literature for their condition and can invest considerable effort in that search, most practising doctors cannot. The Bolam principle, established in 1957, protects a doctor against a claim of negligence if colleagues would have acted in the same manner.⁹ The Bolam principle was overturned by an Australian court last year, and the same may happen in Britain.¹⁰ If the law were to judge a doctor negligent for failing to institute recognised best practice, the continuation of an informed patient population and an overworked clinical community provides a recipe for increasing litigation.¹¹

This problem has been recognised in the move towards evidence based medical practice. In providing information on which to base best practice, bodies like the Cochrane Collaboration¹² have become pivotal, as has the development of clinical tools for rapid and accurate access to such information across the Internet. Pooled practice guidelines will be a resource not only for doctors but, in all probability, for patients as well. Faced with an enormous quantity of information of variable quality, and ill equipped to separate the wheat from the chaff, patients are likely to welcome access to guidelines that have been certified by recognised medical bodies.

This leads on to a final challenge posed to health care providers by the Internet: the mismatch in the speed with which new scientific results can be disseminated and the length of time required for careful peer review. Innovative approaches to scientific publishing may make it possible to use the Internet itself to redress this imbalance.¹³ It should at least be possible to provide guidance for Internet users on the best available sources of health care material. The organising medical networked information (OMNI) initiative is an example of just such a service.¹⁴ Sponsored by leading groups like Britain's National Institute for Medical Research, OMNI is attempting to provide a gateway to high quality biomedical information for the higher education and research communities. The speed with which the Internet can deliver information should thus not be seen as a liability. Indeed, it offers a solution to some of the increasingly complex communication issues facing the health care system. For example, the recent controversy over how the British government advised the public on the potential risks of some formulations of the oral contraceptive pill before informing many doctors could have been avoided. If clinicians had routine access to the Internet, they could rapidly receive the government's advice before it reached the media and the public.

It is clear that the changing nature of information delivery brings with it enormous implications for the delivery of health care.¹⁵ There is a pressing need for dialogue within the