generalisations are made from this evidence.[11] Only long term randomised controlled trials could clarify whether this is so, but about 50 000 women would have to be recruited. Who will organise such trials?

The same economic disincentives hold for comparative trials, which are rarely carried out. For many medical problems there are several classes of pharmacological drugs on the market with different mechanisms of action. How do they compare on efficacy and safety? We shall probably never know because there are clear economic reasons why no one is interested in investigating whether drug A is better than B, C, or D. Clinical equivalence is often used as an excuse not to look for differences. Investment by drug companies in research is welcome but we must urgently set up an independent European fund along the lines of the US National Institutes of Health to finance independent, randomised controlled trials in areas that are relevant to public health.

The European Union fifth framework programme defines strategic priorities for such areas as research and technological development for the period 1998-2002. The initiative is made up of four themed programmes but is meant to finance research to increase knowledge, and for pragmatic reasons it gives priority to research that interests drug companies.[12] The amount of money involved is not enough to cover the costs of independent trials. Investing resources more clearly in public health will not give an immediate return but will increase the amount of evidence on which the practice of medicine should be based.

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Electronics, clinicians, and the NHS

The patient electronic record needs financial and professional support

Information in practice
pp 875, 878

Clinicians in the United Kingdom are accustomed to false dawns in the technology and management of clinical information, but, for once, real change might happen. In this issue (p 875) Keen and Wyatt discuss the changes in electronic networking and the errors that were made before clinicians got their hands on the process.[1] Fortunately, not only is the network changing, but so are its associated technologies.

Clinicians need the network to carry the electronic patient record and at last we can visualise both the possible shape of the record and how it might work for us. This accessible, private, active record is a great prize, but gaining that prize is hard. In terms of clinical informatics, the NHS now faces the task of moving from information islands of varying quality to a congruent linked community where data can move freely and be used to create helpful knowledge for clinicians beyond the capabilities of any paper record.

As a backdrop, we have the bullish approach of governments with the information management and technology strategy in 1992 and Information for Health in 1998 (being relaunched this month).[2 3] These both proposed that a UK electronic NHS was just around the corner. In both cases the reality lagged far behind; the software to support the proposed electronic architecture did not exist, and neither did the hardware in primary or secondary care.

The training and preparation for culture change had (mostly) been a joke, and networking was lost in a swamp of inappropriate standards and bad contracting. System suppliers had little to be proud of either, with their protectionist commercial urges hampering the move towards open standards and platforms. The death knell for useful progress was that governments were keen to encourage, but not to fund, the essential work necessary to stop us simply replicating paper records in an electronic form.

Meantime, a generation change has occurred whereby no doctor now finishing postgraduate training is puzzled by the internet, and the exponential growth in business use of the medium has bred familiarity, if not love, among even those most resistant to change. Change is suddenly inevitable, and occurring.

Crucially this summer, the English General Practitioners Committee announced that the NHS Executive's plan to place free personal computers connected to the NHSnet on every general practitioner's desk had finally been approved, coinciding with similar Scottish initiatives that are also discussed in this issue (p 878).[4]

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This finally buried the government's illusion that general practitioners should pay for information technology for the NHS, a concept about as logical as making nurses pay for patients' dressings. Renamed Project Connect, this plan offers a level playing field for general practice and primary care information technology, without which an electronic NHS will be impossible. It is a cruel twist of fate for the UK Department of Health that the Treasury has delayed implementation on the grounds of the business case not being proved, thus showing that it is not only clinicians who suffer quixotic decisions in health care.

The next link is that in September the department announced at an informatics conference that it is to legitimise electronic record keeping by general practitioners. Although this move threatens to produce "paperless" practices rather than practices with competent electronic patient records, it will stimulate the profession to demand the ability to transfer records from one general practice to another.

Even if transfer had been possible before, then the absence of a working clinical coding scheme to bring the record to life has been a major hindrance to the wish to connect up. The news that the SNOMED CT clinical coding scheme is running to time with no major problems is immensely encouraging.

When transfer occurs, it can occur over an NHSnet which is now restructuring to use the dominant internet standards and which is truly capable of moving traffic in from and out to the internet. This is in line with the needs of clinicians after long, and eventually constructive, dialogue with the NHS Executive.

And when clinical information is transferred, to be of use to patients and doctors, it needs guaranteed integrity and privacy. The recent procurement of (scalable) cryptography for pathology test result messaging, and the forthcoming strategy for cryptography, means that secure transmission of patients' data will be possible within the NHS sooner than expected.

When this kind of information moves around, it must be about the right person and delivered to the right place. For that, it requires the National Strategic Tracing Service to guarantee identity, and NHS Directory services for addresses. Both these are moving ahead on a timetable to match the preceding developments, and in line with the wishes of clinicians.

Finally, to control its immense versatility, electronic information must have standards or else it will generate garbage. The formation of standards boards, driven by clinicians, for clinical, technical, and management information are all encouraging moves underpinning the quality of the change from paper to electronics.

The critical risk now is the level of commitment from government. The electronic record is financially a speculative venture, not a profit and loss entity, but its arrival is inevitable. Securing and supporting this development work is what clinicians now need. The government must make the commitment to provide resources for this, or the NHS faces another lost decade.

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Cancer and insulin-like growth factor-I

A potential mechanism linking the environment with cancer risk

Insulin-like growth factor-I acts as an important mediator between growth hormone and growth throughout fetal and childhood development. Its effects and those of the other insulin-like growth factors are modulated by at least six different binding proteins. The role of insulin-like growth factor-I in promoting cancer has been investigated for many years, but recently the quality and quantity of evidence has increased.[1] In particular, a number of prospective studies using stored blood collected up to 14 years before the onset of disease have shown associations between insulin-like growth factor-I and prostate cancer, premenopausal breast cancer, and colon cancer.[2–4]

The risk of cancer is higher among people with raised concentrations of insulin-like growth factor-I, and it is lower among those with high concentrations of insulin-like growth factor binding protein-3 (the main binding protein). The associations are similar when people whose blood samples were taken soon before diagnosis are excluded from analyses, suggesting that the observed relations are not due to the release of the growth factor by preclinical cancers.[2–4] The effects are sizeable and stronger than the effects seen in relation to most previously reported risk factors.[1] Weaker evidence from case-control studies suggests that the ratio of insulin-like growth factor-I to insulin-like growth factor binding protein-3 may also be related to the risk of childhood leukaemia and lung cancer.[5 6]

The increasing direct epidemiological evidence that relates insulin-like growth factor-I to the risk of cancer is consistent with more circumstantial evidence. Acromegaly, in which high concentrations of growth hormone stimulate production of high concentrations of insulin-like growth factor-I, has been associated with an increased risk of colorectal cancer and breast cancer in some studies and less consistently with prostate, thyroid, and haematological malignancies.[7] In many studies anthropometric markers of the activity of insulin-like growth factor-I, such as height and leg length, are associated with cancer incidence, particularly with the cancers for which risk increases with rising concentrations of insulin-like growth factor-I.[8] While adult height is not strongly associated with concentrations of insulin-like growth factor-I in cross sectional studies, it may be a marker for this growth factor during childhood growth,[9] and this may be the period

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