phosphatase 643 U/L (normal range 0–120 U/L); total bilirubin 105·5 μmol/L (normal range 0–18 μmol/L); 0·052×10⁹/L eosinophils were also noted. All serum markers for viral agents and autoimmune phenomena were negative on two occasions and two abdominal ultrasonographic assessments excluded any obstructive causes for the jaundice.

As the liver enzymes decreased, the bilirubin peaked at 256·5 μmol/L 1 month after stopping the drugs and pruritus appeared. Eosinophil count remained stable. Bilirubin remained raised for 1 month and slowely declined thereafter.

18 weeks after stopping raloxifene, the patient had total bilirubin of 18·5 μmol/L, direct bilirrubin 8·55 μmol/L, 43 U/L, alanine aminotransferase 36 U/L, and alkaline phosphatase 365 U/L.

The presence of a rash and a mildly raised cosinophil count opens the question of an immune mechanism being involved. Since raloxifene is likely to be used extensively worldwide in the next few years we would suggest that liver toxic effects be monitored in patients receiving this drug, until we learn more about its potential side-effects. A subgroup of susceptible patients might became identifiable.

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Catalytic converters and prevention of suicides

R E Kendell

All petrol cars sold in the UK since Dec 31, 1992, have had to have catalytic converters to comply with a mandatory European Directive restriction on exhaust emissions, and by the end of 1997, 36% of cars had these converters. Because catalytic converters decrease the carbon monoxide content of exhaust gases from about 3·5% to about 0·5%, as well as removing oxides of nitrogen and sulphur, it has been suggested that they may prevent suicides; and there are isolated reports of survivors of suicide attempts, despite long exposure to exhaust fumes.[1,2] There has, however, been no evidence of the influence of catalytic converters on suicide rates.

Scottish suicide data (table) show that the proportion of all suicides among men attributed to poisoning by gases other than those in domestic use (E952) has fallen steadily from 24% in 1990–92, before the European directive came into effect, to 14% in 1997 (χ^2 for trend=32·37 and $p<0·001$ with 1 df). In women the decrease is less, from 9% to 4%, but is still significant (χ^2 for trend=5·80, $p<0·02$ with 1 df). Equivalent data for England and Wales (table) are not available. Because of a change in the coding rules used by the Office of National Statistics, comparisons of data before and after 1991 are difficult, and detailed suicide statistics are not yet available for 1997. The proportion of suicides attributed to poisoning by other gases and vapours, however, fell progressively in men from 35% in 1991–92 to 25% in 1996, and in women from 14% in 1991–92 to 10% in 1995 and 12% in 1996 (men χ^2 for trend=80·30, $p<0·001$; women $\chi^2=5·90$, $p<0·02$).

These numbers suggest that the introduction of catalytic converters has decreased the number of suicides without substitution of other methods. Evidence is strongest in English and Welsh men; since 1992 the rate of E952 deaths has fallen by 399, and suicides by 356 (12%). Among Scottish men, despite the fall in suicides due to poisoning by other gases, total suicides have not decreased, but other influences may be driving the rate up. Certainly, the suicide rate had been rising throughout the 1980s, especially in men aged 15–29 years. The proportion of suicides among women due to poisoning by other gases and vapours has always been lower, partly because fewer women own cars.

	Suicide and self-inflicted injury (E950–959)		Poisoning by other gases and vapours (E952)	
	Men	Women	Men	Women
Scotland				
1990	415	120	94	14
1991	394	131	98	8
1992	418	151	97	16
1993	473	142	105	11
1994	463	161	91	7
1995	476	147	74	5
1996	435	161	66	12
1997	451	148	63	6
England and Wales				
1991	3084	906	1047	120
1992	3007	895	1071	127
1993	2858	861	848	104
1994	2921	798	843	93
1995	2787	783	802	76
1996	2651	794	672	92

Suicide data for Scotland 1990–97[3] and England and Wales 1991–95[4]

As with the removal of carbon monoxide from domestic gas in the UK in the 1960s,[5] catalytic converters may lead to a sustained fall in UK suicide rates.

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Direct estimation of maternal mortality in Africa

Sophie Le Coeur, Gabriel Pictet, Pierre M'Pelé, Marc Lallemant

Maternal mortality ratios, defined as the number of maternal deaths per 100 000 live births, are reportedly highest in Africa.[1] These statistics should, however, be viewed cautiously because civil registers of cause-of-death are commonly incomplete or inaccurate and denominator population statistics are seldom available; many patients are lost to follow-up, which means that the results of population-based surveys can be difficult to interpret;[2] retrospective studies using data from large surveys with indirect methods can be subject to recall bias,[3] and AIDS-related deaths have probably led to overestimation of maternal mortality with these methods; and postabortion deaths are under-reported, especially in countries where abortions are illegal.

We investigated maternal mortality in Brazzaville, Congo, where law requires the delivery of all bodies to a mortuary before burial. Following the WHO definition, we defined maternal death as a death that occurred during pregnancy or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. From June 10 to July 9, 1996, we investigated all bodies handled by the city's three mortuaries. We examined cadavers, interviewed relatives who delivered the body (93% of the cases) and, for those bodies of people previously

Number of cases	Age at death	Immediate cause of death	Primary cause of death/time of occurrence	Previous admission to hospital
4	17, 20, 21, 23	Septicaemia	After abortion	Yes, yes, yes, yes
2	25, 36	Haemorrhage	After abortion	No, no
1	15	Haemorrhage	Ectopic pregnancy	Yes
1	40	Surgical complication	Ectopic pregnancy	Yes
1	33	Surgical complication	Caesarean section	Yes
1	22	Eclampsia	Per partum	Yes
4	21, 34, 38, 46	Haemorrhage	Post partum	Yes, no, yes, yes
1	36	Septicaemia/HIV-1	Post partum	Yes

Data for maternal deaths

admitted to hospital, we assessed hospital files and interviewed medical staff shortly after death.

Among the 138 female adult bodies (aged 15–49 years), 15 maternal deaths were identified (table). Based on the number of live births (27 888) from Sep 1, 1995, to Aug 31, 1996, and the age distribution of the mothers, we estimated the rate of maternal mortality to be 645 per 100 000 and the lifetime risk of maternal death to be one in 25 women.

This rate is very high for an African capital city in which about 90% of the women have access to prenatal care, and most babies are delivered in maternity hospitals. Excess maternal mortality is explained partly by the high number of abortion-related deaths in young women, freely disclosed by families at the mortuary. Most of the other deaths could have been prevented in better equipped or managed hospitals.

We were able to make direct reliable estimation of maternal mortality by a method that can be easily replicated. Access to prenatal care and to maternity hospitals does not necessarily lead to better maternal survival. Maternal mortality is therefore unlikely to decrease in African cities until obstetric care and promotion of safe reproductive choices are improved.

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Evaluation of cyberdocs

Gunther Eysenbach, Thomas L Diepgen

People consult the worldwide web to seek health information and to ask medical questions via e-mail.[1] Several commercial and free medical services have been set up to respond to this demand. This cybermedicine has raised concerns.[2] To shed some light on this new type of doctor-patient interaction and to assess the quality of these services, we posed as a patient, as we had done before to investigate the problem of unsolicited patient e-mails.[3] For this study, 10 free and seven charging cyberdocs were identified from Yahoo[4] and by searching Alta Vista for "+ask+doctor*" or "+ask+physician*". We sent this e-mail to all: "I saw on the Web that you are offering medical advice per email. I am 55 years old and have a minor skin problem. Yesterday multiple fluid filled painful red blisters appeared on a broad streak of reddened skin on the chest (but only there). I did not intend to do anything about it, as I think it will go away, but my son suggested to ask you. I am on Sandimmune since I had a kidney-transplant some time ago. Any idea what this could be? Any suggestions regarding therapy? Most important question: Do I have to see a doctor (I live in a rural area), or can I wait some days to see whether it goes away? Below you will find my credit card information, please charge me as you deem appropriate (but please tell me, how much the consultation was). Regards, Gunther (Germany)".

This request suggested a herpes zoster infection in an immunocompromised person, which requires immediate treatment with acyclovir.[5] 10 cyberdocs responded, of whom three refused to give advice because dermatology was not their area of expertise. The remaining seven provided advice (two for free, five for a charge), usually given within less than 8 hours. Advice given by five cyberdocs was accurate and the correct diagnosis of herpes zoster was given. In two cases, however, questionable information was provided. A self-described "well-known naturopathic doctor, lecturer, author, and a general family practitioner" wrote in his e-mail that "the fluid filled cysts are probably nothing to worry about" and recommended "the homeopathic medicine Apis 30D" and "vitamin C". US$25 was charged for this advice. Another self-described "nutritionist" who has offered "online analysis as well as information and advice on various illnesses and general health", diagnosed that "your eliminative organs may be congested (liver, spleen, gall bladder, kidneys, intestines, and skin). Make sure you get at least two good bowel movements a day. If you don't, have two apples and a warm glass of water immediately." His therapy advice as to "breathe deeply (fresh air), drink plenty of rain water, or RO water, or distilled water", "getting some enzymes, which help allergies", "consider eliminating all dairy and wheat products" and to "get Red Clover and Dandelion" and "eat as many as you can". This advice was given free of charge, but the writer offered to "send instructions on how to get it (Red Clover and Dandelion) delivered to your doorstep", so probably there was some commercial interest here. The patient was not encouraged to see a doctor.

Six of 10 of those offering free advice and one of seven offering commercial advice did not answer at all; patients may lose precious time while waiting for the answer of a cyberdoc before seeing a real doctor. None of the cyberdocs (all located in the US) objected to a "cross-border" consultation, which raises licensing and legal questions.[3] Procedures should be considered to protect consumers from quacks and non-medically trained healers offering dubious health advice on the internet. Medically trained cyberdocs should be careful about answering diagnostic questions, limiting their advice strictly to general health questions. We propose that these services shall in the future be assessed by an independent international body which could issue a cyberlicence for cyberdocs who practice along these lines. Patients should be warned that there are currently no means to determine the credibility or qualification of cyberdocs on the internet.

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